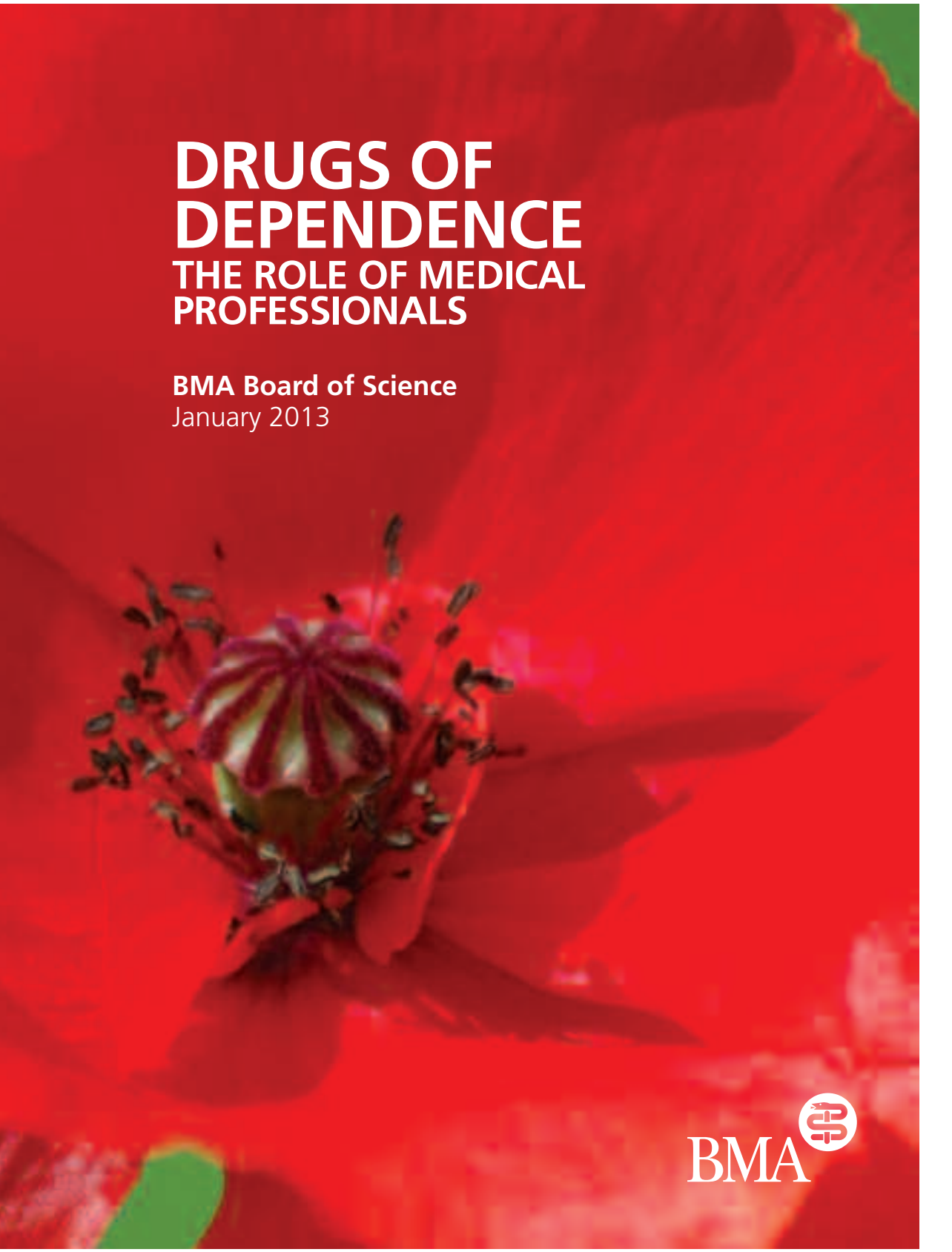
DRUGS OF DEPENDENCE

THE ROLE OF MEDICAL PROFESSIONALS

BMA Board of Science

January 2013



BMA

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Board of Science

This report was prepared under the auspices of the Board of Science of the British Medical Association, whose membership for 2012-2013 was as follows:

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Dr Hamish Meldrum	(Chair of Council, 2007-2012)
Dr Kate Bullen	(Deputy Chair of Council, 2007-2012)
Dr Peter Bennie	(Chairman of the Representative Body, 2007-2010)
Dr Richard Jarvis	(Co-Chair, Public Health Medicine Committee, 2009-2012).

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The Board of Science, a standing committee of the BMA, provides an interface between the medical profession, the Government and the public. The Board produces numerous reports containing policies for national action by Government and other organisations, with specific recommendations and areas for action affecting the medical and allied professions.

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Professor Neil McKeganey

Director of the Centre for Drug Misuse Research. In 1994 Professor McKeganey opened the centre at the University of Glasgow. It undertakes research in such diverse areas as the impact of parental drug use on children, recovery from dependent drug use, the impact of drug use on prostitution, the effectiveness of drug-treatment services and the nature of preteen drug use. In 2011, the centre moved from the University of Glasgow to operate as an independent research organisation. The centre is currently undertaking work on the effectiveness of Suboxone® (buprenorphine and naloxone), the impact of drug and alcohol problems on doctors and dentists, and the effectiveness of prison-based drug treatment. Professor McKeganey has written widely on the topic of drugs policy and has contributed to the United-Nations-based International Narcotics Control Board. He is the author of over 150 academic papers and his most recent book *Controversies in drug policy and practice* was published in 2011 by Palgrave Macmillan.

Professor Robin Room

School of Population Health, University of Melbourne, and Director of the Centre for Alcohol Policy Research at Turning Point Alcohol and Drug Centre, Fitzroy, Victoria, Australia. He is also a professor at and was the founding director of the Centre for Social Research on Alcohol and Drugs at Stockholm University. He had previously directed research at the Addiction Research Foundation of Ontario (1991-1998) and the Alcohol Research Group in Berkeley, California (1977-1991). Professor Room has studied the effects of alcohol, drug and gambling policies. He is a co-author of a number of books on alcohol and drug policy, including *Young men and drugs* (National Institute on Drug Abuse, 1975), *Alcohol in developing societies* (Finnish Foundation for Alcohol Studies, 2002), *Drug policy and the public good* (Beckley Foundation Press and Oxford University Press, 2010), *Cannabis policy – moving beyond stalemate* (Oxford University Press, 2010) and *Alcohol – no ordinary commodity* (Oxford University Press, 2e, 2010). His research interests include historical, cultural and social epidemiological studies of alcohol and other drugs, including comparative research across psychoactive substances.

Reference group

A reference group was established to provide expert advice to the BMA Board of Science during the development of this report. The group comprised senior members of affected professions who have demonstrated experience and interest in relation to the issue of drug use. Please see **Appendix 1** for membership of the group.

Declaration of interest

Declarations of interest for outside experts have been provided in Appendix 1. For further information about the editorial secretariat or Board members please contact the BMA Science and Education Department, which holds a record of all declarations of interest: info.science@bma.org.uk

Abbreviations

AA	Alcoholics Anonymous
ACMD	Advisory Council on the Misuse of Drugs
ACPO	Association of Chief Police Officers
ATOS	Australian Treatment Outcome Study
BBFC	British Board of Film Classification
BCS	British Crime Survey
1,4-BD	1,4-butanediol
BSA	British Social Attitudes (survey)
BZP	1-benzylpiperazine
CA	Cocaine Anonymous
CARAT	counselling, assessment, referral, advice and throughcare
CBT	cognitive-behavioural therapy
CM	contingency management
CND	Commission on Narcotic Drugs
CNS	central nervous system
CPS	Crown Prosecution Service
DDC	Dedicated Drug Court
DfE	Department for Education
DfES	Department for Education and Skills
DH	Department of Health
DIP	Drug Interventions Programme
DMT	*N*,*N*-dimethyltryptamine
DORA	Defence of the Realm Act (1916)
DRR	Drug Rehabilitation Requirement
DSM	*Diagnostic and Statistical Manual of Mental Disorders*
DTTO	Drug Treatment and Testing Order
DZ	dizygotic
ECA	Epidemiological Catchment Area (study)
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ESPAD	European School Survey Project on Alcohol and other Drugs
GABA	gamma-amino butyric acid
GBL	gamma-butyrolactone
GHB	gamma-hydroxybutyrate
GMC	General Medical Council
HBSC	Health Behaviour in School-aged Children (study)
HBV	hepatitis B virus
HCV	hepatitis C virus

HRQoL	health-related quality of life
ICD	*International Classification of Diseases*
IDTS	Integrated Drug Treatment System
IEP	injecting equipment provision
IMD	Index of Multiple Deprivation
INCB	International Narcotics Control Board
IQ	intelligence quotient
LEEDS	Leeds Evaluation of Efficacy of Detoxification Study
LGBT	lesbian, gay, bisexual and transgender
LSD	lysergic acid diethylamide
MDA	3,4-methylenedioxyamphetamine
MDEA	3,4-methylenedioxyethylamphetamine
MDDB	methylbenzodioxolylbutanamine
MDMA	3,4-methylenedioxymethamphetamine (ecstasy)
MMDA	3-methoxy-4,5-methylenedioxyamphetamine
MSM	methylsulfonylmethane
4-MTA	4-methylthioamphetamine
MT	methadone treatment
MXE	methoxetamine
MZ	monozygotic
NA	Narcotics Anonymous
NGO	non-governmental organisation
NICE	National Institute for Health and Clinical Excellence
NOMS	National Offender Management Service
NTA	National Treatment Agency
NTORS	National Treatment Outcome Research Study
OST	opioid substitution therapy
OTC	over-the-counter (drug)
PCP	phencyclidine
PHE	Public Health England
PMA	paramethoxyamphetamine
PMMA	paramethoxymethamphetamine
PMSU	Prime Minister's Strategy Unit
PSHE	personal, social and health education
QoL	quality of life
RCP	Royal College of Physicians
RCT	randomised controlled trial
RR	residential rehabilitation
RSA	Royal Society for the encouragement of Arts, Manufactures and Commerce

SCJS	Scottish Crime and Justice Survey
SIDS	sudden infant death syndrome
SSA	Scottish Social Attitudes (survey)
TC	therapeutic community
TCDO	Temporary Class Drug Order
THC	tetrahydrocannabinol
TOPS	Treatment Outcome Prospective Study
UKDPC	UK Drugs Policy Commission
UN	United Nations
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UN ECOSOC	Economic and Social Council of the United Nations
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

Glossary[a]

The use of bold with upper case indicates a term that is also defined in this glossary.

Abuse liability

The propensity of a particular **Psychoactive substance** to be susceptible to abuse. It is defined in terms of the relative probability that use of the substance will lead to social, physical or psychological problems for an individual or society.

See also **Dependence potential**, **Drug abuse** and **Harmful use**.

Addiction

Repeated use of a **Psychoactive substance** or substances, to the extent that the user (referred to as an addict) is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying **Substance use**, and exhibits determination to obtain psychoactive substances by almost any means. Typically, **Tolerance** is prominent and a **Withdrawal syndrome** frequently occurs when substance use is interrupted. The life of the addict may be dominated by substance use to the virtual exclusion of all other activities and responsibilities. The term addiction also conveys the sense that such substance use has a detrimental effect on society, as well as on the individual. Addiction is a term of long-standing and variable usage. It is regarded by many as a discrete disease entity, a debilitating disorder rooted in the pharmacological effects of the **Drug**, which is often progressive. Addiction is not a diagnostic term in the *International Classification of Diseases* 10th revision (ICD-10), but continues to be very widely employed by professionals and the general public.

The term is often used interchangeably with **Dependence**.

Addictive

Causing, or tending to cause, **Addiction**. Different **Psychoactive drugs** have different levels of addictiveness (or **Dependence potential**); these are outlined in **Appendix 2**.

Alcoholics Anonymous, AA

A **Mutual-help movement** for individuals who are dependent on, or are recovering from dependence on, alcohol. Participants support each other in recovering from, or maintaining recovery from, their dependence. It uses a 12-step programme based on a non-denominational spiritual approach, with an emphasis on mutual aid and support.

a Adapted from World Health Organization (2004) *Lexicon of alcohol and drug terms*. Geneva: World Health Organization; the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) *Online glossary* (www.emcdda.europa.eu, accessed 1 October 2012) and the United Nations Office on Drugs and Crime (UNODC) (www.unodc.org, accessed 1 October 2012).

Controlled substances

Psychoactive substances, and their precursors, whose distribution is forbidden by law or limited to medical and pharmaceutical channels. The substances actually subject to this control differ between countries. The term is often used to refer to **Psychoactive drugs** and precursors covered by international drug conventions. At international and national levels, controlled **Drugs** are commonly classified according to a hierarchy of schedules, reflecting different degrees of restriction of availability.

Craving

A psychological urge to self-administer a **Drug**. Craving is often associated with **Dependence** and a desire to obtain repeated doses of a drug in order to feel good or avoid feeling bad. It may also be associated with a physiological dependence or **Tolerance**.

Decriminalisation

A process in which the seriousness of a crime or of the penalties the crime attracts is reduced. More specifically, it refers to the move from a criminal sanction to the use of civil or administrative sanctions. An example in relation to **Illicit drugs** would be where possession of cannabis is downgraded from a crime that warrants arrest, prosecution and a criminal record to an infraction to be punished with a warning or fine. Decriminalisation is often distinguished from **Legalisation**, which involves the complete repeal of any legal definition as a crime, often coupled with a governmental effort to control or influence the market for the affected behaviour or product.

A distinction is also made between *de jure* decriminalisation, which involves specific reforms to the legal framework, and *de facto* decriminalisation, which involves a similar outcome, but is achieved through 'turning a blind eye' to tolerant policing – effectively non-enforcement of criminal laws that technically remain in force.

Depenalisation

Depenalisation refers to reforms of **Illicit drug** control provisions (to either the letter or practice of the law) that reduce the severity of the penalties imposed upon the offender.

Dependence

As a general term, dependence is the state of needing or depending on something or someone for support or to function or survive. As applied to alcohol and other **Drugs**, the term includes psychological and physiological aspects. Psychological dependence involves impaired control over **Drug use** and a need (**Craving**) for repeated doses of the drug, to feel good or avoid feeling bad. Physiological, or physical, dependence is associated with **Tolerance**, where increased doses of the drug are required to produce the effects originally produced by lower doses, and development of **Withdrawal syndrome** when the drug is withdrawn. The *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition revised (DSM-IV) defines it as:

> *'When an individual persists in use of alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed. Compulsive and repetitive use may result in tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped.'*

The DSM-IV definition is roughly equivalent to the **Dependence syndrome** of the ICD-10. In the ICD-10 context, the term dependence could refer generally to any of the elements in the syndrome.

The term can be used generally with reference to the whole range of **Psychoactive drugs** (drug dependence, chemical dependence, substance use dependence), or with specific reference to a particular drug or class of drugs (eg opioid dependence). While the ICD-10 describes dependence in terms that are applicable across drug classes, there are differences in the characteristic dependence symptoms for different drugs.

In biologically oriented discussion, dependence is often used to refer only to physical dependence. Dependence or physical dependence is also used in the **Psychopharmacological** context in a still narrower sense, referring solely to the development of withdrawal symptoms on cessation of drug use.

The term is often used interchangeably with **Addiction**.

See also **Dependence syndrome**.

Dependence potential

The propensity of a substance, as a consequence of its pharmacological effects on physiological or psychological functions, to give rise to **Dependence** on that substance. Dependence potential is determined by those intrinsic pharmacological properties that can be measured in animal and human **Drug**-testing procedures. It is a term used in applying international drug treaties.

Dependence syndrome

A cluster of behavioural, cognitive, and physiological phenomena that may develop after repeated **Substance use**. Typically, these phenomena include a strong desire to take the **Drug**, impaired control over its use, persistent use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased **Tolerance**, and a physical withdrawal reaction when **Drug use** is discontinued (**Withdrawal syndrome**). In ICD-10, the diagnosis of dependence syndrome is made if three or more of six specified criteria have been experienced within a year (see **Section 1.1.2**, **Box 1**). Dependence syndrome may relate to a specific substance (eg heroin), a class of substances (eg opioids), or a wider range of pharmacologically different substances.

See also **Dependence** and **Tolerance**.

Detoxification

A controlled process of providing symptomatic relief to assist patients to complete withdrawal from a **Drug**, while minimising the associated adverse effects. In the context of **Illicit drug** use, the aim of detoxification is to reverse or reduce **Dependence** on and **Tolerance** to a **Psychoactive drug**.

Diversion

From a medical perspective, diversion is the inappropriate use of a **Drug** by those for whom it has been prescribed, or use by a person for whom the medication was not prescribed. The term may be used to describe diversion of a shipment of drugs out of legal channels at wholesale level or, for example, to describe the sale of prescription methadone to, and use by, an individual for whom it was not prescribed.

The term diversion is also used in a criminal justice context to refer to measures that take an arrestee out of the criminal justice system and into education, medical management or another type of intervention.

Drug

A term of varied usage. In medicine, it refers to any substance with the potential to prevent or cure disease or enhance physical or mental welfare, and in pharmacology it refers to any chemical agent that alters the biochemical or physiological processes of tissues or organisms. Hence, a drug is a substance that is, or could be, listed in a pharmacopoeia. In common usage, the term often refers specifically to **Psychoactive drugs**, and often, even more specifically, to **Illicit drugs**, of which there is non-medical use in addition to any medical use. Professional formulations (eg 'alcohol and other drugs') often seek to make the point that caffeine, tobacco, alcohol and other substances in common non-medical use are also drugs in the sense of being taken, at least in part, for their psychoactive effects.

Drug abuse

A term in wide use but of varying meaning. The DSM-IV defines '***Psychoactive substance*** *abuse*' as:

> *'A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period: (1) Recurrent substance use resulting in a failure to fulfil major role obligations at work, school, or home (eg repeated absences or poor work performance related to substance use; substance-related absences, suspensions or expulsions from school; neglect of children or household); (2) Recurrent substance use in situations in which it is physically hazardous (eg driving an automobile or operating a machine when impaired by substance use); (3) Recurrent substance-related legal problems (eg arrests for substance-related disorderly conduct); (4) Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (eg arguments with spouse about consequences of intoxication, physical fights).'*

The term 'abuse' is sometimes used disapprovingly to refer to any use at all, particularly of **Illicit drugs**. The term is not used in ICD-10 because of its ambiguity and to avoid including social consequences in the definition of a diagnosis. **Harmful use** is the closest equivalent in ICD-10. In other contexts, abuse has referred to non-medical or unsanctioned patterns of use, irrespective of consequences. Thus the definition published in 1969 by the WHO Expert Committee on Drug Dependence was '*persistent or sporadic excessive drug use inconsistent with or unrelated to acceptable medical practice*'.

The term **Drug use** is often preferred as it is non-judgemental; it has been used throughout this report. See also **Drug misuse**.

Drug control

The regulation, by a system of laws and agencies, of the production, distribution, sale and use of specific **Psychoactive drugs** (**Controlled substances**) locally, nationally or internationally. This is the legal aspect of **Drug policy**.

Drug misuse

Use of a substance for a purpose that is not consistent with legal or medical guidelines, as in the non-medical use of prescription medications. This term is often preferred to **Drug abuse**, as it is perceived to be less judgemental.

The term **Drug use** is often preferred as it is even more non-judgemental. This is the term used throughout this report.

Drug poisoning

A state of major disturbance of consciousness level, vital functions, and behaviour following the administration in excessive dosage (deliberately or accidentally) of a **Psychoactive substance**. In the field of toxicology, the term poisoning is used more broadly to denote a state resulting from the administration of excessive amounts of any pharmacological agent, psychoactive or not. In the context of **Illicit drug** use, poisoning may occur as a result of adulterants in the drug.

Drug policy

In the context of **Psychoactive drugs**, the aggregate of policies designed to affect the supply and/or demand for **Illicit drugs**, locally or nationally, including education, treatment, control and other programmes and polices to reduce the harms related to illicit drug use. In this context, 'drug policy' often does not include pharmaceutical policy (except with regard to diversion to non-medical use), or tobacco or alcohol policy. In the context of the WHO's *Action Programme on Essential Drugs*, 'national drug policy' refers to a national pharmaceutical policy concerning the marketing, availability and therapeutic use of medicines.

Drug-related problem

Any of the range of adverse accompaniments of **Drug use**, particularly **Illicit drug** use. 'Related' does not necessarily imply causality. The term was coined by analogy with alcohol-related problems but is less used, since it is **Drug use** itself, rather than the consequence, that tends to be defined as the problem. It can be used to refer to problems at an individual or societal level. In international **Drug control**, drug-related problems are taken into account in setting a level of control for a **Controlled substance** through a WHO assessment of the drug's **Dependence potential** and

Abuse liability. 'Drug problems' is a possible cognate term, but can be confused with '*the* drug problem', meaning **Illicit drugs** as a policy issue.

Drug use

Self-administration of a psychoactive substance. This term has been used throughout this book rather than **Drug abuse** or **Drug misuse**, as it is non-judgemental.

Gateway drug

An **Illicit** or **Licit drug**, use of which is regarded as opening the way to the use of another drug, usually one that is viewed as more problematic.

Harmful use

A pattern of **Psychoactive Substance use** that is causing damage to health. The damage may be physical (eg hepatitis following injection of drugs) or mental (eg depressive episodes secondary to heroin use). Harmful use commonly, but not invariably, has adverse social consequences but social consequences are not necessary to justify a diagnosis of harmful use. The term was introduced in ICD-10 and supplanted 'non-dependent use' as a diagnostic term. The closest equivalent in other diagnostic systems (eg DSM-IV) is **Substance abuse**, which usually includes social consequences.

Harm reduction

In the context of alcohol or other drugs, harm reduction describes policies or programmes that focus directly on reducing the harm resulting from the use of alcohol or other drugs. The term is used particularly of policies or programmes that aim to reduce the harm without necessarily affecting the underlying **Drug use**; examples include **Maintenance treatment** in **Opioid Dependence** and needle/syringe exchanges to counteract needle sharing among heroin users. Harm reduction can be used either to refer to goals (focusing on the harm rather than on use per se) or to means (eg needle exchanges, **Opioid Substitution Therapy** etc); in the latter sense, it is often contrasted to the dichotomy of supply reduction and demand reduction.

Hazardous use

A pattern of substance use that increases the risk of harmful consequences for the user. Some would limit the consequences to physical and mental health (as in **Harmful use**); some would also include social consequences. In contrast to **Harmful use**, hazardous use refers to patterns of use that are of public health significance, despite the absence of any current disorder in the individual user. The term is currently used by the WHO but is not a diagnostic term in ICD-10. It is also commonly used for **Licit drugs**, such as alcohol, which allows comparison between the pattern of use of these drugs and the harm related to their use.

High

An intense feeling of pleasure experienced when using some **Psychoactive drugs**. These substances cause dopamine to be released rapidly and in huge quantities when compared to usual brain levels, which leads to the intense feelings of pleasure.

Illicit drug

A **Psychoactive substance**, the possession, production, sale or use of which is prohibited. Strictly speaking, it is not the **Drug** that is illicit, but its possession, production, sale or use in particular circumstances in a given jurisdiction. *Illicit drug market*, a more exact term, refers to the production, distribution, and sale of any drug outside legally sanctioned channels.

Intoxication

Defined in the ICD-10 as '*a transient condition following the administration of alcohol or other **Psychoactive substance**, resulting in disturbances in level of consciousness, cognition, perception, affect or behaviour, or other psychophysiological functions and responses*'. The term 'acute intoxication' is used for intoxication of clinical significance. Complications may include trauma, inhalation of vomitus, delirium, coma, and convulsions, depending on the substance and method of administration.

Keyworking

A system of providing individualised care though a specific keyworker, who provides a consistent means of contact with medical and social care. It is used for **Rehabilitation** of **Dependence** on **Illicit drugs** and enables support to be tailored to individual need by creating a strong partnership between the individual requiring rehabilitation and the keyworker.

Legalisation

Legalisation is a process of repealing a prohibition (in criminal law) on a given behaviour or product – in this context, supply, possession or use of an **Illicit drug**. The process is often coupled with a governmental effort to control or influence the market for the affected behaviour or product. The term should be distinguished from **Decriminalisation**, which refers to a reduction in the seriousness of an offence or of the penalties it attracts, and specifically the move from a criminal sanction to a civil or administrative one.

Licit drug

A drug that is legally available, either to purchase, or by medical prescription. Examples of licit **Psychoactive drugs** that are available to purchase are alcohol and tobacco. See also **Illicit drug**.

Maintenance treatment

A method of medical management that involves prescribing and administration of a pharmaceutical **Drug** as a 'substitute' for an **Illicit drug**, to patients who have become dependent. It is most commonly used for **Opioid Dependence** (eg treatment with methadone or buprenorphine – commonly called **Opioid Substitution treatment**). The aim is to attenuate withdrawal symptoms, diminish opioid **Craving** and arrive at a **Tolerance** threshold, while preventing euphoria and sedation from overmedication.

Multiple drug use

See **Polydrug use**.

Mutual-help movement

Voluntary associations, usually led by former drug users who now use their experiences to help others cease drug use and improve their coping skills.

See also **Alcoholics Anonymous** and **Narcotics Anonymous**.

Narcotics Anonymous, NA

A **Mutual-help movement** for individuals who are dependent on, or are recovering from dependence on, narcotics (chemical agents (such as opiates or opioids) that induce stupor, coma, or insensibility to pain, but also a term used imprecisely to mean illicit drugs, irrespective of their pharmacology). Participants support each other in recovering from, or maintaining recovery from, their dependence. It uses a 12-step programme based on a non-denominational spiritual approach, with an emphasis on mutual aid and support.

Opiate

An opiate is an **Addictive** drug, derived from the opium poppy, which reduces pain, induces sleep and may alter mood or behaviour (see **Opioids**). This term excludes synthetic **Opioids**.

Opioid

A generic term applied to alkaloids from the opium poppy (**Opiates**), their synthetic analogues and compounds synthesised in the body that interact with specific **Receptors** in the brain and reduce pain, induce sleep and may alter mood or behaviour. In high doses they can cause stupor, coma and respiratory depression. Opium alkaloids and their semi-synthetic analogues include morphine, diacetylmorphine (diamorphine, heroin), hydromorphine, codeine and oxycodone. Synthetic opioids include buprenoprhine, methadone, pethidine, pentazocine and tramadol. More information is available in **Appendix 3**.

Overdose

The use of any **Drug** in such an amount that acute adverse physical or mental effects are produced. It usually implies an amount that constitutes a mortal risk. Deliberate overdose is a common means of suicide and attempted suicide. In absolute numbers, overdoses of **Licit drugs** are usually more common than those of **Illicit drugs**. Overdose may produce transient or lasting effects, or death; the lethal dose of a particular drug varies with the individual and with circumstances. Poisoning is a near-synonym in external-cause diagnostic codes.

Polydrug use

The use of more than one **Psychoactive drug** or type of **Drug** by an individual, often at the same time or sequentially, and usually with the intention of enhancing, potentiating, or counteracting the effects of another drug. The term is also used more loosely, to include the unconnected use of two or more drugs by the same person. It carries the connotation of **Illicit drug** use, though alcohol, nicotine, and caffeine are the substances most frequently used in combination with others in industrialised societies (**Polysubstance use**). Multiple drug use disorder is one of the '*Mental and behavioural disorders due to psychoactive substance use*' in the ICD-10, diagnosed only when two or more substances are known to be involved and it is impossible to assess which substance is contributing most to the disorder. The category is also used when the exact identity of some or even all of the substances being used is uncertain or unknown, since many multiple drug users often do not know themselves what they are taking. The term **Multiple drug use** is also commonly used.

Polysubstance use

The concurrent use of an **Illicit drug** or **Drugs** and alcohol, tobacco (nicotine) or caffeine.

Problem drug use

There are varying definitions for problem drug use. In its broadest sense, according to the United Nations Office on Drugs and Crime (UNODC), problem drug use is used to describe individuals who inject **Drugs** and/or are considered dependent, facing serious social and health consequences as a result. For statistical purposes, the definitions and methods of calculation differ from country to country. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) defines problem drug use as '*injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamines*'.

Prohibition

Policy under which the cultivation, manufacture, and/or sale (and sometimes the use) of a **Psychoactive drug** are prohibited under criminal law (although pharmaceutical sales are usually permitted).

Psychoactive drug or substance

A substance that, when ingested, affects mental processes (eg cognition, mood, sensation and behaviour). This term and its equivalent, **Psychotropic drug**, are the most neutral and descriptive terms for the whole class of substances, licit and illicit, of interest to **Drug policy**. 'Psychoactive' does not necessarily imply **Dependence** producing, and in common parlance the term is often left unstated, as in **Drug use/Drug abuse** or **Substance abuse/Substance use**.

Psychoactive substance use disorders

A shortened version of the term used in ICD-10 – mental and behavioural disorders associated with **Psychoactive Substance use**. The term encompasses acute **Intoxication**, **Harmful use**, **Dependence syndrome**, withdrawal state, withdrawal state with delirium, psychotic disorder, and amnesic syndrome. For a particular substance, these conditions may be grouped together as, for example, cannabis use disorders, stimulant use disorders. Psychoactive substance use disorders are defined as being of clinical relevance; the term 'psychoactive substance use problems' is a broader one, which includes conditions and events not necessarily of clinical relevance.

Psychopharmacology

The actions of **Drugs**, and their effects on mood, sensation, cognition and behaviour.

Psychotropic drug

See **Psychoactive drug**.

Receptor

A structure or site on the surface of a cell that can bind a chemical substance that will then induce a change in the cell. In the context of **Psychoactive drugs**, binding of a drug to a specific receptor on nerves in the brain can induce a psychological effect by either mimicking or blocking the action of a specific natural neurotransmitter.

See also **Psychoactive drug or substance**.

Recreational use

Use of a **Drug**, usually an **Illicit drug**, in sociable or relaxing circumstances, by implication without **Dependence** or other problems. The term is not favoured by those seeking to define all **Illicit drug** use as a problem.

Recovery

In the context of **Drug Dependence**, recovery involves achievement of the individual user's goals for making positive changes in their life. This usually includes improved family and social relationships, living in appropriate housing and being gainfully employed. It is likely to be achieved by treatment to reduce or eliminate dependence on **Illicit drugs**.

Recovery capital

The '*breadth and depth of internal and external resources that can be drawn upon to initiate and sustain* ***Recovery***' from **Substance use**.[a]

Regulation/Regulated market

A range of regulatory controls are deployed, covering drug production and trade, products, gatekeepers of supply and users. Some drugs, preparations and activities remain prohibited. Examples of regulated products are over-the-counter drugs, prescription drugs, alcohol and tobacco.

Rehabilitation

In the field of **Substance use**, the process by which an individual with a substance use disorder achieves an optimal state of health, psychological functioning, and social wellbeing. Rehabilitation follows the initial phase of treatment (which may involve **Detoxification** and medical and psychiatric treatment). It encompasses a variety of approaches, including group therapy, specific behaviour therapies to prevent relapse, involvement with a mutual-help group, residence in a therapeutic community or half-way house, vocational training, and work experience. There is an expectation of social reintegration into the wider community.

Relapse

A return to drug use after a period, of abstinence or controlled use, often accompanied by reinstatement of **Dependence** symptoms. Some distinguish between relapse and lapse ('slip'), with the latter denoting an isolated occasion of alcohol or drug use.

Relapse prevention

Techniques to prevent relapse into drug use. This can be pharmacological (eg naltrexone-maintained abstinence from opioid use), or a psychosocial intervention such as cognitive-behavioural therapy, which focuses on helping users to identify situations where they are most vulnerable to drug use and to develop coping skills to deal with these situations.

a Granfield R & Cloud W (1999) *Coming clean: overcoming addiction without treatment*. New York: New York University Press.

Remission

A symptom-free period. In the context of **Illicit drug** use, it can refer to a period of abstinence or controlled use, or to a period of freedom from the **Craving** associated with **Dependence**.

Residential rehabilitation

Prolonged residential treatment in a home, hostel or hospital unit, for **Dependence**, usually on a **Psychoactive drug**. There is a positive and highly structured drug-free environment with strict rules, where residents are expected to participate in a programme of **Rehabilitation**, based on self-help and mutual support.

See also **Therapeutic community**.

Substance abuse/Substance use

See **Drug abuse** and **Drug use**.

Substitution treatment

Treatment of **Dependence** on a **Psychoactive drug** with a substitute drug with cross-dependence and cross-**Tolerance**. The goal is to reduce or eliminate use of the original drug and/or to reduce harm from a particular method of administration. See also **Harm reduction**.

Therapeutic community

A structured environment where individuals with **Substance use** disorders live, to achieve **Rehabilitation**. Such communities are often specifically designed for individuals with **Dependence** on **Psychoactive drugs**, are run according to strict rules, based on self-help and mutual support, and are often geographically isolated. They use a hierarchical model with treatment stages that reflect increased levels of personal and social responsibility. Peer influence, mediated through a variety of group processes, is used to help individuals learn and assimilate social norms and develop more effective social skills.

See also **Residential rehabilitation**.

Tolerance

A decrease in response to a **Drug** dose that occurs with continued use. Increased doses of alcohol or other drugs are required to achieve the effects originally produced by lower doses. Physiological and psychosocial factors may contribute to the development of tolerance, which may be physical, behavioural or psychological. With respect to physiological factors, both metabolic and/or functional tolerance may develop. By increasing the rate of metabolism of the substance, the body may be able to eliminate the substance more readily. *Functional tolerance* is defined as a decrease in sensitivity of the central nervous system to the substance. *Behavioural tolerance* is a change in the effect of a drug as a result of learning or alteration of environmental constraints. *Acute tolerance* is rapid, temporary accommodation to the effect of a substance following a single dose. *Reverse tolerance*, also known as *sensitisation*, refers to a condition in which the response to a substance increases with repeated use. Tolerance is one of the criteria for the **Dependence syndrome**.

Withdrawal syndrome

A group of symptoms of variable clustering and degree of severity that occur on cessation or reduction of use of a **Psychoactive substance** that has been taken repeatedly, usually for a prolonged period and/or in high doses. The syndrome may be accompanied by signs of physiological disturbance. A withdrawal syndrome is one of the indicators of a **Dependence syndrome**. It is also the defining characteristic of the narrower **Psychopharmacological** meaning of **Dependence**. The onset and course of the withdrawal syndrome are time limited and are related to the type of substance and dose being taken immediately before cessation or reduction of use. Typically, the features of a withdrawal syndrome are the opposite of those of acute **Intoxication**.

Foreword

In this report, the BMA, through its Board of Science, seeks to open and refocus the debate on drug treatment and drug policy through the eyes of the medical profession. The first step in such a debate is to ensure that the facts are presented, along with the evidence to support them. For this reason, we have set out to establish the evidence and seek to draw conclusions from it. We do not have a predetermined medical position on the ways in which policy might be changed, rather a desire to start from a secure baseline of knowledge. As with so many other medical conditions, we believe that there is no 'one size fits all' solution to the problem of drug misuse, and the medical profession's familiarity with the need for advocacy for each individual patient should be at the forefront of this debate.

There will inevitably be differences of opinion and of interpretation. Individuals have experiences that affect their views. They have different ethical, moral and religious persuasions; identifying a common, agreed pathway may prove to be difficult. Taking into account the myriad differences in approach across the world, this is no doubt an understatement.

As a surgeon, I have had limited contact with the medical problems associated with drug use but it has become clear to me that the present approach is not satisfactory.

My understanding has been greatly enhanced by the superb team of contributors to this report. Their contributions have been reviewed by all of the main committees of the BMA. We believe that this report is an up-to-date resource that will provide the factual foundation for informed debate.

The medical profession would never condone drug taking. Individuals, who press others into experimenting with the use of drugs, may deserve punishment. But those who fall into drug dependence become a medical problem from which we, as a society, cannot escape and they badly need our help.

In this country, we are beginning to see evidence of a reduction in the use of hard drugs but they remain a major hazard for those who try them and the dependence that may follow is a lifelong problem for many.

So we acknowledge that, while some progress has been made, this should not lull us into the false belief that we can put this problem out of our minds in the hope that it might go away.

The medical profession should look squarely at the issue and debate it as a medical problem. We have vast expertise to call upon and compassionate understanding to offer. Our involvement, indeed our leadership, in this debate will ensure that the medical issues become central to the national debate and the criminal justice aspects are put into a more accurate context.

We have the special opportunity to listen to patients' views and concerns and to guide them, as individuals, through the various treatment options. We owe it to the patients, their families and those around them to get actively involved in the national debate and so to ensure that the medical aspects are at the heart of the discussions.

Professor Averil Mansfield
Chairman, BMA Board of Science

Professor Averil Mansfield, Chairman, BMA Board of Science

Professor Averil Mansfield

Averil Mansfield is a graduate of Liverpool University and was formerly a consultant surgeon in Liverpool until her move to St Mary's Hospital in London in 1982. She became Director of the Academic Surgical Unit and Professor of Vascular Surgery at St Mary's/Imperial College in 1993. Her research centered around venous thromboembolism, carotid surgery and extensive aortic aneurysms.

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She was President of the BMA from 2009 to 2010 and became Chairman of the Board of Science in 2010.

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Executive summary

Objectives

The objectives of this report are to:

- **encourage debate on the most effective approach to preventing and reducing the harms associated with illicit drug use and illicit drug-control policies, based on an independent and objective review of the evidence**
- **examine the role of the medical profession in preventing and reducing the harms associated with illicit drug use and policies for control of illicit drug use**
- **encourage debate and dialogue between the medical profession and policy makers, legislators, the police, service providers and academics who have knowledge and expertise in this area.**

The report starts by examining the scale of the problem, the harms associated with drug use – for both the individual and society – and influences on illicit drug use. The development of drug policy in Britain is then presented, followed by a chapter discussing the particular harms to the individual and society that are associated with the prohibitionist legal framework controlling drug use. This chapter also presents the options for an alternative legal framework. Interventions to reduce the harms associated with illicit drug use are then discussed, followed by three chapters that examine the doctor's role in the medical management of drug dependence and the ethical challenges of working within the criminal justice system.

Medical practitioners are ideally placed to encourage a refocusing of debate on policies for supporting and treating the physical and mental health needs of illicit drug users. The final chapter examines their role, both as individuals and as a profession, in relation to illicit drug use.

Key points from each chapter are summarised next.

1. Introduction

- Substance use describes a wide range of different patterns of use, from harmless recreational use to life-threatening dependence.
- There is evidence of a neurobiological underpinning to dependence, and an association between biological, psychological and social factors. These factors create a framework within which an individual's predisposing, precipitating, perpetuating and protective elements can be used to plan the most effective treatments.
- Drugs of dependence, such as alcohol and tobacco, are at least as harmful as some illicit drugs, and their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption.
- The Misuse of Drugs Act 1971 in the UK and the three international conventions on international drug policy, to which the UK is a party, classify illicit drugs according to their perceived level of harm, and regulate their control and supply. Possession, purchase or cultivation of illicit drugs is illegal and thus a criminal offence in the UK.
- The priority of the medical profession is to support and treat the physical and mental health needs of drug users and those affected by others' drug use.
- Medical professionals are ideally placed to encourage a refocusing of debate on issues relating to dependent drug use and to influence national and global drug policy.

2. The scale of the problem: illicit drug use in the UK

- There has been a long-term downward trend in illicit drug use in the UK, although use of cocaine has increased slightly. In 2009-2010, 5 per cent of 16 to 59 year olds in the UK population were current drug users (had used drugs in the last month).
- Men are more likely than women to report drug use and current use is highest in the under-25 age group.
- International evidence suggests 10 to 13 per cent of all people who use drugs worldwide are problem drug users. Problem drug use affects approximately 10 per cent of all UK drug users, with the highest levels in the 25 to 34 years age group.
- Cannabis is the most commonly used drug, followed by cocaine powder, ecstasy and amphetamines.
- After North America, Europe is the next largest cocaine market and the UK is the largest market in Europe.
- In Europe, UK teenagers are among the most likely to report recent and current cannabis use, and are above the European average reported level for lifetime use of other illicit drugs.

- There are few reliable data on novel psychoactive substances (gamma-butyrolactone (GBL), 1-benzylpiperazine (BZP), mephedrone, oripavine, anabolic steroids, Spice, etc), which have only been controlled under the Misuse of Drugs Act 1971 since 2009, but they appear to be used more by younger age groups and as an alternative to ecstasy.
- Around half the UK population surveyed considers drug use is a serious problem; and slightly more believe drug users should be treated as individuals needing medical treatment or other support.
- A majority of those interviewed in the British Social Attitudes survey in 2011 believed cannabis should remain illegal and is harmful; this has increased since 2009.
- A majority interviewed for the Scottish Social Attitudes survey thought illegal drug use should not be accepted as a normal part of some people's lives and the proportion has also increased from 2001 to 2009; this is particularly noticeable in the 18 to 24 years age group. Less than 10 per cent of pupils interviewed in England in 2010 thought use of any illicit drugs was acceptable.
- Over half the UK population interviewed in 2011 believed the Government's approach to illicit drug use is totally ineffective.

3. The burden of illicit drug use

- The use of illicit drugs is associated with a range of physical, psychological and social harms. These are affected by the dosage of drug, the pattern of drug use and the mode of administration.
- Most drug-related deaths in the UK are related to the use of opioid drugs, followed by cocaine. The vast majority of these deaths are in men and many are associated with polydrug or polysubstance use. Ecstasy-related deaths are very rare and deaths from cannabis overdose do not occur.
- The risk of death from accidental drug overdose, and from suicide, is associated with poverty, homelessness, polydrug or polysubstance use, impaired physical health and depression.
- While dependence per se is not necessarily significantly harmful, the risk of harm is intrinsically raised as a result of chronic drug use. The following are associated with physical and psychological dependence: cannabis, cocaine, gamma-hydroxybutyrate (GHB), heroin, methamphetamine and other opioid drugs. Amphetamine and ecstasy are associated with psychological dependence only, and there is limited evidence for dependence with ketamine and phencyclidine (PCP). Dependence is rare with hallucinogens.
- Fetal development can be adversely impacted by maternal drug use.
- Adverse health impacts and drug-related deaths may also be associated with adulterants.

- Social harms of drug use include deprivation and family adversity/neglect; criminality associated with drug intoxication or with the need to obtain drugs; and drug-impaired performance at work or when driving. These can result from the illegality of the drugs, or from factors such as the psychopharmacological effects of the drug. They have associated costs for the individual related to loss of earnings, reduced educational attainment and damage to personal relationships. High levels of drug use in a community are linked to unsafe communities because of the associated social problems.
- Studies of the level of harm associated with use of different drugs in the UK scored heroin, crack cocaine and methamphetamine as most harmful to individuals; alcohol, heroin, crack cocaine and cannabis as most harmful to others; and alcohol as most harmful overall, followed by heroin, crack cocaine, methamphetamine and cocaine. The relative levels of harm for the different drugs correlate poorly with the legal classification of drugs.
- Economic and social costs of drug use are related to health and social care costs and criminality; 99 per cent of costs are linked to Class A drug use (cocaine, crack cocaine, ecstasy, heroin, methadone, lysergic acid diethylamide (LSD) and psilocybin (magic mushrooms)) and a large proportion is linked to crime, including crimes of illegality. The economic and social costs of Class A drug use in 2003-2004 in England and Wales were estimated to be £15.4 billion, which equates to £44,231 per year per problematic Class A drug user.

4. Influences on illicit drug use

- Drug use is widely held to be a multifaceted biopsychosocial phenomenon. No single biological, psychological or social factor is exclusively responsible for drug use.
- Family-based, adoption and twin studies have shown a substantial genetic component to drug use. Comorbid psychiatric illness and personality type have also been shown to be strongly linked to drug use.
- The rewarding potential of drugs, such as sensations of pleasure or relief from pain, may play a role in reinforcing the continued use of drugs. The use of drugs activates the mesolimbic dopamine system in the brain, strengthening neural connections, which influences the repetition of drug-related behaviours.
- A drug's potential to lead to tolerance and withdrawal may influence its continued use.
- The environmental or social factors commonly attributed to problematic drug use include family composition, behaviour and relationships, peer influence, social inequalities and being a member of a stigmatised group.

- Positive family relationships and communication may guard against future use of drugs. Living in a single-parent or step-family, substance use among family members, family conflict and poor parental supervision are all indicators for drug use in young people.
- Stigmatised groups are at increased risk of drug use; these include young people in care institutions, sex workers (particularly those who work outdoors), homeless populations and victims of traumatic experiences.
- Evidence shows price has an impact on drug use but the effect is not the same for all types of drugs.
- Evidence of the effect of portrayals of drug use in popular media on drug use are limited and difficult to interpret. There is some evidence that portrayals of drug use in film have an impact on drug use in the UK. Notable celebrities may have a role in either reducing or increasing drug use.

5. Drug policy in the UK: from the 19th century to the present day

- Purchase of psychoactive drugs such as opium and laudanum was unregulated in the UK until 1868, when the Pharmacy Act was passed, restricting opium sales to pharmacists' shops, with a requirement on pharmacists to keep a record of purchasers.
- In 1916, an Army Council order, and the Defence of the Realm Act later the same year, made it an offence for anyone except a physician, pharmacist or vet to possess, sell or give cocaine, and the drug and its preparations could only be supplied on prescription.
- The first Dangerous Drugs Act passed in 1920, and a further Act in 1923, passed to conform to the 1912 International Opium Convention at The Hague to which Britain was a signatory, imposed stricter controls on doctors and pharmacists in relation to dangerous drugs, in a climate with a penal emphasis on policy.
- It was not clear from these Acts or the Convention whether prescribing drugs to addicts constituted legal medical work. The Rolleston Report in 1926 affirmed the right of doctors to prescribe controlled drugs to addicts in defined circumstances and set the scene for a balanced medical approach within a penal framework.
- The second Geneva Convention in 1925 brought cannabis under international control, and restrictions were implemented in the 1928 Dangerous Drugs Act.
- As a result of increasing use of heroin, the 1967 Dangerous Drugs Act restricted prescribing of heroin to doctors licensed by the Home Office, and set up new drug treatment centres within the NHS hospital system. A notification system for addiction was also introduced.

- Introduction of other drugs to the illicit market, such as amphetamines and LSD, led to the Drugs (Prevention of Misuse) Act 1967, and recommendations that penalties for possession of cannabis should be reduced, with no custodial sentencing for casual use, were implemented.
- The 1961 United Nations Single Convention on Narcotic Drugs introduced four schedules of controlled drugs and was followed in the UK by the Misuse of Drugs Act 1971, with drugs categorised in classes according to perceived harm and therapeutic value. This Act also set up the Advisory Council on the Misuse of Drugs, to keep the drug situation under review and advise the Government.
- With increasing illicit drug use, Government strategies in the 1980s began to focus on the social and economic problems of drug users, in addition to their medical problems, and GPs became involved with the more general healthcare needs of drug users, leaving specialists to deal with more difficult drug users.
- The spread of HIV and AIDS generated 'harm-minimisation' policies in relation to drug use, by modification of using behaviours, from injecting to oral use where possible.
- The 1995 Drug Strategy moved away from this approach to one encouraging users to enter treatment, with the aim of moving users towards abstinence and achievement of a drug-free state and of reducing criminal behaviour.
- Later strategies (2002, 2004, 2008) continued to emphasise the need to move drug users into treatment and focused on the links between drugs and crime; they also aimed to move drug treatment away from the NHS into the community and voluntary sector.
- The 2008 strategy maintained a focus on drugs and crime but placed greater emphasis on the impact of problematic drug use on children and families of users.
- With the 2010 strategy, policy continues to move away from drug-crime links and towards a focus on wider social and economic factors that drive problematic drug use. The emphasis is on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.
- The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

6. Controlling illicit drug use

- For the last half century, prohibition and criminalisation has been the dominant policy for drug control, both nationally and internationally.
- It is very difficult to separate the impact of drug policy from the wider effects of social policy and environmental factors on drug-using behaviour.
- Levels of drug consumption do not necessarily follow predictable economic patterns in a linear way, where an increase in price leads to decreased use.

- It is difficult to predict supply and demand of illicit drugs, as all trade is illegal; decreased availability of one drug may result in users turning to other drugs that are more readily available.
- Illegally sourced drugs are of variable quality and purity, with clear adverse health implications for users.
- Criminalisation increases the health risks of illicit drugs by encouraging use in unsafe environments and through dangerous methods of administration. It also deters users from approaching health professionals for treatment.
- A prohibitionist approach creates a lucrative opportunity for criminality and leads to high levels of acquisitive crime among dependent users.
- The stigmatisation of vulnerable populations of drug users also has significant public health implications.
- The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.
- The national budget required for law enforcement, the criminal justice system and dealing with the costs of drug-related crime is several times higher than the amount spent on drug-related health interventions.
- The existing legal framework directly impacts on the ability of medical professionals to gain access to and treat problematic drug users.
- Debate on liberalisation of drug policy is contentious, with strong feelings on both sides of the argument.
- There is widespread confusion about the use of terms such as 'decriminalisation' and an insufficient understanding that criminalisation can operate in tandem with other forms of regulation, supervision and intervention.
- Alternative legal frameworks include decriminalisation (eg sentencing reform), regulation (within a legislative framework), and free market legalisation.
- There is a shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability.
- The evidence suggests that the costs of enforcement are high and that prohibition has created a range of unintended health, social and economic costs.
- While some commentators argue that the benefits of the UK's current system are questionable, and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required, other commentators have been more cautious. Among this latter group of commentators, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

7. Delaying initiation and minimising the use of illicit drugs

- Current prevention strategies aim to reduce drug use by influencing attitudes and behaviour, in order to prevent or delay the initiation of drug use.
- Primary prevention aims to avert or delay initial use, while secondary prevention aims to minimise the harms in those already using drugs. Secondary prevention interventions, such as harm-prevention strategies, are yet to receive much in the way of attention.
- There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK. Drug treatment programmes are more cost effective.
- All schools in the UK are required to have a drug education programme. These programmes improve young people's knowledge about drug use, and have a small impact, notably in delaying the onset of use.
- There is evidence that most pupils recall the content of their drug-education lessons and report that it helps them to make decisions about what to do if offered drugs. Those who had taken drugs said lessons helped them understand why people take drugs and that not as many people as they thought take drugs.
- Programmes that also address classroom behaviour management have been shown to reduce lifetime drug use in boys but not girls in the USA.
- Drug testing in schools does not appear to affect the use of illicit drugs; random testing in schools may have a negative effect.
- There is insufficient research on interventions outside the school setting to prevent drug use to provide evidence on their effectiveness.
- The use of mass media can improve knowledge but is not effective at reducing illicit drug use; social marketing may be a useful way of increasing the efficacy of mass media campaigns.
- Selective prevention strategies target at-risk groups and often address multiple and complex risk factors. There is conflicting evidence about their efficacy in reducing drug use among vulnerable groups, and there is a risk that they further stigmatise already marginalised individuals. The age range 11 to 13 years has been identified as a crucial period for effective intervention.
- Groups that are most susceptible to drug harm should be identified. Taking action on preventing the underlying causes of drug harm rather than preventing drug harm directly may be more effective.

8. Medical management of drug dependence: the doctor's role in managing heroin addiction

- Medical management of drug dependence is more difficult and challenging than for other chronic disorders. Many users who present for treatment are socially marginalised, lead chaotic lifestyles and have little to motivate them towards recovery.
- Stigma and staff attitudes may also complicate management.
- Traditional methods for treating opioid addiction were based on two approaches – encouraging abstinence and a change of attitude on the part of the user.
- Although some individuals do recover spontaneously from opioid dependence, it is usually a chronic relapsing–remitting condition.
- The principle of opioid substitution therapy (OST) is to prescribe and administer a pharmaceutical opioid as a substitute for heroin. This attenuates the symptoms of withdrawal from heroin and allows the user to gain control over other aspects of their life, thereby creating the necessary preconditions to cease drug seeking and use.
- Opioid substitution therapy provides a structured routine through daily attendance for administration in a safe non-punitive and non-judgemental treatment space, which may benefit users in restructuring a chaotic lifestyle.
- The basis of effective OST is suppression of opioid withdrawal.
- High-dose methadone is more effective than a low dose, because it progressively increases the patient's tolerance to opioids, making heroin less reinforcing and cessation of use more likely.
- For some users, the respite from withdrawal offered by methadone is insufficient to allow them to move away from heroin use; treatment with diamorphine is more reinforcing and successful in these individuals.
- Long-term studies suggest OST may reduce use of opioid drugs (in a relapsing–remitting manner), but seldom results in long-term abstinence from all drugs. Continued alcohol misuse and cannabis use are common.
- Opioid substitution has been shown to reduce deaths from opioid overdose and the risk of blood-borne viruses.
- Evidence on the effects of OST on mental health and quality of life is limited and equivocal.
- The National Treatment Outcome Research Study (NTORS) demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed. Economic benefits were largely accounted for by reduced costs of crime.
- Opioid substitution has been shown to reduce rates of acquisitive crime and there is some evidence that it contributes to social reintegration.

- There has been little research on the effectiveness of supervised administration of OST, but limited evidence suggests it is more effective at reducing heroin use than non-supervised treatment.
- Randomised trials have shown no benefit overall of additional psychological interventions in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression. There is substantial evidence that good-quality staff interactions are of benefit for recovery.
- Opioid substitution is associated with a risk of diversion of methadone to other individuals, as well as an increased risk of death during the first two weeks of treatment and in the month after leaving treatment. Overall, the risk of death is reduced by entering OST.
- Subtherapeutic dosing is a serious limitation on the effectiveness of OST.

9. Medical management of drug dependence: reducing secondary health harms

- Consistent evidence shows that doctors in primary and secondary care and in mental health settings frequently do not address alcohol and drug use.
- Caution should be exercised in prescribing drugs with potential for dependence, particularly for patients who are at high risk for dependence or diversion.
- Management of medical emergencies related to acute symptoms of withdrawal should be followed by longer-term medical management and support to reduce dependence.
- It is also important to address strategies for relapse prevention after detoxification.
- The use of naltrexone for relapse prevention after opioid detoxification is of limited value.
- Psychosocial interventions that help users to identify high-risk situations and use coping strategies have been shown to be helpful in managing cannabis dependence.
- In US studies, contingency management in the form of voucher-based reinforcement has been found to significantly improve outcomes for all substance use disorders apart from alcohol. Couples-based therapy and support groups are also of value.
- Brief therapist interventions and motivational interviewing have been shown to reduce drug use among young people. Opportunistic interventions in patients attending for HIV testing has also been shown to increase the likelihood of abstinence and reduce arrest rates.
- Illicit drug use in pregnancy needs particular care with medical management, to avoid harm to both the mother and her baby.

10. Medical management of drug dependence in the context of criminal justice: illicit drug use, courts and prison

- Many illicit drug users first present to medical practitioners via the criminal justice system.
- Treatment of illicit drug users creates particular ethical challenges for medical professionals, especially in relation to coercion and informed consent within the criminal justice system. It is essential to recognise that these individuals have the same rights to accept or refuse treatment as the rest of the population.
- There is a high prevalence of drug use among prisoners in the UK, and high rates of first initiation of drug use.
- The Drug Interventions Programme (DIP), introduced by the Home Office in 2003, aims to develop and integrate measures for directing adult offenders who are illicit drug users into drug treatment and thereby reduce offender behaviour. Most DIP referrals into treatment are achieved via drug testing in police custody suites. This raises ethical issues about coercion to treatment.
- Methadone treatment in prisons has been shown to significantly reduce heroin use among those treated; retention in treatment is associated with reduced mortality, reincarceration and hepatitis C infection. It is hoped that a research study currently in progress in the UK will provide evidence about the most effective treatment for detoxification in prisons. Naltrexone may have a role in this treatment.
- Safety considerations are paramount in opioid detoxification treatment, especially in those soon to be released.
- Opioid substitution therapy has been shown to have an important role in reducing transmission of HIV in the prison setting.
- Needle-exchange programmes are important for harm reduction and are recommended for all illicit drug users in prison in guidance from the World Health Organization (WHO), the United Nations Office on Drugs and Crime (UNODC) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). Nowhere in the UK offers such programmes in the prison setting.
- Vaccination for hepatitis B in the prison setting is important but not yet offered in every prison in England and Wales.
- The National Offender Management Service (NOMS) aims to offer all prisoners who want to commit to leading a drug-free life access to accommodation designated as 'drug free'.
- There is a high risk of drug-related deaths in prison and shortly after release. Medical management must take this into account in planning treatment.
- It is important to ensure patients are linked with community drug services immediately on release from prison.
- The use of naloxone may reduce mortality from drug overdose.

11. The role of healthcare professionals

- Medical training should provide graduates with basic knowledge about the social and personal factors increasing the risks of illicit drug use, the adverse health consequences of the illicit use of drugs, and the role of doctors in identifying drug-related harm and initiating intervention.
- Doctors should maintain an awareness of the non-medical facets of drug use, and exercise caution in prescribing drugs with the potential for non-medical use.
- Doctors should take a drug use history when indicated, undertake brief opportunistic interventions to reduce drug-related harm, and refer to specialist services as appropriate.
- Guidance on clinical management of drug use and dependence is provided by 'The orange guidelines', available to all clinicians.
- Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.
- Doctors with knowledge and experience of helping patients affected by illicit drug use are ideally placed to engage in debate to promote a rational approach to drug policy that is evidence based and health oriented.

Chapter 1 – Introduction

The use[a] of legal or illegal substances that are associated with pleasure, solace or relief from pain, but also have the potential of harm to health, is not a new phenomenon. These behaviours have long been accompanied by concerns about the potential impact on the individual and on society.

As discussed in **Chapter 5**, most of these substances have origins as medicines but have been, or are, used for other purposes. There have, historically, been waves of medical enthusiasm for particular psychoactive substances, which have often been adopted for medical use on the premise that they solved the problems of the previous object of enthusiasm. Many then become new objects of illicit use.

Many different types of psychoactive drugs (see **Glossary**) are commonly used; these include alcohol and nicotine, illicit drugs (see **Glossary**)[b] such as cocaine or heroin, prescription drugs such as tranquillisers and over-the-counter (OTC) medications including codeine. The use of these drugs is not always harmful and, in the case of prescription and OTC drugs, they can dramatically improve health when used correctly. All types of drugs can and do cause harm to the health of some individuals, as well as affecting their family, friends and communities. The extent of harm depends on the type of drug, how it is used, and the social context within which it is used.

As this report notes, there is evidence that alcohol is the most harmful psychoactive drug, in terms of both harm to the individual and harm to others, although there has been much debate about how these harms are measured (see **Section 3.4**).[1,2] The damaging effects of nicotine when used in the form of smoked tobacco are also well known (see **Section 3.2**).[1] Their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption. The BMA has a long history of supporting comprehensive tobacco control measures and policies to reduce alcohol-related harm. While this report makes several references to alcohol and tobacco use, its purpose is to consider illicit drugs and the reader is referred to more detailed information about alcohol and tobacco use that can be accessed from the BMA website.

Alcohol, nicotine and other drugs are available in the UK under various forms of legal regulation (see **Glossary**), and are an accepted part of the social norm. By contrast,

a Given the scientific and legal ambiguity regarding the distinctions between 'use', 'misuse' and 'abuse', only the neutral term 'use' is used in this report (see **Glossary** for further discussion of these different terms).

b An overview of the effects and addictiveness of commonly used illicit drugs is provided in **Appendix 2**.

the use of illicit drugs – those controlled under the Misuse of Drugs Act 1971 (see **Section 1.2**) – is regulated through prohibition (see **Glossary**). Their possession is a criminal offence and users are commonly portrayed as a menacing scourge on society, despite the fact that alcohol has been shown to be at least as harmful as commonly used illicit drugs (see **Section 3.2** and **Figure 3**).[1,2] This demonisation, coupled with the prohibitionist approach to regulation, is argued by many to be counterproductive to reducing the harms caused by illicit drug use (see **Chapter 6**).

The BMA, through its Board of Science, has a long history supporting the development of policies to reduce and prevent the harms associated with drug use and drug control policies.[c] In January 2011, the Board agreed to undertake a review of the role of the medical profession in preventing and reducing these harms, based on an independent and objective review of the evidence. This report aims to encourage debate on this important topic by considering the strengths and weaknesses of current policy and practice for the prevention, control and treatment of illicit drug use. It also considers what the medical profession can do to improve policy and practice. This report is intended for a wide audience, including medical professionals, policy makers, legislators, service providers, the police, the legal profession and academics with a particular interest or expertise in this area.

The initial chapters examine the scale of the problem (**Chapter 2**), the harms associated with drug use, both for the individual user and for society (**Chapter 3**), and the influences on illicit drug use (**Chapter 4**).

Traditionally, the medical profession had a lead role in UK drug policy (see **Glossary**). Over the last few decades, policy has shifted towards a crime-prevention and law-enforcement issue. The development of drug policy in the UK is presented in **Chapter 5**.

It is important to distinguish harms associated with drug use per se from harms to the individual and to society associated with the prohibitionist legal framework surrounding drug use. **Chapter 6** reviews the evidence for the harms associated with the regulatory framework, for both individuals and society. It also presents the options for an alternative legal framework.

c The BMA has published a number of reports on drug use, including: *The misuse of drugs* (1997),[3] which examined the range of policies for improving services for drug users in the UK; *Therapeutic uses of cannabis* (1997),[4] which considered the potential medicinal uses and benefits of cannabis and cannabinoids; *Adolescent health* (2003),[5] which examined the levels of drug use among adolescents in the UK and identified interventions to reduce its prevalence in this age group; *Over-the-counter medication* (2005),[6] which discussed the use of drugs bought over the counter without prescription; *Child and adolescent mental health* (2006),[7] which considered the link between substance use and mental health problems in young people; *Legalising illicit drugs: a signposting resource* (2006),[8] which examined the arguments for and against legalising illicit drugs; and *Driving under the influence of drugs* (2009),[9] which discussed the key issues related to drug-driving and ways to tackle this problem.

Interventions that prevent or delay initiation of drug use will reduce the harms associated with dependent use, and evidence for the effectiveness of such interventions is examined in **Chapter 7**.

The final chapters of this report examine the management of drug dependence as a medical issue. **Chapter 8** looks at the doctor's role in managing heroin addiction, while **Chapter 9** reviews the role of medical practitioners in the prevention and reduction of drug-related harm. Finally, **Chapter 10** looks at the management of illicit drug use in the context of criminal justice. By the time they come for treatment, many dependent drug users are socially marginalised, or in prison, and specific issues arise relating to coercion and consent to treatment in this vulnerable population. There may also be a blurring of the distinction between punishment and treatment. These issues are also considered in **Chapter 10**.

The medical profession has a vested interest in drug policy, because of the direct and indirect health and social harms caused by illicit drug use. It has a key role in supporting and treating the physical and mental health needs of drug users. Medical professionals are ideally placed to encourage a refocusing of debate on these important issues and to influence national and global drug policy. Their role in relation to illicit drug use, both as individuals and as a profession, is examined in the closing chapter of this report (**Chapter 11**).

1.1 Substance use as a medical disorder

The use of psychoactive substances is well recognised across UK society. Such use is associated with a range of harms for some people, while for others there are few negative consequences. As discussed in **Section 3.3.7**, some psychoactive drugs, such as heroin, crack cocaine and methamphetamine, as well as alcohol and tobacco, are highly addictive, while others, such as cannabis and ecstasy are less so. The addictiveness (dependence potential – see **Glossary**) of different psychoactive drugs is presented in **Appendix 2**. Attitudes towards the acceptability of substance use vary widely, with particular debate regarding the concept of pathological substance use and a disease model for addiction. This section examines the evidence for considering harmful/dependent substance use as a medical disorder.

1.1.1 Background

The historical response to harmful/dependent substance use is of interest. Internationally, different countries have either accepted a disease model and treated harmful/dependent users as patients, and/or used the judicial system as a means to define substance use primarily as a criminal activity. Often, particularly nowadays, national systems combine both disease and crime models.

The concept of addiction (see **Glossary**) as a disease was first widely discussed in the 19th century, in the context of alcohol use, and was later applied to the use of other psychoactive substances that have since been classified as illicit drugs. In 1924, against the background of international opiate prohibition developing since 1912 (see **Chapter 5**), the UK made a pioneering decision to support a disease model of addiction. Sir Humphrey Rolleston, then President of the Royal College of Physicians, chaired the Departmental Commission on Morphine and Heroin Addiction (commonly known as the Rolleston Committee), whose recommendations were accepted as Government policy. This committee described addiction as a disease and that those suffering with addiction should receive medical treatment rather than legal sanction.[10] The development of drug policy in the UK is discussed in more detail in **Chapter 5**.

1.1.2 Categories of use

One of the complications in understanding substance use is describing the way in which a particular substance is used. Broadly, use can be considered in terms of recreational use and pathological use.

Recreational use

Many people are able to use psychoactive substances in a recreational manner (see **Glossary**) that causes no problems to the individual or those around them. This pattern of use is usually characterised by moderate levels of consumption and periods when the person stops using the substance without difficulty.

Harmful, dependent and hazardous use

There are clear, internationally agreed frameworks for describing harmful and dependent patterns of substance use. These frameworks define a hierarchy of physical, psychological and social harm to the individual.

The World Health Organization (WHO) *International Classification of Diseases*, currently in its 10th edition (ICD-10),[11] is a diagnostic description of all diseases. Within the chapter on mental and behavioural disorders, a subchapter defines mental and behavioural disorders due to psychoactive substance use. It defines a number of categories including acute intoxication (see **Glossary**), harmful use, dependence and withdrawal. The level of harm caused by a particular pattern of substance use is defined by the categories 'harmful' and 'dependent'.

- **Harmful use**: a pattern of psychoactive substance use that is causing damage to health. The damage may be physical or psychological.

- **Dependent use**: dependence has both psychological and physiological elements. Psychological dependence involves a need (craving **–** see **Glossary**) for repeated doses of the drug to feel good, or avoid feeling bad. Physiological (physical) dependence is associated with tolerance (see **Glossary**), where increased doses of the drug are required to produce the effects originally produced by lower doses, and development of withdrawal syndrome (see **Glossary**) when the drug is withdrawn. Withdrawal syndrome is characterised by physiological and psychological symptoms that are specific to a particular drug. The term 'dependence' is often used interchangeably with 'addiction' (see **Glossary**). The ICD-10 uses the term 'dependence syndrome' (see **Glossary**), to describe a cluster of behavioural, cognitive and physiological phenomena in which the use of the substance or a class of substances takes on a much higher priority for a given individual than other behaviours that once had greater value, and the user may develop tolerance and a physical withdrawal reaction when drug use is discontinued. Specific diagnostic criteria for dependence syndrome are presented in **Box 1**.

Box 1 – ICD-10 diagnostic criteria for dependence syndrome[11]

A definite diagnosis of dependence should usually be made only if three or more of the following have been present together at some time during the previous year:

- a strong desire or sense of compulsion to take the substance
- difficulties in controlling substance-taking behaviour in terms of its onset, termination or levels of use
- a physiological withdrawal state when substance use has ceased or been reduced, as evidenced by the characteristic withdrawal syndrome for the substance, or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms
- evidence of tolerance, such that increased doses of the psychoactive substance(s) are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol- and opioid-dependent individuals who may take daily doses that are sufficient to incapacitate or kill non-tolerant users)
- progressive neglect of alternative pleasures or interests because of psychoactive substance use; increased amount of time necessary to obtain or take the substance or to recover from its effects
- persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

The other major diagnostic framework, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) describes a similar disorder, using the terms 'abuse' and 'dependence'.[12]

WHO also uses the term 'hazardous use' to describe a pattern of substance use that increases the risk of harmful consequences for the user. In contrast to harmful use, hazardous use also refers to patterns of use that are of public health significance, despite the absence of any current disorder in the individual user. It is not used as a diagnostic term in the ICD-10.

These terms, and many others that are used throughout the report, are discussed in more detail in the **Glossary**.

1.1.3 Dependence as a brain disorder

The neurobiology of dependence

While there is compelling evidence to demonstrate a neurobiological underpinning to addictive behaviours,[13] the relationship between the brain elements of addiction and dependence and the characterisation of addiction and dependence at a behavioural level is unclear. Substances have been clearly shown to affect the brain in the short and longer term.[14]

In the short term, substances affect the brain through changing levels of neurotransmitters. Some substances (eg heroin, cannabis) mimic endogenous neurotransmitters, while others (eg cocaine, amphetamine) increase the availability of endogenous neurotransmitter to the brain, by either increasing neurotransmitter release or inhibiting its breakdown.

If a person uses substances over a longer period of time, the brain's structure and function begin to change, prompting behavioural changes in that individual.[14] The psychological effects of classical conditioning, as described in **Section 4.3.2**, are also likely to be involved in reinforcing continued drug use.

The prefrontal cortex area of the brain is particularly vulnerable to the effect of substances. This brain area is crucial for decision making, such as weighing up the pros and cons of a certain activity. Research suggests that the prefrontal cortex is one of the last brain areas to mature.[15] This may make adolescents who use psychoactive substances particularly vulnerable to poor decision making and impulsivity.[16]

The role of dopamine

Dopamine is one of a number of neurotransmitters associated with addictive processes. It is a naturally occurring, 'feel good' neurotransmitter that is important in rewarding positive behaviours (eg eating, drinking). Some psychoactive substances cause dopamine to be released rapidly and in huge quantities when compared to usual brain levels. Raised levels of dopamine in the mesolimbic system lead to intense feelings of pleasure, known to users as a 'high' (see **Glossary**).

If substance use persists, the brain responds to the dopamine overstimulation by decreasing the amount of dopamine produced and reducing the number of dopamine receptors (see **Glossary**) available. This, in turn, can lead to the user feeling emotionally flat and exhausted once the immediate effect of the drug has subsided. The user will often try to stimulate further additional dopamine release by using larger quantities of the substance. This is one of the mechanisms underpinning the clinical features of 'tolerance'.

The role of dopamine in the effect of psychoactive drugs is considered further in **Section 4.2.3** and **Section 4.3**.

Genetics

There is strong evidence for a genetic component to dependence, provided by family, twin and adoption studies (see **Chapter 4**).[17] The evidence is particularly compelling for alcohol dependence. Although research suggests many genes may be involved,[18] there is evidence that a single genetic variant in the aldehyde dehydrogenase 2 gene impacts on patterns of drinking and the risk of dependence.[19] Individuals who are heterozygous for this gene are protected from the effects of heavy drinking, while a mutation in this gene, commonly found in individuals of Far-Eastern descent, causes a reduced ability to metabolise alcohol. The genetics of dependence is a rapidly developing area but, apart from the studies on the aldehyde dehydrogenase 2 gene, there is little immediate prospect of a breakthrough in genetics leading to improved patient care.

1.1.4 The role of other factors

No single factor determines whether a person will harmfully or dependently use a particular substance. As described above, dependence can be considered primarily a brain disorder, but one that interacts with a range of predisposing, precipitating, perpetuating and protective factors.

These factors can best be described in a framework in which the biological, psychological and social components are identified. This is discussed in detail in **Chapter 4.**

Examples of biological factors include chronic pain, which can result in a person seeking pain relief through the use of psychoactive substances (eg alcohol, cannabis); or exposure to dependence-forming medications.

Psychological factors include comorbid mental health problems such as depression, psychosis and personality disorder. Traumatic events, such as childhood sexual abuse, may also increase a person's vulnerability to subsequent use of psychoactive substances. Social factors include the availability of a particular substance; the nature of, and support provided by, a person's social network; peer pressure; and environmental factors such as housing and employment.

A range of evidence-based treatments are available to help people with harmful/dependent substance use, and some of these are discussed in **Chapters 8 to 10**. Each individual is unique, and treatment of harmful/dependent use should be planned with a clear understanding of the predisposing and protective factors.

1.2 The legal framework for illicit drugs

The development of drug policy in the UK is discussed in detail in **Chapter 5**.

The principal legislation regulating the control and supply of illicit drugs in the UK is the Misuse of Drugs Act 1971. This Act classifies drugs into three groups according to the perceived level of harm; the Act itself does not specify how certain drugs should be classified, but created a review board, the Advisory Council on the Misuse of Drugs (ACMD), with this purpose.[d] The current classification of drugs and associated penalties is shown in **Table 1**.[20] It is important to note that some of these controlled drugs will also have clinical uses. **Appendix 2** gives further details about the nature and addictiveness of these drugs, and **Appendix 3** gives details of health-related harms associated with illicit drug use.

d The ACMD makes recommendations to Government on the control of dangerous or otherwise harmful drugs, including classification and scheduling under the Misuse of Drugs Act 1971. These recommendations are non-binding, and have, on occasion, been ignored or rejected.

Table 1 – Classification of drugs and associated penalties for illicit (non-medical) use

Classification	Examples of drug type	Maximum penalty for possession	Maximum penalty for supply
Class A	Cocaine, crack cocaine, ecstasy (MDMA or 3,4-methylene-dioxymethamphetamine), lysergic acid diethylamide (LSD), heroin, methadone, methamphetamine, phencyclidine (PCP), psilocybin (magic mushrooms)	Up to 7 years in prison or an unlimited fine, or both	Up to life in prison or an unlimited fine, or both
Class B	Amphetamines, cannabis, methylphenidate (Ritalin®), codeine, pholcodine	Up to 5 years in prison or an unlimited fine, or both	Up to 14 years in prison or an unlimited, fine or both
Class C	Tranquillisers, some painkillers, gamma-hydroxybutyrate (GHB), ketamine	Up to 2 years in prison or an unlimited fine, or both	Up to 14 years in prison or an unlimited fine, or both

Source: Science and Technology Committee. *Fifth Report of Session 2005-2006. Drug classification: making a hash of it?* HC 1031. London: The Stationery Office, 2006, p8.[20]

The Misuse of Drugs Act states that it is an offence to:
- possess a controlled substance unlawfully
- possess a controlled substance with intent to supply it
- supply or offer to supply a controlled drug (even if it is given away free)
- allow a house, flat or office to be used by people for taking drugs.

In December 2009, the following drugs (commonly known as 'legal highs' or 'novel psychoactive substances') were also brought under control of the Misuse of Drugs Act 1971:
- synthetic cannabinoid receptor (see **Glossary**) agonists (including herbal smoking mixes such as Spice) (Class B)
- gamma-butyrolactone (GBL) (Class C)
- 1-benzylpiperazine (BZP) and related piperazines (Class C)
- oripavine (Class C).

Mephedrone and related cathinone derivatives, as well as naphthylpyrovalerone analogues, were classified as Class B drugs in 2010. The Drugs Act 2005 amended the Misuse of Drugs Act 1971 and the Police and Criminal Evidence Act 1984, to increase the powers of the police and courts in relation to drug control (see **Glossary**). It includes stronger measures to allow police to test drug offenders on arrest rather than at the time of charging, and requires those testing positive to undergo treatment.

In July 2011, the Government announced a ban on the importation of phenazepam – a harmful drug advertised as producing a 'legal high'– as well as its intention to control it as a Class C drug in 2012.[21] In November 2012, following advice from the ACMD, the Home Office announced its intention to classify new synthetic cannabinoids (such as those sold under the name 'Black Mamba'), and methoxetamine (sold as Mexxy/MXE) and its related compounds, under the Misuse of Drugs Act 1971.[22] Methoxetamine has been subject to a Temporay Class Drug Order (TCDO) since March 2012,[23] and will remain under this regulation until its classification under the Misuse of Drugs Act 1971 is approved. It is important to emphasise that that the development of new agents will inevitably run ahead of the Government's ability to amend the legislation.

International drug policy is regulated by three United Nations (UN) conventions: the 1961 Single Convention on Narcotic Drugs, as amended by the 1972 Protocol; the 1971 Convention on Psychotropic Substances; and the 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (see **Box 2**). As of March 2011, 183 states, including the UK, are parties to all three conventions. It is worth noting that many provisions in national legislation are not required by these international drug control treaties.

Box 2 – United Nations international drug control treaties

Single Convention on Narcotic Drugs 1961

The 1961 convention established a single model for international drug control, binding parties to limit the production, manufacture, export, import, distribution of, trade in, use and possession of drugs derived from opium poppies, coca leaves or cannabis exclusively to '*medical and scientific purposes*'. Over 100 illicit substances are placed in four schedules, nominally based on their perceived harmfulness. Limited flexibility is allowed in the interpretation and implementation in many areas of the legislation, which has allowed countries to respond to their specific circumstances. Legalisation (see **Glossary**) of any narcotic drugs listed in the convention is prohibited, and harm-reduction measures to reduce drug-related problems have often been argued against by the International Narcotics Control Board (INCB), which is the independent body established to oversee the UN drug control conventions.

Convention on Psychotropic Substances 1971

This convention was developed in response to increasing concern about emerging drugs and related behaviours during the 1960s, such as the use of amphetamine-like stimulants, barbiturates and other sedative-hypnotics/depressants, and hallucinogens. As with the 1961 convention, these drugs are classified into four schedules according to perceived harm and therapeutic value, with a corresponding hierarchy of controls to license medical, scientific or other uses. Market and trade controls and national requirements are less onerous than those under the Single Convention.

Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988

The 1988 convention strengthened the existing powers for prevention of international drug trafficking (including provisions against money laundering and the diversion (see **Glossary**) of precursor chemicals). It also included provisions to make the intentional possession, purchase or cultivation of narcotic drugs or psychotropic (see **Glossary**) substances for personal consumption a criminal offence under domestic law.

Source: www.unodc.org (accessed 1 October 2012).

Summary

- Substance use describes a wide range of different patterns of use, from harmless recreational use to life-threatening dependence.
- There is evidence of a neurobiological underpinning to dependence, and an association between biological, psychological and social factors. These factors create a framework within which an individual's predisposing, precipitating, perpetuating and protective elements can be used to plan the most effective treatments.
- Drugs of dependence, such as alcohol and tobacco, are at least as harmful as some illicit drugs, and their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption.
- The Misuse of Drugs Act 1971 in the UK and the three international conventions on international drug policy, to which the UK is a party, classify illicit drugs according to their perceived level of harm, and regulate their control and supply. Possession, purchase or cultivation of illicit drugs is illegal and thus a criminal offence in the UK.
- The priority of the medical profession is to support and treat the physical and mental health needs of drug users and those affected by others' drug use.
- Medical professionals are ideally placed to encourage a refocusing of debate on issues relating to dependent drug use and to influence national and global drug policy.

Chapter 2 – The scale of the problem: illicit drug use in the UK

Case study: The financial pressure of illicit drug use

The defendant was a 32-year-old man. As a teenager, he had been in a gang and had previous convictions for possession of dangerous weapons (knives), burglaries, street robberies (mainly mobile phones) and assault. Since the age of 22 he had kept out of trouble with the police. He had been in employment until two years ago, when he had been made redundant through no fault of his own. While in employment, he had frequently used drugs (Class A and B) recreationally but this had escalated to the point where he had become addicted. When he was made redundant he had no financial means to pay for the drugs, so his supplier had persuaded him that if he 'helped' him out by couriering drugs to users for him, he would then be given drugs for his own personal use free of charge. The defendant was very troubled by this offer but felt that he had little option. This arrangement continued until he was arrested in an undercover operation by a plain clothes police officer posing as a purchaser. By this time, the defendant had not only been acting as a courier for his supplier but had started to deal, in a modest way, on his own account. He made about £800 per week, but a part of this was then used to pay for drugs for his own use.

He was charged with possession with the intent to supply Class A and B drugs. He pleaded guilty and came before the Crown Court for sentencing.

The pre-sentence report from the Probation Service explained that he was a self-confessed addict who had taken a deliberate decision to supply drugs in order to raise the funds to satisfy his addiction. He had explained that his only real choice was either to go back to committing burglaries and robberies to raise funds, or to cooperate with his supplier. He did not think he had other realistic options open to him. He was desperate not to return to the cycle of violence that had characterised his life during his youth, so he had agreed to work with this supplier, which he viewed as the lesser of the two evils.

No person further up the supply chain, including the defendant's own supplier, was prosecuted. The defendant was given 18 months' custody.

Case study details provided by Nicholas Green QC, who has a special interest in the impact of drugs policy upon the administration of the justice system.

2.1 Prevalence and patterns of use

According to the UK Focal Point on Drugs,[a] it is estimated that in 2009-2010, 35.9 per cent of 16 to 59 year olds in the UK had used illicit drugs in their lifetime (ever), while 8.7 per cent had used drugs in the last year (recent use), and 5.0 per cent had used drugs in the last month (current use).[b,1] The EMCDDA defines problem drug use as '*injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamines*' (see **Glossary**).[2] In 2011, it was estimated that there were 379,262 people affected by problem drug use in the UK,[c] equivalent to a rate of 9.31 per 1,000 population aged 15 to 64 years, and representing approximately 10 per cent of all UK drug users.[1] In the same year, it was estimated that there were 133,112 people injecting drugs (primarily users of opioid drugs or crack cocaine).[1]

Data from various surveys[d] (see **Appendix 4**) provide a more detailed picture of patterns of illicit drug use in the UK:

- cannabis continues to be the most commonly used across all recall periods, followed by cocaine powder, ecstasy and amphetamines for recent and current use. In England and Wales in 2011-2012, 6.9 per cent of adults had used cannabis in the last year compared to 2.2 per cent who had used powder cocaine
- men are more likely to report drug use than women, across all age groups. In Scotland in 2010-2011, 5.3 per cent of men compared with 1.8 per cent of women reported the use of one or more illicit drug in the last month
- the extent of frequent use varies between drugs, with cannabis users most likely to report frequent use (more than once a month in the past year). Among respondents to the Northern Ireland Crime Survey who had reported taking cannabis in the last year, 34.1 per cent had used it at least once or twice a week in 2008-2009.[3-6]

a The UK Focal Point on Drugs is the national partner of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). It provides comprehensive information to the EMCDDA on the drug situation in England, Northern Ireland, Scotland and Wales.

b It is worth noting that the drug-use categories used in these surveys (ever, recent and current use) are not comparable with the the categories outlined in **Section 1.1.2** that describe the level of harm associated with drug use.

c The UK Focal Point on Drugs estimate of problem drug use in the UK is based on data from England for 2009/2010 for opiate and/or crack cocaine use; data from Scotland from 2006 for opiates and/or benzodiazepine use and drug injecting; data from Wales from 2009/10 for the injecting of opioids, cocaine powder and/or crack cocaine; and data from Northern Ireland from 2004 for problem opiate and/or problem cocaine powder use. For further details see Department of Health (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: Department of Health.[1]

d Data from general population surveys are subject to a number of limitations associated with self-reporting and sampling methodology. Specifically in relation to drug use, these surveys are likely to be under-representative as they commonly miss students and homeless people, who have a higher consumption rate than the general population. Further information on the limitations of general population surveys can be found at www.ons.gov.uk.

The age of first use of illicit drugs varies with drug type. According to the 2011-2012 British Crime Survey (BCS), the most common age of onset for cannabis use was 16 years, compared to 18 years for powder cocaine and ecstasy.[4] The 2010-2011 Scottish Crime and Justice Survey (SCJS) found that just over half of adults who had ever used drugs (51.3%) reported that late adolescence (16 to 19 years) was the age at which they first did so, and 24.7 per cent had first used them before the age of 16 years.[5]

The data suggest that, for a large majority of users, illicit drug use is a life phase during young years. Young adults aged under 35 years are much more likely than older adults to use drugs, with recent and current use highest in the under-25 age group.[3-6] Data from England for 2009-2010 show that the highest prevalence of problem drug use was in the age group 25 to 34 years, at a rate of 17.95 per 1,000 population, compared to a rate of 6.87 per 1,000 in the 15 to 24 years age group, and 6.65 per 1,000 in the 35 to 64 years age group.[7]

Polydrug use (having taken two or more illicit drugs within the same time period – see **Glossary**) is also commonly reported among drug users. In England and Wales in 2009-2010, 19.7 per cent of adults aged 16 to 59 years reported polydrug use in their lifetime, with 3.3 per cent reporting recent polydrug use, and 1.4 per cent reporting current polydrug use.[3] The drugs most commonly used by recent polydrug users were cannabis (83%), cocaine powder (65%), ecstasy (46%) and amphetamines (26%).[3] In Scotland, 34.3 per cent of adults who had used at least one illicit drug in the last month reported some kind of polydrug use in their lifetime.[5]

Concurrent use of illicit drugs and alcohol (polysubstance use – see **Glossary**) has also been found to be common. In England and Wales in 2009-2010, the proportion of recent drug users reporting concurrent harmful alcohol use was at least 90 per cent for all drugs, and as high as 98 per cent for cocaine powder and amyl nitrite.[3]

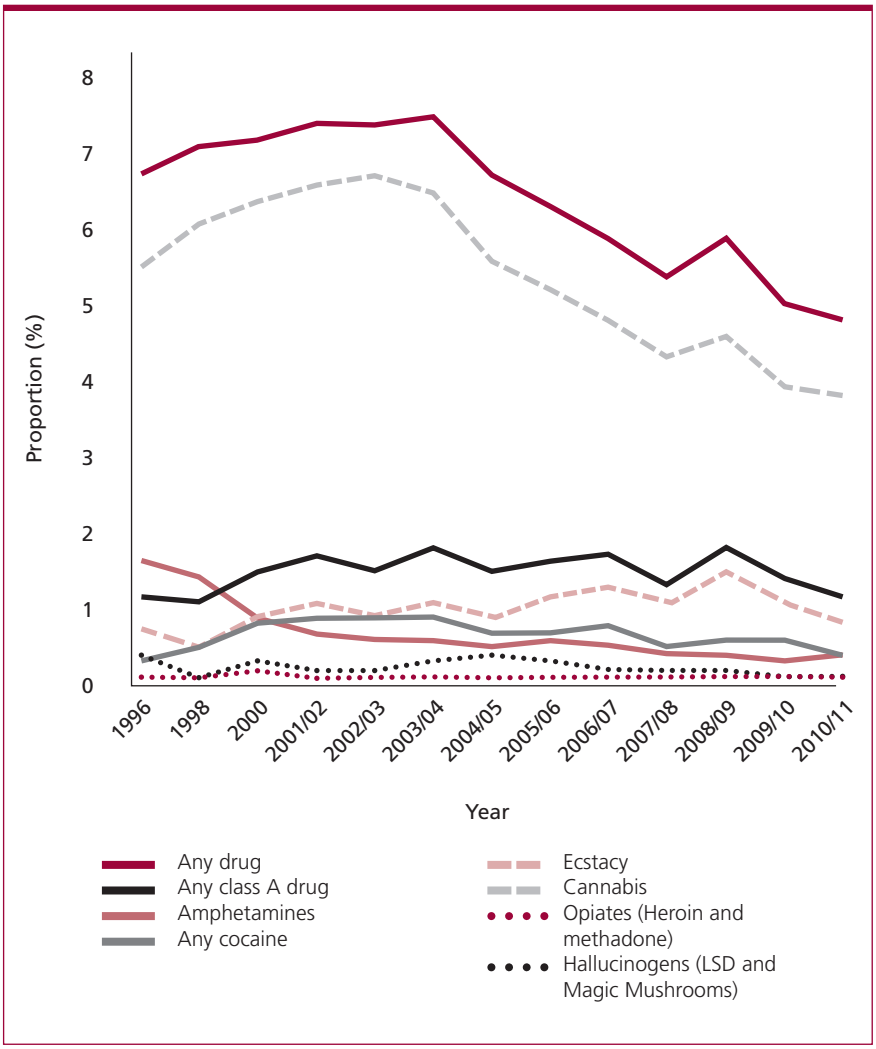
2.2 Trends in illicit drug use

Recent years have seen an overall long-term decline in illicit drug use in the UK. According to the BCS, the proportion of adults aged 16 to 59 years in England and Wales reporting current drug use decreased from 6.7 per cent in 1996 to 5.2 per cent in 2011-2012 (see **Figure 1**).[4] This has been mainly driven by the decrease in cannabis use (9.5% in 1996 compared to 6.5% in 2011-2012). Over this time period, use of opioid drugs has remained relatively stable, while use of ecstasy, amphetamine and hallucinogens (LSD and psilocybin (magic mushrooms)) has declined slowly.[4] Cocaine use has increased slightly over the total period, but has been in decline since 2008-2009.[4]

The BCS also shows that there has been a long-term downward trend in current drug use in the 16 to 24 years age group, largely due to a significant reduction in the use of cannabis and amphetamines (see **Figure 2**).[4] Similar trends have been reported in Northern Ireland and Scotland.[5,6]

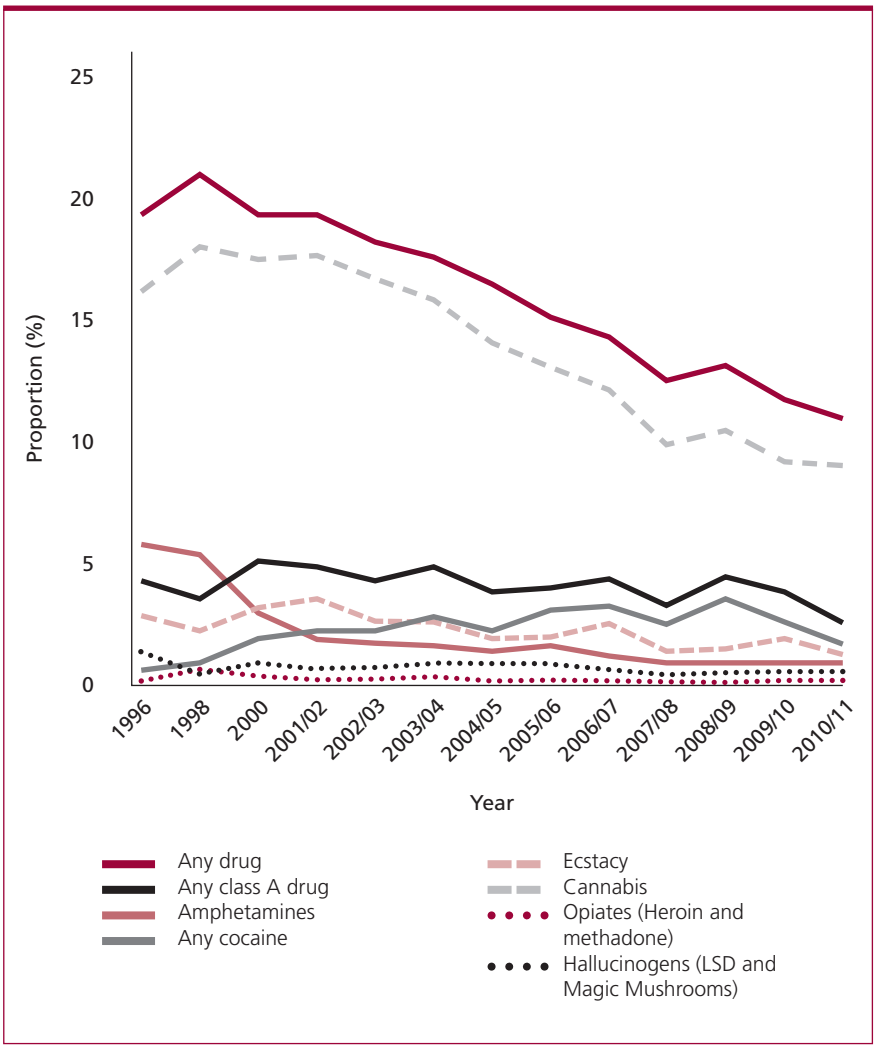
The number of problem drug users aged 15 to 64 years in the UK is approximately 10 per cent of all drug users. It has increased from 357,160 (9.26 per 1,000 population) in 2006 to a peak of 404,884 (10.10 per 1,000 population) in 2009, an increase of 9.07 per cent.[1] This has since declined to 379,262 people (9.31 per 1,000 population).[1] It is worth noting that, while current use of illicit drugs in the UK has been declining since the 1990s, trends (outlined elsewhere in this report, see **Sections 3.3, 3.4** and **5.10**) in problem drug use, drug-related deaths, recorded drug law offences and the number of people in/expenditure on drug treatment, are not showing a long-term decline, and in many cases are increasing. This has important policy implications, which are discussed in more detail in **Chapter 11**.

Figure 1 – Proportion of 16 to 59 year olds reporting having used drugs in the last month, England and Wales, 1996 to 2010-2011



Source: Home Office (2012) *Drug misuse declared: findings from the 2010/11 British Crime Survey. England and Wales* (2e). London: Home Office.[4] Reproduced under the terms of the Open Government Licence for public sector information.

Figure 2 – Proportion of 16 to 24 year olds reporting having used drugs in the last month, England and Wales, 1996 to 2010-2011



Source: Home Office (2012) *Drug misuse declared: findings from the 2010/11 British Crime Survey. England and Wales* (2e). London: Home Office.[4] Reproduced under the terms of the Open Government Licence for public sector information.

2.3 Young people and use of illicit drugs

Use of illicit drugs among young people under the age of 16 years broadly mirrors that of the UK adult population. According to *Smoking, drinking and drug use amongst young people in England 2011*, 12 per cent of 11- to 15-year-old pupils reported taking drugs in the last year, and 6 per cent did so in the last month.[8] Similar proportions of boys and girls had ever taken drugs or used drugs in the last year, while slightly more boys reported taking drugs in the last month compared to girls (7% and 5% respectively).[8] There has been a broad decline in drug use in 11 to 15 year olds since 2001.[8]

The survey also found that:

- 11- to 15-year-old pupils were most likely to have taken cannabis (7.6% in the last year), or to have sniffed glue, gas or other volatile substances (3.5%)
- 2.3 per cent of pupils reported taking a Class A drug in the last year
- most pupils who took drugs did so relatively infrequently: 3 per cent had only ever taken drugs once in the last year, 3 per cent said they had taken them on two to five occasions, and 1 per cent reported having taken drugs on six to ten occasions. Repeated drug use, on more than ten occasions was reported by 3 per cent of pupils
- those pupils reporting Class A drug use were more likely to take drugs at least once a month.[8]

The 2005-2006 cross-national Health Behaviour in School-aged Children (HBSC) study found that of the 41 countries and regions surveyed, use of cannabis among 15 year olds was particularly high in North America, the UK, France, Spain and Italy, especially among boys.[9] The 2007 European School Survey Project on Alcohol and other Drugs (ESPAD) found that in Europe, UK teenagers were among the most likely to report recent and current use of cannabis, and were above the European average reported level for lifetime use of illicit drugs other than cannabis.[10]

2.4 Emerging trends

The use of a range of new substances – commonly referred to as 'legal highs' – is becoming increasingly prevalent in night-life settings and among specific populations such as the lesbian, gay, bisexual and transgender (LGBT) community. These include GBL, BZP, oripavine, mephedrone,[11] a number of anabolic steroids and growth promoters, and herbal smoking mixes such as Spice (see **Appendix 2**). As these were only recently brought under control of the Misuse of Drugs Act 1971, there is only limited information on their use in the general population. As a result of this control, the term 'legal highs' is no longer appropriate and the ACMD favours the term 'novel psychoactive substances'. A significant rise in the use of mephedrone was reported in 2009, which led to its control under the Misuse of Drugs Act 1971 in 2010.[11] The 2011-2012 Crime Survey for England and Wales found that 1.1 per cent of adults aged 16 to 50 years reported using mephedrone in the last year, compared to

0.1 per cent for Spice and other cannabinoids and 0.1 per cent for BZP.[4] The level of reported mephedrone use (1.1%) in this age group was similar to that for ecstasy. Younger adults (aged 16 to 24 years) were more likely to have used recently classified drugs in the last year than adults aged 25 years and over.[3] For adults aged 16 to 24 years, the level of mephedrone use (3.3%) was the same as for ecstasy, the third most taken drug within this age group.[4]

There is emerging evidence that novel psychoactive substances are increasingly being sought as an alternative to ecstasy.[1] In light of the rate at which these new substances are coming onto the market, it is not yet clear whether they will be more or less harmful than the psychoactive substances already commonly used.

2.5 Attitudes to illicit drug use and policy in the UK

Public attitudes to illicit drug use and policy have varied over time. While there has been limited systematic research in this area, a number of surveys and polls provide an indication of public opinion on drug use.

A 2004 review of the international evidence of attitudes to drug policy concluded that support in the UK for relaxing the laws on cannabis had grown considerably over the last decade, among the general population (particularly men) and various professional groups (notably the police, doctors and MPs).[12] It found that more than four in five people supported rescheduling cannabis to allow medical use,[e] and a substantial minority believed in reforming the laws on personal use – including up to one in two who supported decriminalising or legalising possession (see **Glossary** for a detailed description of these terms), and about one in four who endorsed some form of legalised supply.[14] Support for legalisation of any other drug was found to be no higher than 10 per cent in general population surveys, though it has been notably higher among surveys of some sections of the young adult population (eg dance-clubgoers, students, drug users).[14]

Two recent YouGov surveys (in 2006 and 2011) have considered the attitudes of the general public to drugs:[f]

- in 2011, 48 per cent of all respondents agreed that drug use was a serious problem that affects practically the whole country, compared to 51 per cent in 2006
- in 2011, 59 per cent felt that, where individuals use drugs but have not committed any other crime, they should be treated as people who may need medical treatment and other forms of support, compared to 62 per cent in 2006

e The BMA report *Therapeutic uses of cannabis*, published in 1997, concluded that although cannabis is unsuitable for medical use, individual cannabinoids have a therapeutic potential in a number of medical conditions in which present drugs or other treatments are not fully adequate.[13]

f The 2007[14] and 2011[15] surveys on behalf of the Royal Society for the encouragement of Arts, Manufactures & Commerce (RSA) Commission on Illegal Drugs, Communities and Public Policy, were of 2,938 and 2,928 adults in Great Britain, respectively.

- in 2006, 58 per cent of all respondents said that possession of 'soft' drugs, such as cannabis, for personal use should be treated as a lesser offence or not treated as an offence at all
- in 2006, 80 per cent of all respondents considered that people's knowledge of the ABC classification had little or no impact on their choice of which drugs, if any, to use
- in 2006, 10 per cent of drug users said they had held back from seeking treatment, because of the stigma of illegality
- in 2011, 53 per cent of all respondents believed that the Government's approach to illegal drugs was totally ineffective.[14,15]

A number of other surveys have found that the attitudes towards illicit drug use, in particular opioid and cannabis use, have changed since the start of the 21st century.[16,17] There is a trend towards better understanding of the health harms associated with drug use and greater agreement with maintaining the illegal nature of drugs.[16,17]

The 2009 Scottish Social Attitudes (SSA) survey found that 34 per cent of respondents believed that people in possession of small amounts of cannabis should not be prosecuted, while support for the legalisation of cannabis fell from 37 per cent in 2001 to 24 per cent in 2009.[17] Similar views were found in the 2009 British Social Attitudes (BSA) survey, which reported that 58 per cent of participants felt that cannabis should remain illegal, compared to 46 per cent in 2001.[16]

This change in attitudes is also reflected in the views about the harms of illicit drug use and its acceptability. The proportion of respondents to the 2009 BSA survey who supported the statement '*cannabis isn't as damaging as some people think*' decreased from 46 per cent in 2001 to 24 per cent in 2009.[16] The 2009 SSA survey found that the number of respondents who disagreed with the statement '*using illegal drugs should be accepted as a normal part of some people's lives*' increased from 40 per cent in 2001 to 57 per cent in 2009.[17] This was particularly noticeable in the age group 18 to 24 years, where disagreement with the statement increased from 48 per cent in 2001 to 86 per cent in 2009.[17] Other findings from the SSA include:

- individuals who reported ever having used drugs and/or to have had indirect experience of drug use (through family and friends) were more liberal in their attitudes towards drug use
- 54 per cent of respondents agreed with the statement that taking cocaine occasionally is '*very seriously wrong*'
- 45 per cent of respondents thought that persistent heroin users themselves were to blame for their problems with heroin
- 29 per cent of respondents agreed with the statement '*most users come from difficult backgrounds*'.[17]

In relation to young people's attitudes to illicit drug use, this varies depending on drug type. *Smoking, drinking and drug use amongst young people in England 2011* found that relatively small proportions of pupils thought it was acceptable for someone of their age to try cannabis (9%), sniffing glue (7%) or taking cocaine (2%). Even smaller proportions thought it would be acceptable for someone their age to take any of these drugs once a week (cannabis 4%, sniffing glue 2%, cocaine 1%).[8]

2.6 International perspectives

According to the UNODC *World Drug Report 2012*, approximately 230 million people (5% of the population aged 15 to 64 years) worldwide used illicit substances at least once in 2010.[18] By comparison, 10 per cent of 16 to 59 year olds in the UK had used drugs in the last year.[1] Cannabis users comprise the largest number of users of illicit drugs (119 to 224 million people and an annual prevalence between 2.6% and 5% of the global population aged 15 to 64 years), followed by users of amphetamine-group substances (including amphetamine, methamphetamine and ecstasy), cocaine and opioid drugs.[18] It is estimated that there were 27 million problem drug users in the world in 2010, representing between 10 and 13 per cent of all people who used drugs that year.[18] This is similar to the ratio of problem drug users to total drug users in the UK (see **Section 2.1**).

Information on the global drug markets provides an indication of recent global trends. Behind North America, Europe is the second largest cocaine market, with the UK highest within Europe, followed by Spain, Italy, Germany and France.[18] Recent data suggest that the rapid growth of the European cocaine market is beginning to level off in the majority of the larger markets, except in the UK, where consumption is increasing.[18] While western Europe is the second largest heroin market worldwide – consisting predominantly of the markets in the UK, Italy and France – heroin use is declining in most west European countries.[18] There is limited information on the international cannabis market, as much of the drug is produced locally. The most notable global trend is the growth of indoor cultivation, in particular in Europe, Australia and North America.[18]

Summary

- There has been a long-term downward trend in illicit drug use in the UK, although use of cocaine has increased slightly. In 2009-2010, 5 per cent of 16 to 59 year olds in the UK population were current drug users (had used drugs in the last month).
- Men are more likely than women to report drug use and current use is highest in the under-25 age group.
- International evidence suggests 10 to 13 per cent of all people who use drugs worldwide are problem drug users. Problem drug use affects approximately 10 per cent of all UK drug users, with the highest levels in the 25 to 34 years age group.
- Cannabis is the most commonly used drug, followed by cocaine powder, ecstasy and amphetamines.
- After North America, Europe is the next largest cocaine market and the UK is the largest market in Europe.
- In Europe, UK teenagers are among the most likely to report recent and current cannabis use, and are above the European average reported level for lifetime use of other illicit drugs.
- There are few reliable data on novel psychoactive substances, gamma-butyrolactone (GBL), 1-benzylpiperazine (BZP), mephedrone, oripavine, anabolic steroids, Spice, etc), which have only been controlled under the Misuse of Drugs Act 1971 since 2009, but they appear to be used more by younger age groups and as an alternative to ecstasy.
- Around half the UK population surveyed considers drug use is a serious problem; and slightly more believe drug users should be treated as individuals needing medical treatment or other support.
- A majority of those interviewed in the British Social Attitudes survey in 2011 believed cannabis should remain illegal and is harmful; this has increased since 2009.
- A majority interviewed for the Scottish Social Attitudes survey thought illegal drug use should not be accepted as a normal part of some people's lives and the proportion has also increased from 2001 to 2009; this is particularly noticeable in the 18 to 24 years age group. Less than 10 per cent of pupils interviewed in England in 2010 thought use of any illicit drugs was acceptable.
- Over half the UK population interviewed in 2011 believed the Government's approach to illicit drug use is totally ineffective.

Chapter 3 – The burden of illicit drug use

3.1 Introduction

The use of illicit drugs – particularly strongly addictive drugs like heroin, cocaine and methamphetamine – is associated with a range of physical, psychological and social harms. This can include deaths from overdose, long-term adverse effects on health, dependence, and harms to families and communities. This chapter considers the harms associated with drug use per se. The harms associated with the regulatory framework of drug prohibition are considered in **Chapter 6**.[a]

Not all illicit drugs are equally harmful and the extent of harm varies between individuals and depends on the level and pattern of drug use, as well as the pharmacological properties of each drug. Harm is also influenced by the setting in which the substances are used and the combination of substances used.

The level of harm is affected by:

- the **dosage of the drug** – the more of a drug that is taken on a specific occasion, the higher the risk of the user experiencing acute effects, including intoxication and overdose. The greater the amount taken over time, the higher the risk of chronic toxic effects. An additional risk with illicit drugs is that a user may be unaware of the exact dose they are taking; a dose that is higher than expected will increase the risk of harm or fatality
- the **pattern of drug use** – which is determined by the frequency and variability of drug use
- the **mode of administration** – which depends on the way the drug is ingested (eg swallowed, snorted, injected, etc).[1]

The level of harm will also be affected by the purity of the drug. Many illicit drugs are commonly found to contain adulterants that can increase the risk of morbidity and mortality (see **Section 3.3.4**).

a While we discuss the harms from drug use per se and those from prohibition and other social reactions to drug use separately, it is worth noting that in practice there is often a mixture.

3.2 Measuring the level of harm

In the last two decades, there have been a number of attempts to measure and rank the relative level of harm associated with different psychoactive substances.[2-7] These have used various measures of harm, including a drug's safety ratio (usual effective dose for non-medical purposes divided by the usual lethal dose), intoxicating effect, general toxicity, social dangerousness, dependence potential and social and healthcare costs. It is worth noting that, while these evaluations do not directly consider the epidemiology of the respective drugs, some of the criteria (eg the harm that a drug causes to those other than the user) indirectly take account of the number of users.

In 2010, a Dutch addiction medicine expert group conducted a risk assessment of 19 recreational drugs (17 illicit drugs plus alcohol and tobacco), and ranked them on the basis of acute and chronic toxicity, addictive potency and social harm.[8] The study ranked alcohol, tobacco, heroin, crack cocaine and methamphetamine as being most harmful, with benzodiazepines, GHB, cannabis, ecstasy and ketamine scoring in the moderately harmful range.[8] Psilocybin (magic mushrooms), LSD and khat were regarded as the least harmful of the drugs in the study.[8]

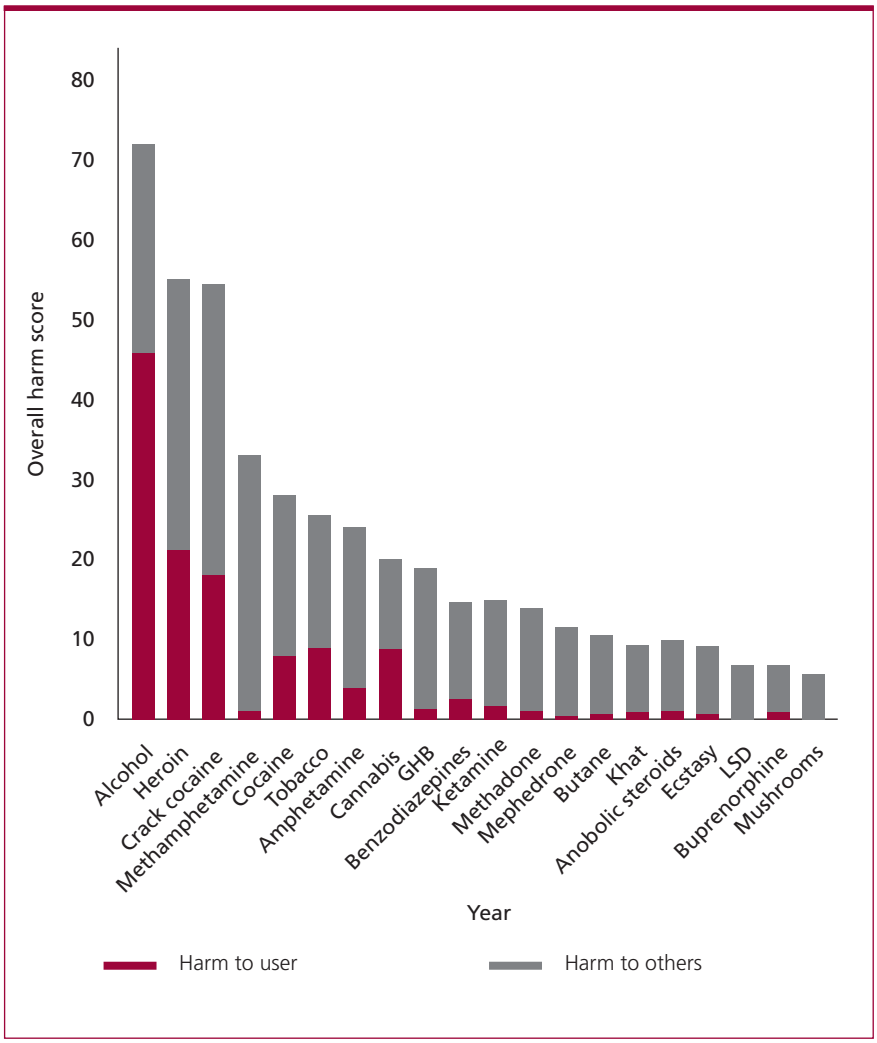
Similar conclusions were made in a 2010 study by Nutt and colleagues.[2] This study involved a multicriteria decision analysis of the level of harm associated with the use of different drugs in the UK. Each drug was scored out of 100 points based on 16 criteria, nine of which related to the individual harms, and seven to the harms caused to others.[2] The study found that heroin, crack cocaine, and methamphetamine were the most harmful drugs to individuals.[2] Alcohol, heroin, crack cocaine and cannabis were scored as the most harmful to others.[2] Overall, the most harmful drug was found to be alcohol, followed by heroin, crack cocaine, methamphetamine and cocaine (see **Figure 3**).[2]

Nutt et al and the authors of the Dutch study concluded that their findings on the relative levels of harm for the different drugs correlated poorly with the legal classification of drugs;[2,8] legal substances such as tobacco and alcohol were found to be at least as harmful as commonly used illicit drugs.

It is important to note that the methodology for these studies evaluating and ranking drug harms has been questioned by Rolles and Measham[9] and Caulkins et al.[10] This primarily concerns the difficulty in quantifying the multiple and non-comparable dimensions of harm in a single measure, and the failure to disaggregate harms related to drug use from those related to drug user behaviours and the policy environment.[9,10] Several rebuttals were published in response to the critique by Caulkins et al (including from the principal author of the 2010 study, Professor David Nutt). These noted that the importance of developing new approaches to ranking

drug harms was to progress the debate among policy makers and the public regarding the validity of the way illicit drugs are classified.[11-15]

Figure 3 – Drugs ordered by their overall harm scores, showing the separate contributions to the overall scores of harms to users and harm to others



Reprinted from Nutt DJ, King LA & Phillips LD (2010) Drug harms in the UK: a multicriteria decision analysis. *The Lancet* **376**: 1558-65,[2] ©2010, with permission from Elsevier.

3.3 Primary and secondary health harms

The primary health harms associated with illicit drug use result from the acute and chronic toxic effects of individual drugs, as well as drug dependence (ie where the risk of harm is intrinsically raised due to the chronic drug use). Acute toxicity can lead to short-term harms, ranging from unpleasant side-effects such as vomiting and fainting, to more serious impacts such as seizures, tissue and neural damage or death. In the longer term, repeated drug use can lead to chronic physical and psychological health effects, as well as dependence.

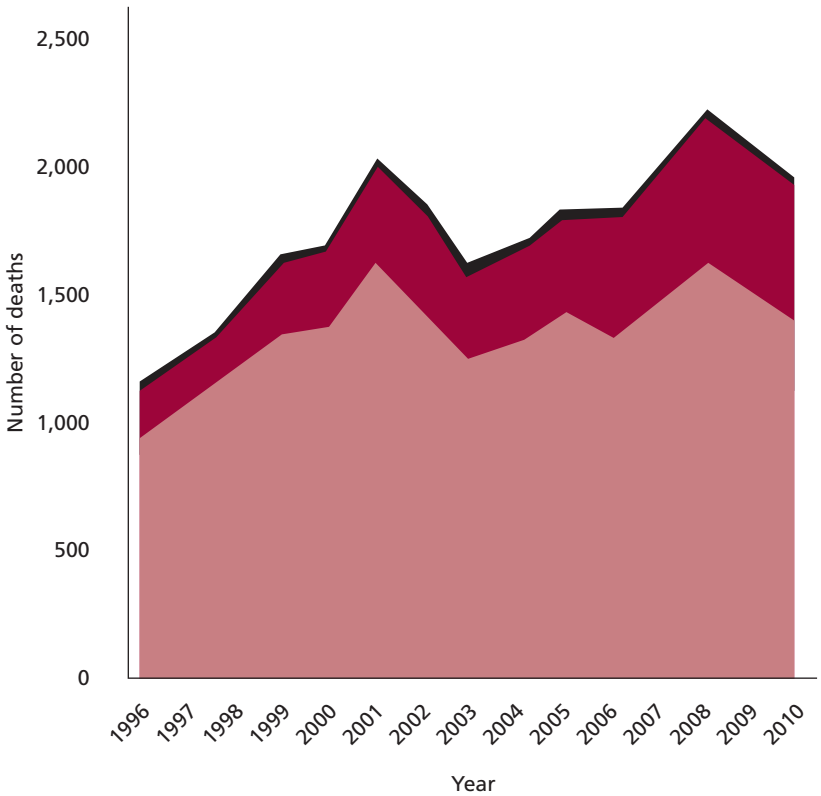
3.3.1 Drug-related deaths: overdoses, poisoning and suicides

While **Section 2.2** notes that current use of illicit drugs in the UK has been declining since the 1990s, the number of recorded drug-related deaths[b] in the UK increased by 67.5 per cent between 1996 and 2010, with year-on-year fluctuations (see **Figure 4**).[17] In 2010, there were 1,930 drug-related deaths, equivalent to a rate of 3.10 per 100,000 population (all ages).[17] The vast majority of these were among men (79.4%) and the rate was highest in the 35 to 39 years age group. Deaths in all age groups decreased from the previous year, with the exception of the oldest age group (60 plus years) (see **Figure 5**). The largest decrease was seen among those aged 20 to 29 years (25.6%). The difference in trends for the 20 to 29 and 40 to 49 years age groups in **Figure 5** (with an ageing trend observed among overdose deaths) suggests there may be an ageing cohort effect.

Most of the drug-related deaths in the UK continue to be linked to the use of opioid drugs, primarily heroin/morphine and methadone, followed by cocaine and ecstasy (see **Table 2**).[17] Overdoses related to opioid use are predominantly caused by respiratory depression, while cocaine-related deaths usually result from myocardial infarction or stroke, and ecstasy-related deaths from hyperthermia or hyponatraemia and reduced resilience to other concurrent threats (see **Appendix 3** for more details).[1] It is worth noting that some categories of illicit drugs, including cannabis, present no risk of death by overdose.

b Defined as deaths caused directly by the consumption of at least one illegal drug. Interpretation of these data should be treated with caution, as death certificates do not always state specific drug types, which could lead to under-reporting, or deaths may be counted in more than one category.

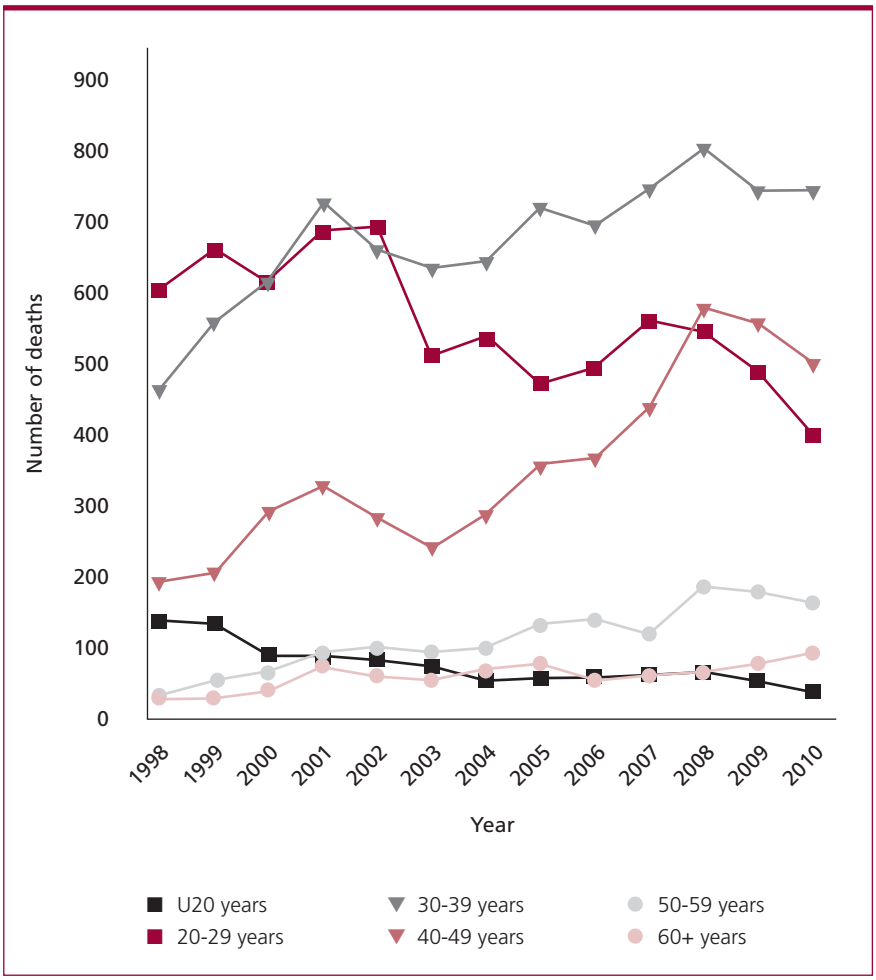
Figure 4 – Drug-related deaths in the UK, 1996 to 2010



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Northern Ireland	9	6	13	19	15	11	29	21	10	31	39	36	38	35	42
Scotland	208	188	230	272	318	376	417	331	387	352	416	450	556	532	479
England & Wales	935	1,064	1,202	1,353	1,374	1,608	1,417	1,243	1,294	1,429	1,345	1,486	1,637	1,525	1,409

Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Figure 5 – Drug-related deaths by age group in the UK, 1998 to 2010



Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Table 2 – Drug mentions on death certificates in the UK, 2002 to 2010

Drug	Year									Percentage change (2002-10)
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Heroin	1,118	883	977	1,043	985	1,130	1,243	1,210	1,061	–5.1
Methadone	300	292	300	292	339	441	565	582	503	+67.6
Cocaine	161	161	192	221	224	246	325	238	180	+11.8
Ecstasy	79	66	61	73	62	64	55	32	9	–88.6

Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Various studies have estimated that the annual death rate for 'high-risk' drug users, such as those who illegally inject opioid drugs, is between 1.1 per cent and 2.0 per cent.[18-21] Increased risk of death from drug overdose has also been found to be associated with poverty, homelessness, polydrug and polysubstance use (see **Glossary**), impaired physical health, depression and a previous history of drug overdose.[21-23] Illicit drug users are known to have higher rates of completed and attempted suicide compared to the general population, and this is associated with psychopathology, family dysfunction, social isolation and polydrug use.[21]

3.3.2 Short- and long-term health harms

Illicit drug use can lead to a range of short- and long-term adverse health impacts.[24-26] A detailed overview of the latest scientific evidence about the health-related harms of emerging and established licit and illicit psychoactive drugs commonly used in the UK is provided in **Appendix 3**.

Amphetamine and methamphetamine

Acute and chronic amphetamine and methamphetamine use is associated with a wide range of complications, although their incidence is unclear.[27] These complications include:

- cardiovascular disorders
- central nervous system (CNS)/psychiatric complications
- pulmonary disorders
- gastrointestinal complications
- metabolic disorders.[26,28,29]

Deaths from amphetamine and methamphetamine use are reported, but are relatively uncommon.[30,31]

Psychological dependence on amphetamine occurs in 30 to 40 per cent of repeated users,[24] but cessation of use is not associated with any physical symptoms. The use of methamphetamine (injected or smoked) in its crystal form (crystal meth) is also associated with a high potential for psychological as well as physical dependence.[25,32-36]

Cannabis

The effects of cannabis are dependent on the strength and type used. Acute cannabis intoxication (at high doses) can result in anxiety and panic attacks, paranoia, dysphoria, cognitive impairment, perceptual distortions and confusion/delirium.[24,26]
Death caused directly by an overdose of smoked cannabis is not possible. Chronic use is associated with impaired pulmonary function, recurrent bronchitis, worsening of asthma and lung cancer (from carcinogens in cannabis and tobacco smoke).[c] Animal studies suggest that heavy use may cause disruption of ovulation, sperm production and sperm function.[24,26,39,40]

Cannabis use is also associated with psychological harm, although there is considerable scientific disagreement regarding the relationship between the two. There is broad agreement in the medical community that:

- regular heavy users may suffer repeated, short episodes of psychosis and effectively maintain a chronic psychotic state

c The evidence for the association between cannabis and lung cancer is unclear, owing to the difficulty in ruling out tobacco use as a confounder. Some studies report an increased risk,[37] while other studies find no link.[38]

- cannabis use may trigger relapse or exacerbate existing symptoms in patients with schizophrenia, and may precipitate psychotic symptoms in individuals predisposed to developing schizophrenia. At an individual level, cannabis users have a two-fold increase in the relative risk for later developing schizophrenia, while at a population level, the effect size is relatively small, as eliminating its use in those at risk would reduce the incidence of schizophrenia by 8 per cent.[24,41-45]

Emerging evidence also suggests that heavy cannabis use by adolescents increases the risk of depression and schizophrenia in later life, especially in individuals who already have a vulnerability to develop a psychiatric syndrome.[46-48] Regular cannabis use during adolescence has also been found to result in declines in intelligence quotient (IQ). A 2012 study found that persistent regular cannabis use over 20 years was associated with neuropsychological decline broadly across the domains of functioning (ie executive function, memory, processing speed, perceptual reasoning and verbal comprehension).[49] This effect was concentrated among adolescent-onset users, and the cessation of cannabis use did not fully restore neuropsychological functioning in this group.[49]

Approximately 10 per cent of people who have ever used cannabis develop features of dependence, which is associated with chronic regular use and may be physical or psychological.[24]

Cocaine and crack cocaine

Cocaine use is linked to a high incidence of cardiac arrhythmias and sudden death from overdose, mainly owing to cardiovascular and cerebrovascular complications.[50-61] The risk of cocaine toxicity is influenced by concomitant use of other drugs, in particular alcohol and heroin.[61] Many deaths caused by cardiovascular complications occur in individuals with pre-existing risk factors or conditions induced by chronic cocaine use, such as left ventricular hypertrophy, coronary atherosclerosis or vascular malformations in the brain.[62,63]

While cardiovascular and cerebrovascular complications are the most common adverse health consequences,[64] acute and chronic cocaine use can also lead to:

- respiratory disorders, either acute (pulmonary oedema, pulmonary infarction, haemoptysis) or chronic (eg pulmonary hypertension)
- genitourinary and obstetric disorders, either acute (acute renal failure, mediated by rhabdomyolysis or direct toxicity, testicular infarction, placental abruption, spontaneous abortion) or chronic (premature birth, growth retardation)
- gastrointestinal complications (mesenteric ischaemia or infarction)
- psychiatric disorders (euphoria, dysphoria, agitation, anxiety, suicidal thoughts, paranoid psychosis, depression)
- musculoskeletal and dermatological disorders.[62]

Ecstasy

The incidence of serious acute adverse events related to ecstasy use is low and their occurrence is unpredictable.[65,66] Ecstasy-related deaths have received a lot of media attention,[67] but they are rare and usually result from hyperthermia or acute hyponatraemia (where a user drinks too much water to avoid dehydration), which can ultimately lead to cerebral oedema.[66,68]

In the short term, regular use of ecstasy can lead to sleep problems, lack of energy, dietary problems and increased susceptibility to colds and flu. It is also associated with a range of psychological effects, including anxiety, visual hallucinations and paranoia.[24] In the longer term, ecstasy can cause psychological dependence as users seek the feelings of euphoria and calmness associated with its use.[24,68,69] There is little evidence for long-term physical dependence associated with ecstasy.[68]

There is also little evidence of longer-term harm to the brain in terms of either its structure or function.[66] There is some evidence for a small decline in a variety of domains, including verbal memory, even at low cumulative doses.[68,70,71] The magnitude of such deficits appears to be small and their clinical relevance is unclear.

GHB

Use of GHB at high doses can lead to overdose, which is commonly associated with acute complications such as unconsciousness, vomiting, tremors, headache and confusion.[72-74] Severe intoxication can lead to deep coma and breathing difficulties, and GHB-related deaths have been reported in rare cases.[75] As well as developing psychological dependence, users can become physically dependent on GHB.[76,77] Although this is rare, it can be severe, with a rapid onset of severe withdrawal symptoms including delirium, psychosis, tremor, insomnia and severe anxiety.[78] Dependence can develop from severe bingeing over a short period, or may result from regular use over a longer period.

Adverse effects of the related drugs GBL and 1,4-butanediol (1,4-BD) are listed in **Appendix 3**.

Heroin and other opioid drugs

As noted previously, opioid overdose is the most common cause of drug-related death in the UK (predominantly from respiratory depression and drop in blood pressure resulting in respiratory arrest).[17] A number of common correlates of overdose fatality have been identified, which include:

- a long history and high level of opioid dependence
- recent abstinence (eg prison, detoxification release)
- polydrug or polysubstance use (particularly with alcohol, which seems to be a factor in approximately half of overdoses, and benzodiazepines)
- being male
- increasing age (most fatalities occur among those in their 30s)
- social isolation
- neurocognitive deficits.[26]

As discussed in **Sections 3.1** and **3.3.4**, the strength and purity of the drug also affect the risk of overdose.

In the short term, acute intoxication causes a range of common side-effects (eg nausea, vomiting, constipation, drowsiness and mental confusion), and in some cases hallucinations, dysphoria, sweating and itching.[26] Rare features of acute intoxication include complications associated with non-fatal overdose (eg hypoxia causing brain damage), and disease of the white matter of the brain (leukoencephalopathy) resulting from inhalation of heroin vapours.[26]

Chronic use of opioids is associated with an increased risk of mortality (from overdose and route-specific hazards – see **Section 3.3.5**), and a suicide rate that is higher than that of the general population.[26,79,80] A number of chronic complications can also occur, which include:

- constipation, dry mouth, menstrual irregularity, malnutrition, anorexia, tooth decay, decreased sexual desire and performance
- respiratory diseases (asthma, chronic obstructive pulmonary disease)
- modest suppression of hormone levels
- suppression of the immune system, social deprivation and malnutrition.[26]

Opioid dependence is characterised by profound psychological and physical dependence and can develop through use of heroin, opium and other illicit opioids, as well as prescribed medications such as methadone and buprenorphine. When untreated, approximately 30 per cent of heroin-dependent individuals will have died by 10 years from overdoses,[24] or as a result of secondary complications, as described in **Section 3.3.5**. Those on prescribed heroin do not have a lower life expectancy. Individuals who are opioid dependent are five times more likely than the general population to have a depressive disorder, and three times more likely to be affected by

an anxiety disorder.[24] It is unclear whether this is a causal relationship. Withdrawal from opioid dependence is rarely life threatening, but can lead to a range of unpleasant symptoms (eg nasal discharge, sweating, sleep disturbance, anorexia, restlessness, irritability, tremor, weakness, depression, nausea, vomiting, abdominal cramps, muscle spasms and diarrhoea).

Hallucinogens (including LSD and psilocybin)

The hallucinogenic effects of LSD and psilocybin (magic mushrooms) vary, depending on the dose, and the situation the user is in. In the short term, their use leads to an increased risk of accidental death, violence and injuries, owing to perceptual distortions and impaired decision making.[26]

A range of acute psychological/psychiatric effects are associated with the use of these hallucinogens:

- dysphoria
- distortions in shapes and colours
- illusions, delusions
- anxiety, panic, depression
- dizziness, disorientation and impaired concentration
- frequent mood changes
- recall of psychologically troubling memories
- short-lived psychotic episode (hallucinations, paranoia)
- precipitation of relapses in schizophrenia.[26]

Chronic use of LSD and psilocybin (magic mushrooms) can lead to depression and feelings of isolation or delirium, and brief flashbacks or recollection of previous hallucinatory experience may occur days or months after use.[26] In rare cases, it can also cause persistence of low-level hallucinations, known as hallucinogen persisting perception disorder.[26] Only a few users of hallucinogens experience signs or symptoms of dependence.[26]

Adverse effects of the hallucinogens mescaline and *N*,*N*-dimethyltryptamine (DMT) are listed in **Appendix 3**.

Ketamine and phencyclidine

Ketamine and PCP are dissociative anaesthetics that can cause loss of coordination and control.[81] This can lead to an increased risk of death and injury as a result of accidents, as well as respiratory depression, loss of consciousness and coma.[26] There have been rare reports of overdose deaths from heart attack or respiratory problems associated with the use of ketamine, while PCP can cause death as a result of hyperthermia and convulsions.[26] The use of these dissociative anaesthetics can also lead to acute and chronic psychological and psychiatric symptoms such as hallucinations, impaired

attention and cognitive functioning, confusion, panic attacks and paranoia, depression, and extreme loss of motor skills (catatonia).

Chronic heavy use of ketamine can lead to ulcerative cystitis (marked thickening of the bladder wall and severe inflammation)[82-84] and abdominal pain.[26] There is limited evidence that ketamine dependence and tolerance may occur among regular heavy users, but there is no evidence to suggest withdrawal symptoms. There is also some evidence that dependence and withdrawal syndrome can develop with chronic PCP use.[26]

Other psychoactive drugs

Adverse effects of nitrites; novel psychoactive substances such as substituted cathinones, 2C series phenylalanines and tryptamine derivatives; khat; and *Salvia divinorim* are all listed in **Appendix 3**.

Polydrug use

Polydrug use or the combination of illegal drugs with alcohol (polysubstance use) can lead to an increased risk of serious health harm and death. This can result from pharmacokinetic factors (eg reduced metabolism) or drug interactions, or directly from the drugs' toxic effects. The use of one psychoactive substance can also lead to increased risk behaviour with another substance (eg alcohol use may reduce the capacity to judge the amount of opioids consumed).

Many of the drug-related deaths that occur among problem drug users, which most commonly involve opioid overdose, are also linked to polydrug use (including tobacco and alcohol).[85] Chronic polydrug use can also lead to increased mortality from other diseases, as the continued use of several substances leads to longer-term toxicities in various organs or body systems.[86]

A specific example of chronic health damage resulting from polysubstance use is the high prevalence of tobacco smoking among individuals with cocaine-associated myocardial infarction.[87,88] **Table 3** provides an overview of the harms associated with the concurrent use of specific substances.

Table 3 – An overview of the harms associated with the concurrent use of specific substances

Drug	Effects associated with concurrent use of:	
	Alcohol	**Illicit drugs**
Amphetamines	• Increases perceived total intoxication • Increases adverse cardiovascular effects	**Cocaine** • Limited evidence; may have adverse consequences on the CNS
MDMA (ecstasy) and related analogues	• Reduces subjective sedation associated with alcohol, but not alcohol-induced impairments • Increases plasma levels of MDMA • Decreases blood alcohol levels • May enhance the temporary impairment of immune cells associated with MDMA use (transient immune dysfunction)	**Cannabis** • Users may potentially experience cumulative CNS impairment • May increase susceptibility to infection **Cocaine** • Evidence from animal studies suggests an increased risk of neurotoxicity
Cannabis	• Reduces driving performance	

Drug	Effects associated with concurrent use of:	
	Alcohol	**Illicit drugs**
Cocaine	• Increases blood levels of cocaine and the active metabolite cocaethylene; users may perceive a more intense feeling of intoxication • Users may perceive a reduction in the sedating effects of alcohol • Combination potentially increases adverse cardiovascular effects • Patients with coronary artery disease or alcohol dependence may be particularly vulnerable to the combined toxic effects of alcohol and cocaine	**Ketamine** • Potential to exacerbate the cardiovascular risks of cocaine (crack) **Methadone** • Increases adverse cardiovascular effects (eg increased blood pressure and heart rate)
GHB	• Increases the risk of respiratory depression • None documented	
Nitrites	• None documented	**Use of drugs for treating erectile dysfunction (eg viagra)** • Increases the hypotensive effects (abnormally low blood pressure)
Opioids	• Increases the depressant effects of alcohol on the CNS; can be fatal • Acute use of alcohol and methadone appears to result in lower blood-alcohol levels – the clinical significance is unclear	**Benzodiazepines** • Increase the depressant effects of opioids on the CNS

Source: Jones L, Bates G, Bellis M *et al* (2011) *A summary of the health harms of drugs*. London: Department of Health.[26] Reproduced with the permission of the Department of Health.

3.3.3 Effects on the fetus

Fetal development can be adversely impacted by maternal drug use. The BMA has previously considered the effects of prenatal alcohol exposure and smoking on the unborn fetus in its 2007 report *Fetal alcohol spectrum disorders – a guide for healthcare professionals* (2007)[89] and its 2004 report *Smoking and reproductive life – the impact of smoking on sexual, reproductive and child health*.[90]

The risk of harm to the fetus from maternal drug use is generally considered to be greatest during the first trimester (especially the first 8 weeks),[24] although the second and third trimesters remain critical periods of exposure for fetal development. Damage may also be caused before the woman knows that she is pregnant. Evidence is continuing to emerge on the adverse effects of a number of specific drugs:

- babies born to opioid-dependent mothers may suffer neonatal abstinence syndrome. This can be characterised by short-term withdrawal symptoms affecting the CNS, the respiratory system and the gastrointestinal tract[24]
- cocaine causes reduced blood flow to the placenta, thereby increasing the risk of placental abruption.[26,91] Maternal cocaine use is also associated with an increased risk of spontaneous abortion and premature delivery, as well as sudden infant death syndrome (SIDS) [24,92]
- a greater risk of prematurity and intra-uterine growth retardation is associated with multiple drug use.[24]

There is also likely to be an increased risk of fetal harm from pregnant drug users who lead chaotic lifestyles (including as a result of the illegality of the drugs), as this can lead to poor nutrition and maternal health, as well as poor antenatal attendance.

3.3.4 Adulterants

Illicit drugs are commonly found to contain substances in addition to the purported active ingredient.[93,94] These adulterants – any substance or organism found in illicit drugs at the point of purchase other than the active ingredient – can increase the risk of morbidity and mortality. They are commonly added to enhance or mimic the effects of an illicit drug (eg procaine in cocaine), or to facilitate its administration (eg caffeine in heroin).[93] Contaminants such as bacteria or other biological agents may adulterate illicit drugs, as a result of poor or unsterile manufacturing and production techniques, substandard packaging and inappropriate storage.[93]

Evidence from case reports has found that the adverse health impacts and deaths associated with adulterants commonly result from poisoning, poor manufacturing techniques or poor storage or packaging, or occur as a result of the effects of other substances sold as the illicit drug.[93] Key findings from the case reports include:

- heroin adulteration is mostly associated with poisonings (eg by lead, scopolamine and clenbuterol) or bacterial infections

- cocaine/crack cocaine adulteration is mostly associated with poisonings, with a wide range of adulterants responsible, including phenacetin, thallium, benzocaine, scopolamine, strychnine, levamisole and anticholinergic poisoning
- methamphetamine adulterants are mostly associated with poisonings, for example with lead, toxic fumes and talcum powder
- two case reports detail the deaths of ecstasy users as a result of consumption of tablets adulterated with paramethoxymethamphetamine (PMMA) and/or paramethoxyamphetamine (PMA).

A more detailed overview of the evidence of drug adulterants, including information on the potential reasons for their inclusion and the health effects, is provided in **Appendix 5**.

3.3.5 Secondary health harms associated with injecting drug use

In addition to the direct adverse effects of illicit drug use, there can be a number of secondary health impacts associated with the way in which the drug is used. People who inject drugs and share needles are at risk of transmitting and acquiring a range of infections, including HIV, hepatitis B (HBV), hepatitis C (HCV), and, if using in unhygienic environments with unsterilised injecting paraphernalia, bacterial infections at the injection site.

In the UK, HIV prevalence among people who inject drugs was 1.5 per cent in 2009, compared to 0.8 per cent in 2000.[17] This is matched by the increasing total prevalence of HIV infection. In England and Wales, the estimated number of prevalent HIV infections in 15 to 44 year olds increased from 1.5 per 1000 in 2000, to 2.4 per 1000 in 2008.[95] The proportion of these who were injecting drug users was 2.4 per cent.[95]

In 2009, the prevalence of HCV among people who inject drugs was much higher, at 48 per cent for England and Wales, compared to 38 per cent in 2000.[17] Around one in six people who inject drugs have ever had an HBV infection, and in this group the prevalence of infection in England, Wales and Northern Ireland fell from 28 per cent in 2000 to 17 per cent in 2009.[17] In the general population in the UK, HBV infection has been estimated to affect 0.3 per cent and HCV 0.4 per cent.[96]

3.3.6 Other secondary health harms

Other chronic secondary health harms include:

- the long-term adverse consequences of smoking cannabis on pulmonary function (including airways obstruction and hyperinflation)[97]
- smoking crack cocaine can cause chest pain and lung damage[98-101]
- snorting cocaine powder can lead to nasal bleeding and stiffening of the facial muscles, while heavy users may damage the nasal membranes or perforate the nasal septum.[54]

3.3.7 Dependence

The repeated use of illicit drugs can lead to dependence syndrome – a cluster of behavioural, cognitive and physiological phenomena that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state (see **Glossary**). As can be seen from **Section 3.3.2** and **Appendix 2**, repeated use of some psychoactive drugs can lead to dependence.

Dependence per se is not necessarily significantly harmful but the risk of harm is intrinsically raised because of the chronic drug use. In the case of heroin, for example, as noted previously, its chronic use is characterised by profound psychological and physical dependence.[26] This chronic use significantly increases the risk of mortality from overdose and acquisition of a drug-related infectious disease.

Different drugs vary in their propensity to give rise to dependence (dependence potential, see **Glossary**). Illicit drugs such as heroin, crack cocaine and methamphetamine – as well as the licit drugs, tobacco and alcohol – rank highly in their tendency to encourage repeated use.[2]

3.4 Social harms

Illicit drug use is associated with a range of potential social harms, including deprivation and family adversity/neglect, criminality associated with intoxication, acquisitive crime associated with obtaining drugs, drug-impaired driving, and drug-impaired workplace performance. Some of these social harms result from the illegality of the drugs, while others are caused by factors such as the psychopharmacological effects of the drug.

3.4.1 The social effects of illicit drug use on families

Certain patterns of illicit drug use can adversely affect family life, in many of the same ways that problematic levels of drinking can: through domestic violence, loss of family income, poor role models for children, accidents and injuries, malnutrition and eating disorders, unemployment, social exclusion, self-harm and suicide, and problems in relationships with friends and partners.[1] Illicit drug use can significantly impact on family

economic resources through direct expenditure on drugs, increased medical expenses, reduced household income through drug-related morbidity and mortality, lost employment opportunities, legal costs of drug-related offences, and decreased eligibility for loans.[1,16,102,103]

The children of drug users are likely to be adversely affected in a number of ways, including suffering from poverty, abuse and neglect, exposure to violence and crime, risks of harm from drug paraphernalia, going into care, absence of a parent, and disrupted schooling and education.[104-106]

3.4.2 Harm to communities – drug-related violence and crime

Drug-related crime falls into two categories. Drug law offences include possession, dealing or trafficking of drugs covered under the Misuse of Drugs Act 1971. This is dealt with in **Chapter 5**. Illicit drug use is also associated with a number of other criminal behaviours, which in turn are linked to underlying socioeconomic factors. In the UK in 2010-2011, there were 270,045 recorded drug law offences (39,966 (14.8%) of which were for trafficking, 228,425 (84.6%) for possession, and 1,384 (0.5%) for other drug offences), which was an increase (19.7%) from 225,670 in 2005-2006.[17] The vast majority of these offences were for cannabis possession.[17] This increase contrasts sharply with the long-term decline in current drug use outlined in **Section 2.2**).

Dependent use of drugs is associated with increased levels of acquisitive crime – such as theft, street robbery, car break-ins and burglary – as a means to fund habits. The link between illicit drug use and crime is complex and multifaceted, as not all drug types are associated with all forms of crime, and some drugs are not associated with crime at all. In England and Wales, according to the Home Office *Arrestee survey 2003-2006*, 81 per cent of regular (at least weekly) users of heroin or crack reported having committed acquisitive crime in the 12 months prior to arrest, compared to 30 per cent of respondents who did not use heroin or crack regularly (ie did not use them weekly).[107] A report from the UK Government Strategy Unit in 2003 suggested that dependent heroin and crack users '*commit substantial amounts of crime to fund their drug use (costing £16bn a year)*' and that '*Drug use is responsible for the great majority of some types of crime, such as shoplifting and burglary*', including '*85% of shoplifting, 70-80% of burglaries and 54% of robberies*'.[108] For dependent drug users with limited alternative sources of income, particularly women, street sex work often becomes the most viable source of fundraising to buy drugs. The UK Home Office has estimated that more than 85 per cent of street sex work is drug motivated.[109]

In addition to the criminality and violence associated with acquisitive crime, the psychobiological effect of drugs may directly lead to violent behaviour; the drugs most commonly linked to psychopharmacological violence include amphetamines and cocaine.[110] There is little evidence that the psychopharmacological effects of heroin, cannabis, ecstasy or other hallucinogens are associated with violence and crime.[110] It should be noted that the evidence for the psychopharmacological causation of violent behaviour is weak (including for amphetamines and cocaine).[110,111]

Other social harms associated with the law relating to drug use are considered in detail in **Chapter 6**.

A high level of drug use in the community is also linked to unsafe communities, through increases in violent incidents, antisocial behaviour, prostitution, begging, unusable public spaces, and people sleeping rough.[112] This in turn can depress house prices, reduce investment in the neighbourhood and create or maintain areas of deprivation.

3.4.3 Drug-driving

Data on the levels of drug-driving in the UK are limited. While drug use cannot be causally linked[d] to road crashes, a number of small-scale studies provide some information on its prevalence:

- in 1989, random samples from a number of road traffic accident fatalities showed that only 3 per cent of the drivers involved in accidents had been driving with drugs in their systems, compared to 35 per cent for alcohol (25% over the legal limit)[113]
- a 2001 study of fatal road accident casualties found that at least one impairing prescription or illegal drug was detected in 24.1 per cent of the 1,184 casualties, and that alcohol was present in 31.5 per cent of the sample (21.5% over the legal limit).[114] The study identified cannabis as the drug most frequently found among casualties. There was a substantial increase in the incidence of cannabis in fatal road casualties, from 2.6 to 11.9 per cent over the period between the two studies. The authors found that those who had consumed drugs were no more likely to have also consumed alcohol than drivers who had not used drugs – when considering drivers over the legal limit for blood alcohol, there was no significant difference (at the 5% significance level) between those with no drugs, single drug use and multiple drug use: 20.6 per cent, 17.3 per cent and 16.1 per cent respectively
- surveys of drug use among Scottish drivers arrested under Section 4 of the Road Traffic Offenders Act 1988[17] have shown that cannabinoids were consistently present,

d A causal link cannot be stated because of poor data levels and a lack of information on the effect of various drug levels on driving performance.

ranging from 36 per cent in 2003 to 53 per cent in 2008, while cocaine was detected in around 15 to 25 per cent of cases.[115]

Limited data are available internationally. A study by the EMCDDA, published in 2008, concluded that the prevalence of drivers under the influence of drugs on EU roads had increased significantly since the late 1990s.[116] A Dutch study conducted in the mid-1980s found that 8.5 per cent of injured drivers were under the influence of illegal and impairing medicinal drugs.[117] A similar survey conducted in 2000-2001 found the proportion of injured drivers under the influence of illegal or impairing medicinal drugs had increased to 30 per cent.[118]

3.5 The economic and social costs of illicit drug use

Estimates for the cost of illicit drug use to society in economic terms are limited (see **Box 3**). These include costs to the individual, such as the costs related to premature death, drug-related illness and the loss of earnings through criminality/imprisonment, sickness, temporary or permanent unemployment and reduced educational attainment. The costs to society can be divided into four broad categories:

- **healthcare service costs**: including costs to primary care services and hospital services (A&E, medical and surgical inpatient services, paediatric services, psychiatric services, and outpatient departments)
- **costs of drug-related crime, disorder and antisocial behaviour**: including costs to the criminal justice system, costs to services (eg social work services), costs of drug-driving, and the human cost of drug-related harm (eg domestic abuse, assault)
- **loss of productivity and profitability in the workplace**: including costs to the economy from drug-related deaths and drug-related lost working days
- **impact on family and social networks**: including human and emotional costs such as breakdown of marital and family relationships, poverty, loss of employment, domestic and child abuse, and homelessness.

Box 3 – Estimates for the costs of drug-related harm in the UK[e]

The economic and social costs of Class A drug use (cocaine, crack, ecstasy, heroin, methadone, LSD and psilocybin (magic mushrooms)), in 2003-2004 in England and Wales were estimated by a Home Office report to be £15.4 billion, equating to £44,231 per year per problematic drug user:

- problematic Class A drug use (opioid drug and/or crack users) accounted for the majority (99%) of the total costs
- health and social care costs accounted for £557 million
- the measured costs of drug-related deaths were estimated to account for £923 million.[119]

This report says that the cost estimates include two components of the cost of crime: expenditure by the criminal justice system in dealing with crimes committed (with no further details supplied in the report, it is assumed this does not include the costs associated with imprisonment) and cost consequences for the victims of crime.

Hospital admissions arising from diseases or conditions directly and indirectly related to substance use make a large contribution to the costs to the NHS. The most recent data available indicate that there are around 6,400 admissions for drug-related mental health and behavioural disorders each year in England, and over 12,500 admissions for drug poisoning.[120]

In 2003, the Prime Minister's Strategy Unit (PMSU) estimated that the cost in terms of health and social functioning harms of drug use in the UK was £24 billion per year.[121] This report does not specify what constitutes drug-related crime.[109]

The economic and social cost of drug-related harm in Scotland, which includes criminal justice costs (extent unspecified) has been estimated as £2.6 billion per annum.[122]

e It is worth noting that the costs associated with the impact on family and social networks are not included in these estimates because of the difficultly in determining the level of cost associated with these factors.

The total economic and social cost of Class A drug use in Wales has been estimated to be around £780 million per year, and drug-related crime accounts for 90 per cent of this.[123] Similar data are not available for Northern Ireland.

The criminal justice costs associated with illicit drug use, including prison costs, are discussed in more detail in **Section 6.4.5**.

Summary

- The use of illicit drugs is associated with a range of physical, psychological and social harms. These are affected by the dosage of drug, the pattern of drug use and the mode of administration.
- Most drug-related deaths in the UK are related to the use of opioid drugs, followed by cocaine. The vast majority of these deaths are in men and many are associated with polydrug or polysubstance use. Ecstasy-related deaths are very rare and deaths from cannabis overdose do not occur.
- The risk of death from accidental drug overdose, and from suicide, is associated with poverty, homelessness, polydrug or polysubstance use, impaired physical health and depression.
- While dependence per se is not necessarily significantly harmful, the risk of harm is intrinsically raised as a result of chronic drug use. The following are associated with physical and psychological dependence: cannabis, cocaine, gamma-hydroxybutyrate (GHB), heroin, methamphetamine and other opioid drugs. Amphetamine and ecstasy are associated with psychological dependence only, and there is limited evidence for dependence with ketamine and phencyclidine (PCP). Dependence is rare with hallucinogens.
- Fetal development can be adversely impacted by maternal drug use.
- Adverse health impacts and drug-related deaths may also be associated with adulterants.
- Social harms of drug use include deprivation and family adversity/neglect; criminality associated with drug intoxication or with the need to obtain drugs; and drug-impaired performance at work or when driving. These can result from the illegality of the drugs, or from factors such as the psychopharmacological effects of the drug. They have associated costs for the individual related to loss of earnings, reduced educational attainment and damage to personal relationships. High levels of drug use in a community are linked to unsafe communities because of the associated social problems.
- Studies of the level of harm associated with use of different drugs in the UK scored heroin, crack cocaine and methamphetamine as most harmful to individuals; alcohol, heroin, crack cocaine and cannabis as most harmful to others; and alcohol as most harmful overall, followed by heroin, crack cocaine, methamphetamine and cocaine. The relative levels of harm for the different drugs correlate poorly with the legal classification of drugs.

- Economic and social costs of drug use are related to health and social care costs and criminality; 99 per cent of costs are linked to Class A drug use (cocaine, crack, ecstasy, heroin, methadone, lysergic acid diethylamide (LSD) and psilocybin (magic mushrooms)), and a large proportion is linked to crime, including crimes of illegality. The economic and social costs of Class A drug use in 2003-2004 in England and Wales were estimated to be £15.4 billion, which equates to £44,231 per year per problematic Class A drug user.

Chapter 4 – Influences on illicit drug use

4.1 Introduction

Drug experimentation primarily begins in adolescence but only a small proportion of those that experiment with drugs then go on to use drugs harmfully.[1] Understanding the reasons behind this and, in so doing, categorising the various theories to explain this phenomenon, is an extensive task.

There is general consensus that drug use is a multifaceted 'biopsychosocial' phenomenon. This term is used to encapsulate that drug use is influenced by biological, psychological and social factors. Although distinct theories have been developed for each of these factors, which are discussed in this chapter, there is often a degree of overlap between these explanations. Using only one model to explain why people use drugs may not be appropriate to describe all types of behaviour.

In addition to biopsychosocial influences, the extent to which drugs are obtainable and aspirational is thought to influence their use.[1] This includes their price of purchase, the ease of access to specific drugs and their psychological attractiveness and societal acceptance. This chapter also considers these influences.

This chapter will focus only on the influences of illicit drug use. It should be noted that there are similarities between what influences illicit drug use and what influences alcohol and tobacco use. Since the influences on alcohol and tobacco use have been widely published elsewhere by the BMA, these will not be addressed. For further information on these topics please refer to the BMA reports:

- *Under the influence: the damaging effect of alcohol marketing on young people* (2009)
- *Forever cool: the influence of smoking imagery on young people* (2008).

The following case study illustrates the multifactorial aetiology of drug dependence.

Case study: Influences on illicit drug use

Mr X is a 43-year-old man who has been using substances since he was in his teens. He has been in treatment for the last 10 years. He is now taking 40mg of methadone, which is dispensed daily. This has reduced from 80mg over the past two years. He has not used any heroin or other opioid drugs for the past four years and has not injected at all for the past eight years. He is continuing to use crack cocaine about once a month. His main problem is his alcohol use, which has been increasing ever since he came into treatment and became much worse when he stopped using heroin. He is now drinking about two cans of strong lager (10 units) several days a week, although he is sometimes able to stay off alcohol for two or three days per week. He finds it particularly difficult not to drink after work.

Ten years ago Mr X was diagnosed with hepatitis C. He was offered treatment then, but as he did not want to have a liver biopsy did not want to be referred. Two years ago he was admitted to hospital with jaundice and ascites and diagnosed with advanced hepatic cirrhosis. He did well during that admission, and following medical treatment improved substantially and was able to return to work. He was subsequently offered treatment for HCV by his local hepatology service. This was not started though, as he continued to drink alcohol after a short (3-month) period of abstinence.

Mr X had a difficult childhood. His alcoholic father died when he was very small. His mother was depressed and he was taken into care when his behaviour became unmanageable as a teenager. This followed his mother remarrying. As an older adolescent, he was caught by the police a few times for minor acquisitive offending and served one short sentence in a young offenders' unit. He did enjoy school, was popular and was always interested in computing. He left school with GCSEs in maths and computer science. He spent some time in South America in his 20s but returned to England and started working as a computer technician. He still works freelance and is able to get work from a friend who runs his own business. He has a council tenancy.

He has a long-term partner who has used drugs in the past. He has two stepdaughters.

He is seen every two weeks by his local drug treatment service. He has a keyworker (see **Glossary**) but does not use the sessions well and generally just wants to collect a prescription. He has a GP but has never been to see him. He is seen by the hepatologists every six months.

Three months ago Mr X had another episode of ascites. Again he did well and was booked in to see the hepatitis clinical nurse specialist to talk about interferon and ribavarin treatment. He began to understand that he must stop drinking if he is to have successful

treatment for his hepatitis C. The hepatologist explained to him in detail the prognostic implications of his liver damage and the nature of the treatment. He began to use his keywork session to discuss his fears for the future. The addiction psychiatrist assessed his mental state and concluded that he was depressed and that he would benefit from both an antidepressant and some cognitive-behavioural therapy (CBT), which he did attend. He was also advised to stay on methadone (for a discussion of methadone therapy, see **Chapter 8**), as further withdrawal symptoms may have jeopardised his ability to stay free of illicit drugs and alcohol. The psychiatrist also did some joint sessions with him and his partner. He also began to see his GP, who was able to reinforce the message that he had to stop drinking.

He was eventually able to stop drinking for three months and start treatment, while continuing to receive support from his drug service and his GP. His goal is to become completely drug and alcohol free.

Case study details provided by Dr Emily Finch, a consultant addiction psychiatrist.

4.2 Biological factors

4.2.1 The genetic basis for drug use

The use of drugs has a genetic component.[2] This means that those with a genetic predisposition to drug use, such as those with a direct family member with a history of substance use, are at an increased risk of using drugs.[2] The implication of this is that variations exist at an individual neurobiological level, and this affects an individual's susceptibility to drug use. This means that not every person will themselves carry the gene or become drug dependent.

Evidence for the heritability of drug use is derived from a range of research designs. The most robust evidence for the genetic influence of drug use comes from twin studies; research using family- and adoption-based designs has also shown an effect. Given the breadth of high-quality research using twin studies, this section will only briefly examine family- and adoption-based designs, before focusing on twin studies.

As discussed earlier, a considerable part of the genetic effect may be protective against dependence rather than raising risk. An example of this is the aldehyde dehydrogenase 2 gene (*ALDH2*), which is prevalent in Asian populations and thought to be protective against dependence on alcohol.[3,a]

Family-based designs

Research using family-based designs suggests that siblings of cannabis-dependent individuals have an elevated risk of developing cannabis dependence themselves.[4] Similar findings have been reported among siblings of cocaine-dependent individuals.[4] Siblings of individuals with dependence on opioid drugs, cocaine and/or cannabis have also been reported to be at an increased risk of developing drug dependence.[5] These findings were found to be largely independent of factors related to family conditions.[5] The impact of the family on drug use is discussed in greater detail later in this chapter (see **Section 4.4.1**).

While there is evidence that substance use disorders cluster in families, it is not clear from family-based designs whether these can be wholly attributable to heritable factors. This is because the family design cannot distinguish between whether the cause of familial similarity is genetic or environmental in nature.[6]

Adoption-based studies

Adoption-based studies have shown a genetic basis for drug use. Adoption studies are based on a comparison of the concordance[b] between offspring behaviour and the characteristics of both the adoptive and biological parents. Similarity between offspring and biological parents is suggestive of genetic influences, although research studies in this area should correct for in utero exposure to drugs.

Adoption studies have reported a strong link between biological parents' substance use, and their offsprings' risk of addiction. A 1995 analysis of adoptees with substance-dependent biological parents (parents that were alcohol and/or drug dependent) compared with controls (adoptees with non-substance-dependent biological parents) provided an early demonstration of the role of genetic factors in the development of drug use and dependence.[7] After controlling for in utero substance use, substance use in biological parents was found to be significantly associated with adoptee drug use.[7] These findings are suggestive of genetics having a significant influence on the development of drug use.

a In some drinkers, however, the *ALDH2* allele ('flushing gene') contributes to diminished activity of the enzyme and increases drinkers' risk of developing some cancers.[8]

b In genetic terms, concordance refers to the probability that a pair of individuals will both have a certain characteristic, given that one of the pair has the characteristic.

Twin studies

Twin studies utilise data from identical/monozygotic (MZ) and fraternal/dizygotic (DZ) twin pairs that have been reared together. As genotypes and family environments tend to be similar, twin studies provide greater clarity in disentangling the role of genetic and environmental influences on drug use.[6] This is because genetic influences are shared 100 per cent between members of MZ twin pairs, while DZ twin pairs only share 50 per cent of their additive genetic influences. This means the genetic influence between MZ twins is likely to be more apparent than in DZ twins. Thus, differences between these two groups are suggestive of a genetic factor.

Research using twin studies has reported a large degree of heritability[c] in relation to drug use.[6] It has consistently been shown there is a higher MZ than DZ concordance for drug dependence.[2]

The extent to which drug use has a genetic component appears to differ between different types of drug. Cannabis use and dependence appear to have a large genetic component. A 2006 review of the genetic epidemiology of cannabis use, abuse and dependence found evidence that there is a genetic basis to each of these three stages.[9] It was estimated that the heritability of cannabis use ranged from 34 per cent to 78 per cent.[9]

In terms of other drugs, research from the late 1990s among Vietnamese twins reported that 33 per cent of stimulant use/dependence, 27 per cent of sedative use/dependence, 54 per cent of heroin use/dependence and 26 per cent of the use/dependence of psychedelic drugs could be attributed to genetic factors.[10,11] These findings have been replicated among female twins from the USA.[12,13] Significant twin resemblance was found for hallucinogen use, opioid use, sedative use, stimulant use and symptoms of dependence.[12,13]

The convergence of findings from a range of research designs provides compelling evidence that illicit drug use and dependence are influenced by heritable genetic factors. Despite this, genetic factors are not exclusively responsible for the development of drug use and dependence. If they were, the above studies would be expected to report 100 per cent concordance between MZ twins. As is detailed in the following sections, there are a wide range of other factors that may influence drug use.

c Heritability refers to the extent to which genetic individual differences contribute to individual differences in observed behaviour (also known as phenotypic variation). Individual differences in behaviour may be due to genetic or environmental factors, and/or random chance.

4.2.2 Concurrent disorders

Psychiatric illness is thought to strongly influence the use of drugs. In recent years, a considerable amount of research literature has documented associations between drug use and dependence, and a range of psychiatric disorders.[14-17] This comorbidity[d] has been observed for a diverse range of drugs, and is associated with negative outcomes for both the persistence and severity of drug use and psychiatric illness.[2]

It should be noted that a proportion of the overlap between drug use and mental illness may be definitional. This is because of the difficulty in separating out true underlying disorders from behaviours that develop as part of drug use. The effects of drugs on mental health are explored in more detail in **Chapter 3**.

Available clinical, neurobiological and epidemiological evidence is yet to identify a unified explanation as to why there is such a high concordance between drug use and mental illness.[2] A number of different explanations have been suggested to account for this relationship.

It is assumed that the presence of an initial psychiatric illness may, either directly or indirectly, increase the risk of drug use. One of the most widely cited explanations of this causal relationship between psychiatric illness and drug use is that drugs are used to self-medicate the negative pervasive symptoms of psychiatric illness. [2,18]

It may be that the direction of this relationship is reversed, and that drug use acts as a precursor to biological changes that are known to be involved with psychiatric illness.[2] Research from the USA has suggested that high levels of cocaine use are associated with the development of psychotic symptoms.[19,20] A similar pattern has been observed for cannabis,[21-25] opioid drugs and amphetamines.[26]

Alternately, it may be that there is a shared aetiology to drug use and mental illness, in which a specific factor, such as a common genetic predisposition, increases the risk of both mental illness and drug use.[2] Epidemiological data from the USA indicate the lifetime rates of major depression are 32 per cent in cocaine users, and up to 13 per cent among non-users of cocaine, which is suggestive of some common cause.[2] It may also be that shared environmental influences account for this comorbidity.[2,26]

d Comorbidity refers to the co-occurrence in the same individual of more than one psychiatric disorder.

Available longitudinal investigations provide little in terms of disentangling the relationship between mental illness and drug use. This is both because the evidence from these investigations is considered relatively weak in determining causality, and because they are limited in number. From available research, there is supporting evidence for each explanation.[2] It may be the case that each of these explanations is correct, and the extent to which any one is at work is related to a complex range of factors that are specific to the individual.

4.2.3 The psychopharmacology of individual drugs

Aside from an individual's own biological predisposition, which may put them at an increased risk of using drugs, the extent to which a drug can influence an individual's behaviour is related to a drug's psychopharmacology (see **Glossary**).

Drugs alter the normal functioning of brain mechanisms that exist to regulate the functions of mood, thoughts and motivations.[2] There is considerable variation in relation to the particular types of neural receptors (see **Glossary**) and neurotransmitters that drugs affect in the brain, and consequently the extent and nature of their physiological effects on the brain and behaviour.[2] It should be noted that almost all psychoactive substances with reinforcing properties share the common property of activating mesolimbic dopamine, which plays a critical role in models of learning theory.[2] The role of dopamine is considered further in **Section 4.3**.

A component of why individuals may wish to use drugs is to elicit an alteration in normal brain function. This may include the desire to experience pleasure or to avoid pain (the desired effects of commonly used illicit drugs are explored in greater detail in **Appendix 2**). Thus, at a biological level, both the immediate and long-term reasons for why people may use a drug can be rationalised by understanding how that drug affects the brain at the pharmacological level.

The repeated use of drugs may contribute to their continued re-administration through the development of physical symptoms. These include:

- **tolerance**: which can be defined as a given drug producing a decreasing effect with repeated dosing.[2] Tolerance to a drug can be both physical and psychological, with psychological tolerance often having a greater effect on influencing behaviour. Tolerance influences repeated drug use, and as a result larger drug doses must be administered to produce a similar effect
- **withdrawal**: which is the body's reaction to absolute or relative withdrawal of a drug. Withdrawal is associated with a range of significant negative physical and psychological outcomes, and in certain cases can be fatal. Withdrawal can be alleviated by readministering the drug, which contributes to its repeated use.[2]

These two factors may influence the continued use of drugs but, as highlighted in **Appendix 2**, the potential to develop tolerance and withdrawal states varies with individual drugs.

4.3 Psychological factors

4.3.1 Personality type

There is evidence that certain personality characteristics can be considered predisposing vulnerabilities for drug use.[17,27] The use of drugs is also thought to contribute to the development in changes in personality.[17, 27]

Personality traits of impulsiveness, sensation seeking and negative emotionality have been associated with an increased risk of using drugs.[28-31] Sensation seeking has been defined as a need to seek intense sensations, along with the willingness to take risks for the sake of having such experiences. Among those with sensation seeking as a personality trait, under-responsiveness to natural rewards and the need for greater stimulation has been suggested as motivation for drug taking.[28] Individuals with high levels of impulsivity have a tendency to act quickly without forethought and planning.[29] Evidence suggests that a lack of forethought and inhibitory control over behavioural impulses may play a role in perpetuating drug use.[27,30] Longitudinal studies have found that impulsivity in childhood predicts experimentation with drugs in later adolescence and early adulthood.[31] High scores on measures of negative emotionality have also been associated with future drug use.[27]

Continued use of drugs has been associated with behavioural, cognitive or affective changes to personality.[17,27] The social withdrawal, irritability and negative emotionality often observed among drug-dependent groups may be better attributed to drug-induced anxiety and depressive syndromes.[27]

Further perspectives have suggested a different explanation for the association between personality type and drug use. Personality traits have been documented to have a substantial heritable component.[32] Rather than personality influencing drug use, or drug use influencing personality, it may be that there is some common genetic factor that predisposes an individual both to have certain personality traits and to be at an increased risk of using drugs.[32]

4.3.2 Models based on learning theory

Learning-based theories have been developed from classical and operant conditioning paradigms of response reinforcement. These models seek to explain addictive behaviour as pairings between a drug, drug-associated stimuli,[e] and the effect of taking a drug. Enduring changes to behaviour result from, or are influenced by, these interactions. Learning theory may be useful to understand how drug use becomes a facet of identity, and the implications this may have on treatment. In these instances, specific maladaptive traits may become reinforced over time, through the acquisition of drugs or perceived protection against negative experiences (see **Chapter 8** for further information on the 'addict identity').[27]

It is necessary to recognise that drugs are rewarding. The rewarding properties of drugs can include sensations of pleasure or relief of pain, tension or fatigue, as well as the ability to enable the user to escape negative feelings or emotions. Thus, the drug is used, it has rewarding effects, and this reinforces repeating this behaviour (ie it influences the continued use of the drugs).[2]

This relationship can be understood at a biological level. As explored earlier, drugs influence the normal functioning of the brain. The use of psychoactive drugs causes activation to areas of the brain that are normally involved in motivation, such as the mesolimbic dopamine system (see **Section 1.1.3**). This causes the release of dopamine, the neurotransmitter released in response to any positive event or reward.[2] Any release of dopamine leads to a strengthening of the synaptic connections in the neural pathways.[2,33,34] This reinforces the behaviour that resulted in a reward, making it more likely to be repeated.[2] Psychoactive drugs can activate the mesolimbic dopamine system, either directly or indirectly, and, through associative learning processes, stimuli associated with drug use and drugs can themselves begin to influence behaviour.[2]

Classical conditioning

Classical conditioning (sometimes known as Pavlovian conditioning) can be simplified as learning through association. Theories based on classical conditioning are often used to explain complex behaviours, such as drug craving.[f,2,35] Under a classical conditioning model, drug craving arises because of the repeated pairing of environmental stimuli with the rewarding properties of drugs.[30]

e Drug-associated stimuli could include environments where drugs are taken, the presence of drug dealers or drug users, or the sight of drug paraphernalia.

f Craving is to have a strong or incontrollable want for something (*Cambridge Dictionary*).

To the individual using drugs, neutral stimuli associated with drug use, such as drug use paraphernalia, or environments where drugs have previously been consumed, can begin to exert influences on behaviour. Research has demonstrated that after repeated drug administration, cues that precede drug ingestion, such as the sight of a needle and syringe, elicit craving for drugs.[36] A formulation of how this process takes place is as follows:

- a stimulus, such as a syringe, elicits no particular drug-related response, ie it is a **neutral stimulus**
- when an individual uses a drug such as heroin intravenously via a syringe, it reliably elicits a response: a drug-related high. The drug is the **unconditioned stimulus**, and the drug-related high is the **unconditioned response**. The unconditioned response occurs in response to the unconditioned stimulus
- the **unconditioned response** (heroin) is repeatedly paired with the **neutral stimulus** (syringe)
- eventually, the **neutral stimulus** (syringe) alone is able to elicit a **conditioned response**, which is to crave using heroin.

Operant conditioning

The theory of operant conditioning (also known as instrumental learning/conditioning) has also been used to describe why people use drugs. If classical conditioning can be seen as learning through association, then operant conditioning can be seen as learning through reinforcement.[2,35]

In contrast to classical conditioning models, where the individual has no control over the presentation of a stimulus, with operant conditioning it is the individual's own behaviour that produces the stimulus.[2,35]

Operant conditioning explains that behaviour is repeated because of the emotional consequences attached to that behaviour.[2,35] If use of a drug produces a reward, such as a state of euphoria, or alleviates withdrawal symptoms, it is more likely to be repeated.[2,34] If use of a drug leads to an non-rewarding, aversive state, such as acute intoxication, then a behaviour is less likely to be repeated.[2,35]

Social learning

Social learning theory has also been used to explain influences on drug use. Social learning theory extends the concept of operant conditioning as a basis for addiction, to learning through observation and communication. Social learning theory posits that individuals may be influenced in their decision to use drugs through observing role models in their environment and perceiving social norms in relation to drug use.[35] Social learning theory explains that individuals will repeat behaviours they observe to have a positive outcome, and avoid behaviours they observe having a negative outcome.[35] According to social learning theory, the more frequent and intense the

observed positive element of drug taking, the more likely it is that it will become habitual.[35] The more frequent or intense the observed negative drug-associated experience, the greater the likelihood that it will be avoided. Social learning theory is often used to describe the influence of peers and family on drug use.[35]

4.4 Social factors

4.4.1 Family

Family conditions during childhood are associated with illicit drug use.[7,37,38] Beyond the genetic characteristics shared within a family, there are a range of familial factors thought to influence drug use. As described in **Section 4.3.2**, social learning theory suggests that one of the mechanisms by which behaviour is acquired is through imitation and modelling of others. The role of the family's attitudes towards drug use may play a role in this regard. As well as this, atypical family relationships may also influence drug use. Research has indicated that the family factors that contribute to individual differences in drug use include:

- single-parent, or step families[39-42]
- substance use among family members[43]
- poor parent-child relationships[44,45]
- family conflict[46]
- poor parental supervision.[43]

It should be noted that there may be other environmental factors that influence drug use, and it can be difficult to disentangle these factors from the influence of family conditions. This is because families share the same environments. These confounding variables may include social inequalities and the role of peer influence.

Family structure

A number of studies have suggested that family structure may play a role in individual development and functionality, including drug use. Research among 14 to 15 year olds in five European countries, including England, found that living with both biological parents was generally associated with reduced levels of drug use.[39] Similar research reported a significant association between illegal drug use and broken family structure among 10 to 12 year olds in Glasgow and Newcastle.[47] In comparison, those living with both biological parents had the lowest past illegal drug use.[47] The highest levels of drug use were found among those living with reconstituted families (step families).[47] Similar findings were reported in research among Scottish adolescents, with a greater level of lifetime illegal drug use reported among those from single-parent families.[48]

Family substance use

The use of drugs within the family environment may influence subsequent drug use. Research among Scottish pupils reported that almost half of those who had used drugs had a family member that also used drugs.[49] This compares with around 10 per cent of non-using pupils having a family member that used drugs.[49] In the majority of cases, the drug-using family member identified was a sibling or cousin.[49]

Family relationships

As well as family composition and behaviour, the quality of family relationships may influence drug use. Research among British adolescents reported that those who thought their parents' opinions were most important were less likely to regularly use drugs.[50] In comparison, those who valued their friends' opinions highest reported greater drug use.[50]

Parenting style may also influence levels of drug use. Research has reported that families that lack parental monitoring, that have high levels of parent–child conflict, or where children are unwilling to disclose information to their parents, have higher levels of drug use.[48] The association between lack of parental monitoring and drug use at the age of 15 years has been shown to be particularly strong.[48] Stattin and Kerr have posited that a lack of parental monitoring may result from children disclosing too much information about norm-breaking behaviour to their parents.[51] This knowledge causes parents to abandon monitoring their children's behaviour, which has consequent impacts on drug use.[51]

Protective factors

The family environment may also exert effects that protect against the use of drugs. Positive family relationships and communication may guard against future use of drugs.[39,40] Any benefit in living with both parents is thought to be undermined in instances where drug use among peers is high.[39]

4.4.2 Peer influence

Peers may influence whether an individual engages in or refrains from drug use.[52,53] Peers may influence individuals directly, such as by offering drugs, or indirectly through social modelling and perceived norms.

Drug use appears to occur often within a peer-group context. Research has reported that adolescents who spend more time with their friends are at an increased risk of drug use.[54] American research has found that youth spending five or more evenings each week out with friends are at greater risk of drug use than those spending fewer nights out.[54] From a British perspective, research has indicated that lifetime cannabis users are less likely to spend time regularly with their parents, and more likely to spend free time with drug-using friends.[45] Research conducted among Swiss school

students reported a close association between pupils witnessing students coming to school cannabis intoxicated, or taking cannabis onto school premises, and their own cannabis use.[52] It should be noted that this research does not identify the direction of this relationship, in terms of whether cannabis-using peers influence students to use cannabis, or whether cannabis users choose to associate more with other cannabis users.

The relationship between peer groups and drug use is complex, and may function in different ways. Individuals often identify themselves as a member of a group on the basis of shared behaviours or beliefs. They may adopt behaviours to increase their sense of belonging to a group, or to become accepted as a group member. Alternatively, the high concordance between peer group and drug use may be a result of individuals seeking out peers with similar interests and behaviours to their own. Consequently, peer-group homogeneity may result from processes of selection into groups, or conformity to existing members of a group.[55] Social learning theory may explain peer drug use, as drug use is encouraged by observing drug using among role models. Decisions to use drugs are made on assessments of the consequences of drug use, and the perceived punishments or rewards reinforce the decision to engage in or refrain from the behaviour.

McIntosh et al reported that the impact of peer pressure declines with age.[53] Research involving 11 to 14 year olds in Scotland and England reported a decrease with age in the influence of peer pressure when experimenting with drugs.[53] It is suggested that the declining role of peer pressure results from drug-using peers moving away from viewing drug use as a form of risk taking, and instead to drug use as an enjoyable activity.[53] The decision to experiment with drugs becomes increasingly a matter of personal choice rather than one of external influence.[53]

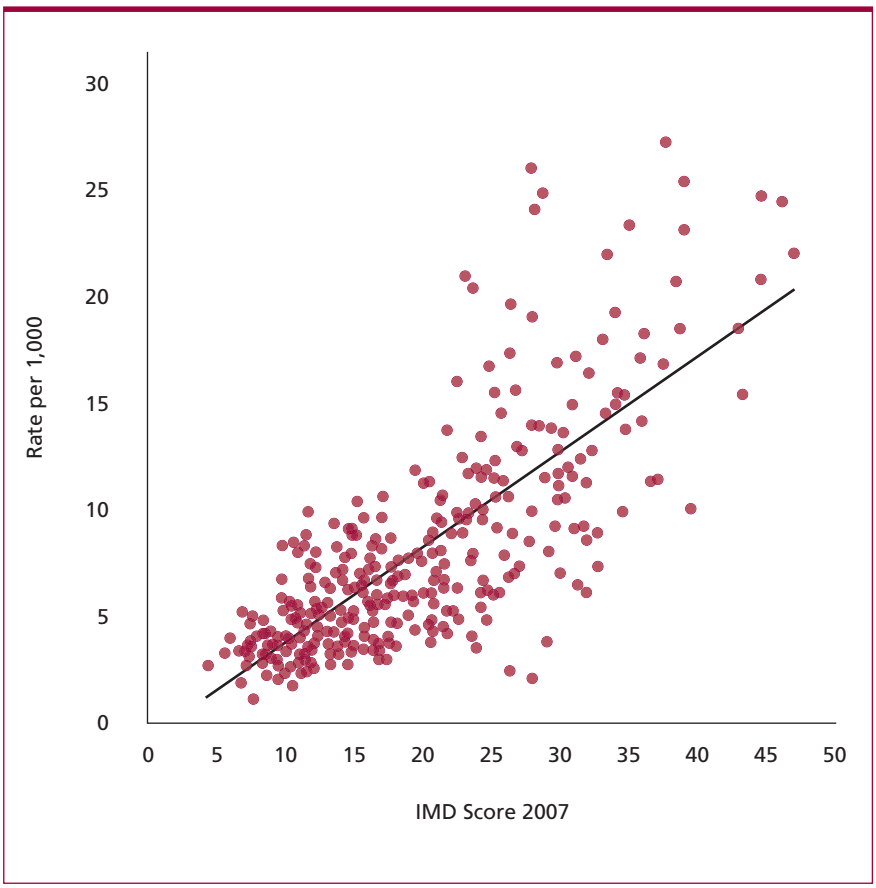
4.4.3 Social inequalities

Social inequalities refer to people in different socioeconomic groups experiencing a different quality of life. These differences include avoidable differences in health, wellbeing and length of life.

Cannabis use has been found to be greater among those living in areas of lower deprivation.[56] It has been suggested that this is because cannabis users more frequently come from less-deprived backgrounds.[57] Teenagers and young adults from poorer backgrounds have less discretionary cash to purchase drugs. This suggests there is an effect of affluence on drug use, at both the individual and neighbourhood level.[58] Social deprivation does appear to influence the harmful use of drugs. The Marmot Review suggested that, in the UK, the likelihood of problematic drug use is related to socioeconomic status, noting a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation (see **Figure 6**).[59] Similarly,

hospital admission rates for drug-specific conditions for both male and female individuals have shown a strong positive association with deprivation.[59]

Figure 6 – Prevalence of problematic drug users aged 15 to 64 years, by local authority of residence and Index of Multiple Deprivation (IMD),[g] 2006-2007



Source: North West Public Health Observatory (2010) *Indications of public health in the English regions. 10. Drug use*, p51, scatter plot 1. Liverpool: North West Public Health Observatory.[57] Reproduced with the permission of the North West Public Health Observatory.

g The Index of Multiple Deprivation (IMD) is a measure used in UK Government statistical study of deprived areas in UK local authorities. A low IMD score indicates an area of low deprivation.

4.4.4 Stigmatised groups

Stigmatised groups are prone to earlier, more frequent, or more problematic drug use.[60] For the less affluent in particular, drug use can cause stigma, and can be how people end up in these groups. It is thought they might also experience faster progression to problem drug use.[60] Among certain stigmatised groups, socioeconomic inequalities appear to play a substantial role in their stigmatisation.[60] Problematic drug use is just one of a number of behaviours, such as poor diet and lack of exercise, associated with negative health outcomes.[60]

Groups that are considered vulnerable include, but are not limited to:

- young people within care institutions
- sex workers
- homeless populations
- victims of traumatic experiences.

Young people within care institutions

Young people in care institutions, such as residential or foster care, face distinct developmental challenges. In comparison to the normal population, these include accelerated social independence, not completing formal education, and high unemployment upon leaving care.[61]

Research has identified that those in care are at an increased risk of earlier initiation into, higher levels of, and more frequent use of drugs, including heroin and crack cocaine.[61-64] Research using twin studies has shown that those using cannabis in care institutions before the age of 17 have an increased risk of other drug use and dependence, when compared to their non-drug-using co-twin.[65] The risk of other drug use and dependence is estimated to be 2.1 to 5.2 times higher than that of their co-twin.[65]

A range of factors are thought to explain the high proportion of drug use among this population. These factors include carer use and challenging life events, such as bereavement, rejection, early independence and responsibility, sex work and the transition from care.[64] In addition, some young people within care institutions may have grown up in homes where parental problematic drug use was evident. As has been highlighted previously, parental use of drugs may influence their children's drug use.[66] Parental drug use may also be a compounding factor in preventing children from returning to the care of their parents. This separation from their parents may further increase the risk of young people using drugs.[61]

Sex workers

Sex workers are thought to be at an increased risk of using drugs. Explanations for this increased risk include sharing environmental space on streets and in the dealing houses, which serve as sex markets, drug markets and areas where homeless people congregate.[67] In one study, 84 per cent of those sex workers who work outdoors reported having a current drug problem.[67] This compares with just 13 per cent of sex workers who work indoors.[67]

There are few reliable data on the prevalence and patterns of drug use among this population. Evidence on whether drug use is a cause or effect of sex work indicates that both are possible. Research suggests that drug use is often a motive for prostitution, but could also be a consequence and maintaining factor.[67] Sex work and drug use may be mutually reinforcing, such that 'exiting' either becomes more difficult. Their mutually reinforcing potential is strengthened where individuals are exposed to 'trapping factors'.

These include:

- involvement in prostitution and/or 'hard drug' use before the age of 18 years
- sex working 'outdoors' or as an 'independent drifter'
- experience of at least one additional vulnerability indicator, such as being 'looked after' in local authority care or being homeless.[66]

Homeless populations

Homelessness occurs on a continuum ranging from 'rooflessness' or sleeping rough, to living in bed and breakfast accommodation and hostels, to an inability to leave unsatisfactory housing conditions. Homelessness has been associated with increased use of drugs.[68] In addition to drug use, homelessness is also associated with social exclusion, which includes poor and unhealthy living conditions, unemployment, low education, socially disadvantaged background and poor physical health. There may also be a high level of psychiatric illness among homeless populations.[61]

The association between homelessness and drug use is largely recognised in the literature. Research among homeless people in London found that 60 per cent reported that their substance use was one of the reasons they first became homeless.[69] Having become homeless, 80 per cent reported subsequently using drugs.[69] Overall, drug use, injecting, daily use and dependence have been found to increase, the longer that individuals remain homeless.[69]

A 2003 Home Office piece of research into young homeless populations found young homeless people reported high lifetime, last-year and last-month prevalence rates for drug use. This included illegal drugs and illicit use of prescribed medication.[70] Ninety-five per cent of young homeless individuals had used drugs.[70] Often they had begun experimenting with illegal drugs at a young age, typically aged 14 years.[70] Levels of use of cannabis, amphetamine and ecstasy were also high among this population, and a substantial minority reporting use of heroin and crack cocaine.[70]

Victims of traumatic experiences

Adverse experiences are thought to play a role in influencing drug use. Early adverse experience, such as childhood sexual or physical abuse, have been associated with an increased vulnerability to drug use.[71]

There is evidence that individuals who have experienced some form of trauma at a young age are at an increased risk of developing problems with drug use.[72] Research among US childhood victims of physical abuse, sexual abuse or neglect estimated that these individuals are up to 1.5 times more likely to use illicit drugs.[73] Similar research among American students demonstrated that the highest levels of drug use were found among students who reported both physical and sexual abuse.[74] In addition, victims of any form of abuse reported initiating drug use earlier and greater multiple drug use, when compared to their non-abused peers.[74] Research has also demonstrated that emotional abuse is associated with higher levels of drug use.[75] Trauma in later life is thought to be associated with drug use, but the evidence base for this association is not well established.

Although clinical data confirm a relationship between adverse experiences and drug use, it is not known whether this relationship is direct or indirect. It is thought that the high concordance between drug use and victims of trauma may, in part, be explained by individuals using illicit drugs to cope with negative emotions, feelings and experiences. Among drug-using school children who have been sexually and physically abused, explanations for use include coping with painful emotions and escaping from their problems.[74] It may also be that traumatic experiences indirectly impact on drug use. It has been well established that childhood maltreatment may result in a number of emotional and psychological consequences, such as depression, anxiety, suicidality, low self-esteem and personality disorders.[76] The association between mental health and drug use has already been highlighted in **Section 4.2.2**.

4.5 Access to drugs

4.5.1 Price

Price appears to influence the use of drugs. It was previously believed that the addictive nature of drugs meant drug users were not sensitive to changes in price, but research has demonstrated that drug users are responsive to price.[1,77] This estimated responsiveness to price (elasticity of demand[h]) varies by drug and user type;[i] in almost all cases, the number of users and the quantity of drugs consumed declines when prices are increased – in some cases substantially.[1,77] Further evidence for how price affects different types of drugs, and users, is presented next. It should be noted that, given the illegal nature of drug use, the price data reported are often of low quality (see **Section 6.3.2**).

Cannabis

American research has estimated that, among high school students, responsiveness to the price of cannabis is about –0.30.[78] Research in Australia, which investigated cannabis use among adult populations, demonstrated a much larger responsiveness of –0.88.[j,79]

Cocaine

Responsiveness to price has been shown for cocaine. Research conducted in 1999, using data from the US National Household Survey on Drug Abuse between the years 1988 and 1991, estimated a price responsiveness of between –0.30 and –0.55.[80] Among youth populations, the responsiveness to the price of cocaine was –0.89 and –1.28.[k,80] More recent research, conducted in 2006, estimated that among US college students, the responsiveness to the price of cocaine is as high as –0.57, depending on age and sex.[81] It is interesting in this context to note that the price of cocaine in the USA has fallen by around 70 per cent since its peak in the late 1970s, but use has fallen by almost the same amount.[82]

h Price elasticity of demand is a measure used in economics to show the responsiveness, or elasticity, of the quantity (proportion) demanded of a good or service, in relation to a change in its price. More precisely, it depicts the change in quantity demanded, in response to a 1 per cent change in price. Price elasticity, or responsiveness to price, is almost always depicted as negative – a rise in price reduces demand. Demand is described as 'inelastic' if it is numerically less than –1.0, but this does not mean that there is no responsiveness to price.

i In the context of drug use, elasticity of demand comprises two components: the 'participation response' – the decision to use the substance – and the 'intensity response' – the amount a continuing user consumes.[1]

j The figures –0.30 and –0.88 both refer to the participation elasticity, ie the decision to use the drug.

k The participation elasticity was –0.89 and the overall elasticity was –1.28.

Heroin

It is unclear whether the responsiveness to changes in the price of heroin is similar to that seen with cocaine and cannabis.[1] This is because the evidence base for heroin use is poor. Responsiveness to the price of cannabis and cocaine is generally extrapolated from general population surveys that provide information on the prevalence of cocaine and cannabis use. General population surveys do not report on the prevalence of heroin use. This is, in part, because heroin users generally live too chaotic a lifestyle to allow their inclusion in such samples.

Research between 1993 and 2006 among clients in needle exchanges in Oslo, estimated a price responsiveness of –0.77 for heroin users.[83] It should be noted that these findings are conditional on the user injecting heroin. Research among US arrestees testing positive for heroin estimated that the responsiveness to heroin prices was between –0.10 and –0.18.[84] Research that examined the impact of US heroin prices on admissions to emergency rooms for heroin use found that responsiveness to price among this population was only –0.10.[85] These trends underline that, at least in the medium term, the demand for drugs is responsive to other factors besides price.

4.5.2 Physical availability of drugs

The physical availability of drugs refers to the proximity and accessibility of a drug. Logic dictates that if a drug is not physically available, then it cannot be used. As explored previously, a range of factors influence drug use, and while the physical availability of drugs plays a role in their use, it cannot be considered the sole influence on whether they are used.

Available evidence suggests that the physical availability of drugs does not impact on levels of drug use. Research from the USA has suggested that the physical availability of drugs is often concentrated in neighbourhoods with high levels of economic disadvantage, greater population density and high concentrations of minority residents.[86,87] Levels of use were reported to be similar to those seen in affluent neighbourhoods.[86,87] Socioeconomic status appears to influence problematic drug use, so the physical availability of drugs may impact use among those who are already using drugs problematically.

4.6 Psychological attractiveness and societal acceptance

4.6.1 Popular media

The popular media, which include film, television, music, video games and the internet, together with increasing exposure to celebrity lifestyles, form a dimension of people's social environment. Available evidence suggests that popular media may influence health behaviours. Research has demonstrated that popular media portrayals of pro-alcohol and smoking imagery can influence the uptake of these substances.[23,88-90] While research into the influence of popular media on drug use has received much less attention, a similar effect appears to be present.[92-96] There is little evidence demonstrating that popular media has a protective impact on drug use.[97,98] The efficacy of mass media approaches in delaying initiation into and minimising the use of illicit drugs is explored in **Chapter 7**.

4.6.2 Films

Films often address and depict health-related behaviours. With the cinematic film industry grossing billion of pounds in profits, and with the globalisation and proliferation of home-based media technologies, there is the potential for film to influence the behaviour of large numbers of people.

The use of illicit drugs is often portrayed in films. A content analysis of the top grossing US films from 1999 to 2001, found nearly two out of five teen characters in films used illicit drugs, and were unlikely to be shown suffering any consequences of their drug use (either positive or negative, or short or long term).[99] Australian research from 2005 analysed the portrayal of drug use among the most popular 200 films globally, from 1985 to 2005. It was found that cannabis was portrayed in 8 per cent of films, with each film depicting the use of cannabis up to a maximum of 10 times.[100] Cannabis use was only shown in a positive or neutral light, with no negative depictions or consequences.[79] This is similar to the findings related to the effects of marketing and imagery on tobacco and alcohol use.[88,101]

The available evidence suggests that films have the potential to model behaviour, and communicate normative propositions about health-related matters, such as illicit drug use.[102] Research has suggested that portrayals of drugs have an impact on drug use in the UK. A 2011 cross-sectional study of over 1,000 13 and 15 year olds from the west of Scotland explored incidents of witnessing drug use in films, and subsequent drug use, and found an association between film exposure to illicit drugs and using cannabis.[92] This association persisted after adjusting for sex, social class, family structure and levels of parental control.[92] The association did not exist when controlling for other variables, including personal characteristics, such as risk taking, rule breaking, achievement of school qualifications and friends' substance use.[92] It is difficult to interpret these findings, given the cross-sectional nature of this analysis, which makes

conclusions about the direction of any relationship problematic. One explanation is that young people who take drugs not only are more inclined to do this in the company of like-minded friends, but may also share, or develop, similar tastes in cultural representations of drug use, which may in turn determine the kinds of films they choose to watch.[92] Conversely, portrayals of drug use could directly influence an individual's uptake of drug use, which could itself influence the friendship groups that an individual may choose to maintain.[92]

4.6.3 Television

Television watching is widespread throughout the UK. There is the potential for images on television to reach a broad range of UK society, although the evidence that portrayals of drug use on television influence behaviour is less well established than for other media. Given the evidence that film influences drug use, and the obvious similarities between these two media, it is not unreasonable to assume similar effects occur with television.

Portrayals of drug use on UK television appear to be relatively sparse and predominantly negative (see **Box 4**). A 2005 review by Ofcom, which assessed a snapshot of television for content, including drug references, found that overt or implied drug users comprised 0.4 per cent of the television characters included in the sample.[102] Drug scenes were most likely to provide an antidrugs message, with 57 per cent of scenes reviewed assessed as carrying a negative message, 40 per cent a neutral message and 3 per cent a mixed message.[102] There were no drug scenes assessed as portraying a positive message about drugs.[102]

Box 4 – Example of drug reference in television

Holby City

Gabby is in hospital after taking too many drugs and consequently gave birth 3 months early. The baby is on life support and unlikely to survive. Her boyfriend Leo blames her for taking the drugs, and himself for supplying them. Gabby says she can't think straight and wants Leo to ask the doctors for some drugs so she can say yes to turning off the life support machine. Leo says that he cannot believe she is more bothered about her next fix than her dying baby.

Source: Ofcom (2005) *Smoking, alcohol and drugs on television: a content analysis*. London: Ofcom.[102] Reproduced with the permission of Ofcom.

4.6.4 Music

As with other forms of media, exposure to music and the impact on drug use has received little attention. There are a range of reasons why music may influence health behaviours. Music is related to personal identity, and people often model themselves after musical figures, in terms of dress, behaviour and identity.[103-105] Exposure to modern music is ubiquitous.

Reference to drug use in certain types of music is common, and appears to influence drug use. American research from 2008 found that explicit substance use is represented in around one-third of the most popular songs in the USA, with alcohol and cannabis referenced most frequently.[106] Overall explicit substance use is portrayed most frequently in rap music, and least frequently in pop music.[106] References within music to substance use are most commonly motivated by social pressure and sex, and are associated with partying and sex.[106] The social, sexual, emotional and financial consequences of drug use are most commonly depicted as positive.[106] The legal and physical consequences of drug use are more commonly depicted as negative.[106]

Robust research on exposure to drug references in UK music has not taken place, so it is not possible to make a reliable assessment of drug exposure in UK music. Due to the increasingly globalised trends in music in developed countries, there is a large degree of international crossover in styles of music. It is not unreasonable to take figures reported in the USA as a crude estimate of what is taking place in the UK.

Research has suggested that exposure to drug references in music influences cannabis use. American research from 2010 looked specifically at cannabis exposure in popular music and current cannabis use among students aged 14 to 15 years.[92] It was reported that high exposure to references to cannabis in popular music was independently associated with higher levels of current cannabis use.[93]

4.6.5 Celebrity

The reach of entertainment media provides unprecedented public access to the lives of celebrities. Public knowledge of the personal lives of media personalities is greater today than it has ever been. This is particularly true among young people.[107] Research from 2001 reported that of those surveyed, 59 per cent of young people stated that their celebrity idol had influenced some aspect of their attitudes or beliefs.[108]

Research has suggested that celebrities may have both a positive and negative impact on drug use, although this is not conclusive. Research from 2010, which examined Diego Maradona's influence on drug use (an Argentinean footballer with a history of involvement with drugs), found that those who had a greater degree of

parasocial interaction[l] with Diego Maradonna were more likely to have an increased awareness of drug abuse, a greater personal concern about drug use, abstain from drug use, and strongly support drug-use-prevention programmes.[94] In contrast, identification with Maradonna had a mitigating effect on prevention of drug use.[94] These findings suggest that notable celebrities may have a role in reducing drug use, and a conflicting role in increasing drug use.

4.6.6 Video games

Leisure activities have changed over the last 10 to 15 years, with the use of new technologies such as video game consoles taking up a large proportion of free time.[95] This increase in video game use is set within a context of leisure time that is increasingly being occupied by the use of electronic devices.[95]

The number and types of depictions of drug use in video games is less clear than for other forms of media. The most recent content analyses, from 2004 and 2005, of US teen- and mature-rated video games found that only a handful of video games depicted drug use in any format.[109,110] It should be noted that the video games industry is a continually expanding market, and it is likely that the number and complexity of video games on offer since these analyses were conducted has increased dramatically.[96] The number of depictions and types of drug use portrayed in video games are potentially much higher than the available figures suggest.

Given the relative paucity of evidence examining the frequency of video game use, and how this impacts on behaviour, it is not clear whether video games affect drug use. One American research study has suggested that video game use is positively related to drug use.[95] The direction of this relationship, in terms of games influencing drug use, or drug users being more drawn to games, is unknown. It is not possible to determine whether use of video games plays a direct role in use of drugs, or if it impacts drug use indirectly, by taking time away from activities that have been shown to have a protective influence on drug use.[95]

l Parasocial interaction is a term used in social science to describe one-sided, interpersonal relationships in which one party knows a great deal about the other, but the other does not.

4.6.7 The internet

Given the rapid advancement in the internet as a means of finding and disseminating vast amounts of information, it represents a developing area in terms of drug exposure and use. A 2009 piece of exploratory analysis on drug website viewing among 12 to 18 year olds in America, found that 5.4 per cent of youths had visited antidrug websites, 1.7 per cent had visited websites that discussed drug use in a positive light and 3.2 per cent had visited a mixture of both.[96] Viewing of websites encouraging drug use was associated strongly with drug-use behaviours.[96]

The extent to which internet use may influence drug use is unknown. From the limited available evidence, it appears that internet use may influence drug use in a more complex manner than is seen with other forms of popular media.[95] This complexity appears to arise from the type of internet use engaged in by an individual, with some use encouraging drug use, and other forms of internet use protecting against it. When the internet is mainly used for chat rooms, shopping, entertainment and pornography, an increase in the use of drugs has been found.[95] Conversely, when the internet is used for activities such as school work, it is associated with less drug use.[95] The content or purpose of internet use may be significant, in terms of use of illicit drugs.

Summary

- Drug use is widely held to be a multifaceted biopsychosocial phenomenon. No single biological, psychological or social factor is exclusively responsible for drug use.
- Family-based, adoption and twin studies have shown a substantial genetic component to drug use. Comorbid psychiatric illness and personality type have also been shown to be strongly linked to drug use.
- The rewarding potential of drugs, such as sensations of pleasure or relief from pain, may play a role in reinforcing the continued use of drugs. The use of drugs activates the mesolimbic dopamine system in the brain, strengthening neural connections, which influences the repetition of drug-related behaviours.
- A drug's potential to lead to tolerance and withdrawal may influence its continued use.
- The environmental or social factors commonly attributed to problematic drug use include family composition, behaviour and relationships, peer influence, social inequalities and being a member of a stigmatised group.
- Positive family relationships and communication may guard against future use of drugs. Living in a single-parent or step family, substance use among family members, family conflict and poor parental supervision are all indicators for drug use in young people.

- Stigmatised groups are at increased risk of drug use; these include young people in care institutions, sex workers (particularly those who work outdoors) homeless populations and victims of traumatic experiences.
- Evidence shows price has an impact on drug use but the effect is not the same for all types of drugs.
- Evidence of the effect of portrayals of drug use in popular media on drug use are limited and difficult to interpret. There is some evidence that portrayals of drug use in film have an impact on drug use in the UK. Notable celebrities may have a role in either reducing or increasing drug use.

Chapter 5 – Drug policy in the UK: from the 19th century to the present day

5.1 Introduction

The need to address problems associated with drug use is not a new phenomenon. As discussed in **Chapter 6**, a key question is what the primary aim of drug policy and legislation should be. At one end of the spectrum, it could simply be to reduce or eliminate illegal drug use, while at the other end it would focus entirely on the health and social problems of the individual drug user, by considering drug dependence as a chronic medical disorder. These are two examples of possible foci: the question is discussed in detail in **Chapter 6**.

Current policy in Britain takes account of both viewpoints, as well as the wider social and economic factors associated with illicit drug use (see **Chapters 3** and **6**). This chapter examines the development of drug policy in Britain since the mid-19th century and the rationale behind current policy.

5.2 The beginnings of drug control in Britain

Opium eating and laudanum (an alcoholic solution of opiates) consumption were widespread in mid-19th century Britain. Opium, and its derivative morphine, were available as patent medicines, in tinctures and other commercial products that were readily accessible through chemists and herbalists. The use of these products declined after the 1868 Pharmacy Act restricted opium sales to the pharmacist's shop, with the Act requiring pharmacists to keep records of the purchasers. The later 1908 Pharmacy Act moved morphine, cocaine, opium and derivatives containing more than 1 per cent morphine into part one of the poisons schedule. At this point, control was on availability and sale and was largely based on self-regulation by pharmacists, with little Government intervention. There was a small population of morphine-using addicts and some opium and cannabis smoking among artistic, mystic and bohemian circles but the population of drug users at the beginning of the 20th century was relatively small. At the same time, British pharmacists and physicians had nearly 40 years' experience of dispensing opiates and attempting to control their use.[1,2]

5.3 Domestic policy developments and international drug control

Meeting Britain's international treaty obligations set the context for the development of British drug policy. Britain became committed to a drug control policy as a result of the international narcotics control system established in the early 20th century. A series of international meetings, largely prompted by American concern about Far Eastern opiate use, laid the bases of the system. Britain's involvement in the Indian opium trade with China through the 19th century was brought to an end by the Anglo-Chinese opium agreement. There was some domestic pressure for drug control, with public and press concern about cocaine smuggling to India and opium and morphine smuggling to the Far East, some of which involved British ships. This was of particular concern in the wartime emergency situation of 1915-1916 and was compounded by reports of cocaine use among soldiers, especially those on leave in London, which was seen as compromising army efficiency. In 1916, the Army Council issued an order prohibiting the gift or sale of cocaine and other drugs to soldiers, except on prescription. This was the first time that a doctor's prescription was required by law for the purchase of specified drugs. When cocaine dealers found ways of circumventing the order, pressure from the press, anti-opium interests, the police and the army resulted in the introduction of the Defence of the Realm Act regulation 40B (DORA 40B) in the same year. The regulation made it an offence for anyone except physicians, pharmacists and vets to be in possession of, to sell or give cocaine. The drug and its preparations could only be supplied on prescription. The Home Office had responsibility for policing DORA 40B and now took on the central role of initiating and shaping the restrictions of drug control policy.[2]

Before the First World War, Britain had been a signatory of the International Opium Convention at The Hague in 1912. This Convention was the first global attempt at drug control and aimed to reduce the use of morphine and cocaine by restricting the manufacture of, trade in, distribution and use of, these drugs to 'legitimate' scientific and medical purposes only. Although it did not specify limiting the use of opium to scientific and medical purposes (and this was, essentially, not covered until 1961 – see **Section 5.7**), signatories agreed to suppress the use of opium and distribution was expected to fall as a result of the Convention. In 1920, Britain was obliged to introduce the first Dangerous Drugs Act to meet the Hague Convention's requirements, while also incorporating the DORA 40B restrictions. The Dangerous Drugs Act laid the foundation of further legislation and control policy in Britain and consolidated the precedence of the Home Office over the Ministry of Health in the area of drug policy. The Act generated little debate at large, with recent sensational accounts of recreational drug use among bohemian circles prompting a political and press demand for a penal approach to drug control.[2] A penal emphasis in policy continued with the 1923 Dangerous Drugs and Poisons (Amendment) Act, which imposed stricter controls on doctors and pharmacists with respect to dangerous

drugs, introduced more severe penalties and higher fines and sentences, and expanded the search powers of the police.[2]

5.4 The Rolleston Committee

The 1920 Dangerous Drugs Act established that medical practitioners were allowed to prescribe morphine, cocaine and heroin but it was not clear from either the Hague Convention or the Act whether prescribing these drugs to addicts constituted legitimate medical work. The population of opiate users at this time was small, largely middle class, addicted to morphine and in the medical and allied professions, or had become dependent in the course of medical treatment. At the suggestion of the Home Office, the Ministry of Health convened an expert committee (Departmental Committee on Morphine and Heroin Addiction) chaired by Sir Humphrey Rolleston, then President of the Royal College of Physicians, to consider and advise on the circumstances in which it was medically advisable to prescribe heroin or morphine to addicts. The report produced by the committee (usually known as the Rolleston Report),[3] reaffirmed the doctor's freedom to prescribe regular supplies of opioid drugs to certain addicted patients in defined circumstances that the committee regarded as 'treatment' rather than the 'gratification of addiction'. While the possession of dangerous drugs without a prescription was still the subject of the criminal law, addiction to opioid drugs was recognised as the legitimate domain of medical practice (and hence prescribing). This balance of a medical approach within a penal framework became a hallmark of British drug control and has been called the 'British System' by commentators.

5.5 Increasing international drug control

The Hague Convention had laid down domestic control obligations for its signatories and not addressed the question of transnational controls. The League of Nations was established after the First World War and provided a centralised body for administration of international drug control. The second Geneva Convention of 1925 was signed under the auspices of the League of Nations and required parties to the treaty to provide annual statistics on drug stocks and consumption, the production of raw opium and coca, and the manufacture and distribution of heroin, morphine and cocaine. The Geneva Convention was also notable in bringing cannabis under international control, and restrictions on cannabis were implemented in Britain with the 1928 Dangerous Drugs Act.

5.6 Growth of drug use in Britain and the 1960s heroin crisis

Until the 1960s, prescribed heroin was the main medication used for treatment of those addicted to morphine and heroin; this population was predominantly aged over 30 years and middle class. This was a settled approach, as a major addiction problem was not apparent in the British drug scene. In the early 1960s, the first reports about the activities of young heroin users began to appear in British newspapers – a phenomenon that was new to Britain. The Home Office convened an interdepartmental committee under the chairmanship of Sir Russell Brain, largely prompted by concern about whether long-term prescribing was still appropriate more than 30 years after the Rolleston Report. The Brain Committee published its first report early in 1961,[4] and concluded that the drug problem remained small and no changes in approach were needed. Increasing media and professional evidence of a heroin epidemic in Britain involving younger heroin users led to a Second Interdepartmental Committee on Drug Addiction, again chaired by Brain. Drug addiction was formulated as a '*socially infectious condition*', for which it was appropriate to provide treatment. The committee concluded that the increase in heroin use had been fuelled by a small number of doctors who were overprescribing heroin and that individual doctors were unable to meet the demands of the new situation. As a result, the committee recommended that restrictions should apply to the prescribing of heroin and cocaine and that new drug treatment centres should be set up within the NHS hospital system.[5] These recommendations were enacted in the Dangerous Drugs Act 1967, which restricted the prescribing of heroin for treatment of addiction to doctors licensed by the Home Office. The doctors who obtained licences were mostly consultant psychiatrists in charge of drug treatment centres. This limitation of doctors' clinical autonomy received some criticism from the medical profession. As this restriction of clinical freedom did not extend to prescribing heroin for medical treatment other than addiction, and GPs were generally reluctant to treat addicts, the change was accepted by the medical profession.[6] The committee's recommendations also led to the introduction of a notification system for addiction (as with infectious diseases). The drug clinics took over the prescribing of heroin to patients who were previously prescribed by private doctors and NHS GPs. Prescription of heroin to addicts declined in the early 1970s, as doctors at the drug clinics were uncomfortable prescribing it. Methadone had recently been developed in the USA as a new treatment specifically for dependence on opioid drugs, and the clinic doctors considered oral methadone was a more suitable medication.

The 1960s also saw widespread use of other illicit drugs by young people, notably cannabis but also LSD and amphetamines. Concern over the use of amphetamines, or 'purple hearts' or 'pep pills' as they were commonly called, led to their control under the Drugs (Prevention of Misuse) Act 1964.[7] While amphetamine use among young people was the first to draw political reaction, cannabis-related convictions increased steeply as use of this drug became more popular in the mid-1960s, and the issue was

hard to ignore. A Home Office Advisory Committee (the 'Wootton Report') in 1968 recommended that the legal penalties for simple possession of cannabis should be reduced and casual users of cannabis should not receive custodial sentences.[8] Despite initial hostile Government reaction, the committee's proposals were implemented in subsequent legislation.

5.7 The UN Single Convention on Narcotic Drugs 1961 and the Misuse of Drugs Act 1971

Further international drug control protocols followed the Geneva Conventions of the 1920s and eventually all the existing international drug control treaties were consolidated in the UN 1961 Single Convention on Narcotic Drugs (see **Box 2**, **Section 1.2**).[9] The Single Convention has four schedules of controlled drugs, ranging from most restrictive to least restrictive. The Misuse of Drugs Act 1971 was introduced to meet the treaty obligations and has an analogous scheme of drug scheduling, with drugs considered the most harmful such as heroin and cocaine classified as Class A drugs (see **Table 1**, **Section 1.2**). The Act also established the Advisory Council on the Misuse of Drugs (ACMD) to keep the drug situation under review and give advice to the Government on measures '*which, in the opinion of the Council ought to be taken for preventing the misuse of such drugs or dealing with social problems connected with their misuse*'.[10] Among its important functions is to recommend classification of new or existing drugs that may be misused. Further details of drugs covered by the Misuse of Drugs Act are given in **Section 1.2**.

5.8 Heroin use grows in the 1980s

The 1980s brought new pressures on the treatment system and Britain's drug control policy, with a new epidemic of heroin use. The numbers of addicts notified to the Home Office and the amount of heroin seized rose dramatically. There was widespread media coverage of this new wave of heroin use, and drug use became an important and sustained policy issue for the first time since the 1960s. The then Conservative Government sought to encourage a coordinated response from across the range of Government departments, by setting up an interdepartmental working group of ministers and officials, which resulted in the first Government strategy document *Tackling drug misuse*, issued in 1985.[11] During the same period, new ways of tackling drug treatment were developed following the recommendations of the *Treatment and rehabilitation* report from the ACMD in 1982.[12] The focus became the broader population of 'problem drug users', seen as a heterogeneous group with a range of problems beyond the use of a drug itself, encompassing social and economic as well as medical problems. The generalist doctor was seen as key to dealing with drug-related problems, and drug use was no longer seen as the sole province of the specialist clinic psychiatrist. The ACMD saw an increasing role for doctors outside the specialist treatment services, with the proviso that there were '*strict safeguards*'.[12] In response to the ACMD recommendations for safeguards, in 1984 the Department of Health and

Social Security issued all doctors with their publication *Guidelines of good clinical practice in the treatment of drug misuse*.[13] Revisions of these guidelines have been published subsequently, most recently in 2007.[14]

5.9 The AIDS epidemic and treatment policy

The late 1980s saw HIV and AIDS become the dominant public health concern. People who injected drugs were seen as a potential route for the HIV virus to rapidly diffuse into the wider community, through the sharing of contaminated injecting equipment. In response to the widespread concern about AIDS, HIV and those who inject drugs, the ACMD set up an AIDS and Drug Misuse Working Group. The resulting report, *AIDS and drug misuse. Part I* provided the template and rationale for a reorientation of drug treatment practice to meet the new challenge of drug use and HIV.[15] The report stated that '*The spread of HIV is a greater threat to individual and public health than drug misuse*'. The ACMD saw that the key aims of drug treatment were to attract seropositive injecting drug users into treatment, where they could be encouraged to stop using injecting equipment and move away from injecting toward oral use. Harm minimisation was the core principle of this policy and received support from the Government. Harm minimisation was characterised by adopting measures that sought to reduce the harm caused by continued drug use, through modification of using behaviours.[15] *AIDS and drug misuse. Part I* and the complementary report *AIDS and drug misuse. Part 2*,[16] continued the policy aim of involving GPs and general psychiatrists more actively in the direct provision of services to address the more general healthcare needs of drug users, while the specialist clinics maintained responsibility for the more complicated needs of the more difficult drug users. Needle exchange services rapidly became mainstream. Their early introduction, together with a range of other harm-reduction interventions, has been seen as critical in preventing the major spread of HIV among individuals who inject drugs that has been seen in other countries where such approaches were not adopted.[17]

Around this time, maintenance prescribing re-emerged in the form of oral methadone maintenance and became increasingly provided by GPs, either independently or in a 'shared care' scheme, as well as by specialist services.[18]

5.10 Crime and a redesign of British drug policy

Through the 1980s, there was a notable increase in use of recreational drugs among the young, not only cannabis but also the new 'dance drugs' such as ecstasy, and there was increasing public and political concern about the link between drug use and crime. The number of drugs offenders rose from 24,000 in 1986 to 95,000 in 1996, with the majority of these offences related to cannabis possession.[19] In 1995, the Government published *Tackling drugs together: a strategy for England 1995-1998*,[20] in which it sought to combine '*accessible treatment* [with] *vigorous law enforcement … and a new emphasis on education and prevention*' (see **Chapter 7**). The aim of the strategy was to

increase community safety from crime and to reduce the health risks and other damage related to drug use. This and subsequent Government drug strategies reconceptualised drug treatment as an intervention that might lead to a reduction of criminal behaviour. Criminals who use drugs were to be encouraged to enter treatment as a means of altering their behaviour. The strategy also indicated a move away from the harm-minimisation approach of the preceding years. The strategy stated that the principal objective of treatment was to assist drug users toward abstinence and maintenance of a drug-free state, while recognising that other approaches would continue to be taken to reduce the spread, by drug users, of HIV and other communicable diseases. There was to be an integrated approach coordinated by the Government but with the details of policy determined at a local level by new drug action teams. Statutory and voluntary sectors would work together and health and social care would be linked to the criminal justice system.

In 1996, the Department of Health (DH) set up a review of drug treatment services and their effectiveness, which concluded that '*treatment works*'.[21] This conclusion underlay the 10-year New Labour strategy *Tackling drugs to build a better Britain*,[22] which stressed the use of diversion into drug treatment from the criminal justice system. An example of this new approach was the introduction of community sentences for offenders, involving drug testing and treatment components called Drug Treatment and Testing Orders (DTTOs). Treatment services within prisons expanded. The main focus of the strategy was problematic drug users, which included those who injected drugs and those using opioid drugs and crack cocaine. Spending on drug treatment rose substantially. In 1994, around 67,000 people were counted as being in treatment, rising by 26.9 per cent to 85,000 in 1998-1999 and a further 129.9 per cent to 195,400 by 2006-2007, giving an overall rise from 1994 to 2006-2007 of 191.6 per cent.[23] The treatment and rehabilitation (see **Glossary**) budget for 1994 was £61 million, while the total spend on treatment in 2005-2006 was estimated to be £508 million.[23]

In criminality surveys conducted in England and Wales in 2000 and 2002, over one-third of male prisoners and over a quarter of men serving community sentences reported experiencing problematic drug use.[24] Men were more likely than women to say that they had problems staying off drugs in the last 12 months (43% versus 39%).[24] The budget for drug treatment interventions in the criminal justice system in England and Wales was over £330 million in 2006-2007 and spending on drug treatment in prisons increased from £7 million in 1997-1998 to £80 million in 2007-2008.[25]

The 2002 *Updated drug strategy* concentrated on the '*most dangerous drugs*', defined as Class A drugs, and again emphasised the objective of getting more of the estimated 250,000 problem drug users into treatment.[26] The Home Office was given overall responsibility for implementation of the drug strategy, although the DH and Department for Education and Skills (DfES) had key roles. The 2004 *Tackling drugs:*

changing lives strategy document again stressed Government policy to get as many offenders who were drug users into treatment as possible.[27] Another aim was to enhance the quality of treatment by providing support with housing, finance, skills training and job opportunities for drug users. The 2008 drugs strategy *Drugs: protecting families and communities*[28] maintained the focus on problematic drug users and the links between drugs and crime but laid a greater emphasis on the impact of problematic drug use on others in the user's circle, especially children and families.[29]

5.10.1 Recovery and policy

As part of the NHS, the National Treatment Agency (NTA) was set up in 2001 as a specialist health authority to monitor expenditure of the drug treatment budget and to expand the availability and quality of treatment. As described in the previous section, the number of people in drug treatment increased by 129.9 per cent from 85,000 to 195,400 between 1998-1999 and 2006-2007.[23] Then in 2009 the NTA shifted its focus from getting people into treatment to helping service users achieve and sustain long-term recovery (see **Glossary**), with services aiming to support recovery that is shaped by the individual drug users themselves. This focus on outcomes and an emphasis on recovery is mirrored in the most recent Government strategy, *Drug strategy 2010. Reducing demand, restricting supply, building recovery: supporting people to lead a drug free life*.[30] Policy continues to move beyond an individualistic focus, with less emphasis on drug–crime links and a greater consideration of the wider social and economic factors that drive problematic drug and alcohol use and that can help or hinder recovery.

A subsequent Government document, *Putting full recovery first*, provides more detail of the Government's aim of establishing a treatment system approach that puts more emphasis on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.[31] An Inter Ministerial Group on Drugs has been established to direct and monitor implementation of the drug strategy. The functions of the NTA will be transferred to a new body, Public Health England (PHE), from April 2013. PHE is being set up to provide leadership within a recovery sector that covers both drug and alcohol dependence. A payment by results model is to be developed to incentivise reaching outcomes that include being free of dependence and not involved in crime and being in employment. Local areas will be supported to move local commissioning structures toward recovery- and abstinence-based support.

It is worth noting that there are risks associated with moving to a payment by results system where the agencies, and presumably thus the professionals, are to be paid not for their services, but by whether the patient behaves, and lives his/her life, in the way that Government policy prescribes. Given the poor success rates for treatment of drug problems, particularly if the definition of success includes abstinence, this may make a bad situation worse. Apart from that, within a medical framework, this would be a

change in the aims of doctors: not to minimise sickness but to help the patient lead a good life, and to be paid not for services provided but by how the patient behaves. Under such circumstances, healthcare professionals may be reluctant to take on patients who have failed before, as they may be at higher risk of failing again.

The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

An overview of current Government strategies in the UK is provided in **Appendix 6**.

Summary

- Purchase of psychoactive drugs such as opium and laudanum was unregulated in the UK until 1868, when the Pharmacy Act was passed, restricting opium sales to pharmacists' shops, with a requirement on pharmacists to keep a record of purchasers.
- In 1916, an Army Council order, and the Defence of the Realm Act later the same year, made it an offence for anyone except a physician, pharmacist or vet to possess, sell or give cocaine, and the drug and its preparations could only be supplied on prescription.
- The first Dangerous Drugs Act passed in 1920, and a further Act in 1923, passed to conform to the 1912 International Opium Convention at The Hague to which Britain was a signatory, imposed stricter controls on doctors and pharmacists in relation to dangerous drugs, in a climate with a penal emphasis on policy.
- It was not clear from these Acts or the Convention whether prescribing drugs to addicts constituted legal medical work. The Rolleston Report in 1926 affirmed the right of doctors to prescribe controlled drugs to addicts in defined circumstances and set the scene for a balanced medical approach within a penal framework.
- The second Geneva Convention in 1925 brought cannabis under international control, and restrictions were implemented in the 1928 Dangerous Drugs Act.
- As a result of increasing use of heroin, the 1967 Dangerous Drugs Act restricted prescribing of heroin to doctors licensed by the Home Office, and set up new drug treatment centres within the NHS hospital system. A notification system for addiction was also introduced.
- Introduction of other drugs to the illicit market, such as amphetamines and LSD, led to the Drugs (Prevention of Misuse) Act 1967, and recommendations that penalties for possession of cannabis should be reduced, with no custodial sentencing for casual use, were implemented.
- The 1961 United Nations Single Convention on Narcotic Drugs introduced four schedules of controlled drugs and was followed in the UK by the Misuse of Drugs Act 1971, with drugs categorised in classes according to perceived harm and therapeutic value. This Act also set up the Advisory Council on the Misuse of Drugs, to keep the drug situation under review and advise the Government.

- With increasing illicit drug use, Government strategies in the 1980s began to focus on the social and economic problems of drug users, in addition to their medical problems, and GPs became involved with the more general healthcare needs of drug users, leaving specialists to deal with more difficult drug users.
- The spread of HIV and AIDS generated 'harm-minimisation' policies in relation to drug use, by modification of using behaviours, from injecting to oral use where possible.
- The 1995 Drug Strategy moved away from this approach to one encouraging users to enter treatment, with the aim of moving users towards abstinence and achievement of a drug-free state and of reducing criminal behaviour.
- Later strategies (2002, 2004, 2008) continued to emphasise the need to move drug users into treatment and focused on the links between drugs and crime; they also aimed to move drug treatment away from the NHS into the community and voluntary sector.
- The 2008 strategy maintained a focus on drugs and crime but placed greater emphasis on the impact of problematic drug use on children and families of users.
- With the 2010 strategy, policy continues to move away from drug-crime links and towards a focus on wider social and economic factors that drive problematic drug use. The emphasis is on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.
- The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

Chapter 6 – Controlling illicit drug use

6.1 Introduction

This chapter reviews the current legal framework related to illicit drug use and examines the implications for society and for health professionals.

In considering the impacts of current drug policy and law, it is important to distinguish between harm associated with drug use per se and harm associated with, or created or exacerbated by, the legal/policy environment. The former are discussed in detail in **Chapter 3**. **Sections 6.2** and **6.3** of this chapter specifically explore the legal/policy aspects. This type of distinction may not always be clear in practice; while the health harms associated with drug use are relatively well understood,[a] the relationship between drug use, and the cultural/political response to the drug use, is complex. It is important to consider whether the same drug may cause different types of harm depending upon the sociocultural context and legal framework within which the drug use takes place.

The debate surrounding enforcement of drug policy is controversial, with strong feelings both for and against liberalisation. These arguments are discussed in **Section 6.5** and alternative approaches to drug control are presented in **Sections 6.6** and **6.7**.

6.2 Evaluating prohibition

Reviewing both the impact and effectiveness of the legal and policy environment relating to drug use is not straightforward and study conclusions must be interpreted with care. A wide variety of interest groups come to the drug policy debate, with different priorities and analytical perspectives, which can be shaped by personal, ideological, political or professional interests. Drug policy and law influence a broad range of social policy arenas, encompassing a range of different enforcement interventions that may deliver success on certain indicators, but prove counterproductive elsewhere. The choice and prioritisation of particular effectiveness indicators can lead to very different conclusions.

a Novel psychoactive substances are an important exception.

Separating out the impact of drug policy from the effects of wider social policy and non-policy exogenous variables that can also affect drug-using behaviours and drug markets[b] presents an additional challenge.

A key question is what the primary aim of drug policy and legislation should be. Specifically, should it be the reduction of illegal drug use through the use of prohibitive and criminal legislation? Or should it be, from the medical perspective, focused upon reducing public health and social harms? This dichotomy requires consideration of a complex array of social, health and human rights factors. The doctor's role is discussed in more detail in **Chapter 11**.

6.2.1 A global approach

Current drug policy is underpinned by the UN drug conventions (see **Box 2**, **Section 1.2**). Their founding principle is the need to address problems associated with drug use and is primarily concerned with protecting and improving public health. The consensus based on these conventions is to create a framework where supply and possession of listed drugs for non-medical/scientific use is made a criminal offence.

6.3 The benefits of a prohibitionist approach

6.3.1 Deterring use

While there is a voluminous literature on the deterrent effects of punitive enforcement on crime generally, there is comparatively little about how the threat of sanctions and law enforcement affects illicit drug use.[1] Existing research has tended to focus on the impacts of decriminalising, rather than criminalising, the possession and use of illicit drugs. The 2001 US National Academy of Sciences report, *Informing America's policy on illegal drugs: what we don't know keeps hurting us* recognised this evidential gap,[2] and called for more research into the deterrent effect, noting that '*a rational drug control policy must take appropriate account of the benefits and costs of enforcing sanctions against drug users*'. The gap was also identified in the 2006 Science and Technology Select Committee's report *Drug classification: making a hash of it?*[3] The report notes that while legal enforcement underpins the Government's policy on drug classification, the committee could find '*no solid evidence to support the existence of a deterrent effect*'. The UK Government responded by acknowledging the lack of evidence but stating that it '*fundamentally believes that illegality is an important factor when people are considering engaging in risk-taking behaviour*'.[4] The response also stated that '[T]*he Government will consider ways in which the evidence base in the context of the deterrent effect can be strengthened*',[4] but it has, to date, not published any such evidence.

b For example, demographic changes, cultural shifts, migration, medical advances, emergence of new drugs, recessions, wars, etc.

For crime more broadly, the literature indicates that generalisations about punishment and deterrence are not useful and a differentiated approach is necessary for different types of crimes.[5] Research that specifically studies deterrence and illicit drug use is urgently needed.

Studies that have focused on the deterrent effects of sanctions on users have produced mixed results. Some polling evidence, for example by The Police Foundation inquiry report *Drugs and the law* (1999),[6] suggests that, for some, illegality is a factor in their decision not to use drugs. The inquiry concluded that the evidence of a deterrent effect was '*very limited*' and found that health concerns and general disinterest played a much greater role. There is also some evidence showing that sanctions can reduce use of hard drugs among individuals already in the criminal justice system,[7] though Babor and colleagues caution against extrapolating these findings to more open systems.[8]

Comparative analysis between countries or jurisdictions with different levels or intensity of punitive user-level enforcement provides no conclusive support for a significant deterrent effect. A 2008 review, drawing on mental health surveys conducted in 17 countries across the world in conjunction with the WHO, concluded that global drug use is not simply related to drug policy, since '*countries with stringent user-level illegal drug policies did not have lower levels of use than countries with liberal ones*'.[9] As discussed in **Chapter 3**, the relative levels of harm for different drugs correlate poorly with their legal classification, and legal substances, such as alcohol and tobacco, have been found to be at least as harmful as commonly used illicit drugs (see **Figure 3**, **Chapter 3**).[10,11] Studies comparing levels of cannabis use in different states in both Australia and the USA have similarly failed to demonstrate any significant correlation between punitiveness of enforcement and prevalence of use.[12] Some of the groups that are most vulnerable to drug-related health harms are likely to be among those least deterred by punitive laws. These groups include young people with an inclination to take risks, dependent and problematic users, those from socially deprived backgrounds, those with existing criminal records, and those with mental health vulnerabilities (see **Chapter 4**). The impact of enforcement on overall harms for these groups is likely to be limited.[13]

There may even be perverse effects associated with criminalisation. The Home Office noted in its submission to the Home Affairs Select Committee in 2001: '*some people would seem to be attracted to experiment with controlled drugs because of their illegality (eg "forbidden fruits")*'.[14] Any such effects are hard to quantify.

Following their review of the existing evidence, Babor and colleagues report that the majority of interventions aimed at deterring drug use in the criminal justice system show '*modest effectiveness*'.[8] They go on to stress that the amount of research on this issue has been minimal, of varying quality, and concentrated in only a few countries.[8] A review published by the EMCDDA in 2010 also highlighted that the impact of legal changes on drug use has not been consistently evaluated.[15] At present, the evidence justifying the conclusion that criminal prohibition deters use is not strong (see **Chapter 7**).[16] While it would be wrong to discount the effect altogether, there is little evidence that punitive enforcement is significantly effective in 'sending a message' that will help reduce or eliminate drug use. It is argued that illegality can help young people in particular to 'say no to drugs': this is a credible proposition but it is hard to measure its efficacy with any accuracy. It is unclear whether comparable prevention efforts are more effective with illegal drugs than legal ones, ie whether the illegality itself is a key aspect of prevention effectiveness (see **Chapter 7**). In addition to legal sanctions, it is also important to consider the extent to which social, cultural and religious norms may condition and deter use. Writing in the journal *Science*, Jarvik suggests that religious convictions may account for the lower use of legal substances such as alcohol and tobacco in Amish and Mormon communities.[17] He goes on to hypothesise that such convictions, combined with the conspicuous stigmatisation of deviant behaviour, may deter illicit drug use more effectively than the threat of prison.[17]

6.3.2 Reducing use by reducing availability and increasing price

As discussed in **Section 4.5.1**, price appears to influence the use of drugs.

Availability

As discussed in **Section 4.5.2**, the physical availability of drugs refers to their proximity and accessibility. In an illegal market, it is difficult to establish reliable methods to measure availability. A series of proxy measures have been used by the UK Government, such as drug seizures, dismantling of criminal groups, and recovery of criminal assets. While these measures can indicate enforcement successes, they are not measures of availability.

The reduction of availability was a priority target in the 1998 and 2002 UK drug strategies,[18,19] and the 2010 strategy takes what it describes as an '*uncompromising approach to crack down on those involved in the drug supply both at home and abroad*'.[20] The strategies are not based upon an agreed definition of availability, and although the 2010 strategy focuses on process measures such as breaking up criminal gangs and seizing assets, it has not identified any targets or established measures of impacts on availability.[20]

Price

The role of supply-side enforcement in raising prices is unquestioned. Products like heroin and cocaine, which cost only pennies per gram to produce, frequently sell for £40 or more per gram by the time they reach consumers in the UK.[21] This process, which has been described as '*the alchemy of prohibition*',[22] turns low-value processed agricultural products into commodities that are literally worth more than their weight in gold.[23]

The impact of price on levels of drug consumption is discussed in detail in **Section 4.5.1**. Drugs of dependence have more complex economics than other products: drug use does not necessarily follow predictable economic patterns in a simple linear way, which makes generalised conclusions problematic. Levels of use can rise and fall independently of price[24] and there is some disagreement between commentators on the impact of price rises. Drawing on the work of Grossman[25], Babor and colleagues maintain that even users who are drug dependent cut back on their consumption when prices rise.[8] Other commentators argue that for those who are dependent, increases in price are unlikely to have a dramatic impact on use, particularly when compared to those whose use is more intermittent.

Enforcement can certainly create obstacles in terms of additional expense and inconvenience, and drug markets can be locally displaced and temporarily disrupted. There is no evidence from the experience of past decades to suggest they can be eliminated or significantly reduced in the long term while demand remains high. It is evident that criminal supply has been able to keep pace with rising demand. Inference from prevalence data (see **Chapter 2**), and survey data on '*drug offers*', indicate that drugs remain widely available to those who seek them.[26]

Supply and demand within a criminal market that is not regulated by the state still has a series of checks and balances. In a market that is primarily demand driven and supplied by profit-seeking entrepreneurs, prices are unlikely to rise to a level where demand dries up. Even if supply-side enforcement can successfully achieve a '*drought*' or push prices for a particular drug beyond the reach of most consumers, the effect is likely to be displacement to other more affordable drugs, or a drop in drug purity as a way of maintaining more consistent street prices.[21] Both these impacts have unpredictable health implications. For dependent users on lower incomes, demand may also be less price elastic (for an explanation of price elasticity, see **Section 4.5.1**), so that increasing prices lead to increased levels of criminal activities (see **Section 6.4.2**) to raise the necessary funds, rather than reduced use.[27]

All of these effects were observed during the 2000 Australian '*heroin drought*',[c,27] although it is not clear how much this was related to enforcement, and how much to external factors in global opiate production.[28]

6.4 The costs of a prohibitionist approach

In 2008, the executive director of the UNODC acknowledged the major negative '*unintended consequences*' of prohibition.[29] These included the creation of '*a huge criminal black market*'; '*policy displacement*', where '*public health, which is clearly the first principle of drug control …* [is] *displaced into the background*'; and '*the balloon-effect*', where enforcement activity in one area does not eliminate production, transit or use, but simply displaces it to another area.[29] Other bodies, such as the coalition of non-governmental organisations (NGOs) supporting the 2011 Count the Costs initiative,[30] have produced more detailed analyses. The key costs, or unintended consequences, of the prohibition approach are outlined next.

6.4.1 Increasing health risks associated with drug use

Prohibition has an impact on the type and quality of the specific products consumed and on consumption behaviours. This increases health risks in a number of ways.

- Illegally sourced drugs are of unknown quality, strength and purity, lacking the certainty of legal drugs or legally regulated equivalents for medical use. This point was emphasised by a recent NTA guide.[31] In addition to the health risks associated with illicit drug use, the uncertainty surrounding the quality and purity of illicit drugs creates or exacerbates risks. These include the risks of overdose, poisoning (from adulterants, bulking agents and other contaminants), and infection from biological contaminants among drug users who inject.[32]
- A fall in purity and/or rise in the cost of heroin (and some other powder-form drugs) can encourage injecting in preference to safer methods of use such as smoking/snorting, as a way of getting a greater effect for less money.[33]
- The economics of the illegal trade have tended to push markets towards increasingly potent or concentrated (but profitable) drugs and drug preparations associated with increased risks.[34]
- Criminalisation can increase risk by pushing use into marginal, unhygienic and unsupervised environments. This is particularly true for needle sharing among drug users who inject, in relation to transmission of HIV and hepatitis.[35,36] These infections are not a feature of injecting use in Swiss-style clinics, where injection of prescribed heroin is supervised (see **Section 6.6.4**).[37]

c The Australian 'heroin drought' was an unpredicted and abrupt reduction in heroin supply. The shortage was most marked in New South Wales, which witnessed increases in price, decreases in purity at street level, and reductions in the ease of obtaining the drug.

- Criminalisation of users can discourage them from approaching drug services, contacting paramedic services in emergency situations, or volunteering accurate or complete information to health professionals (see **Section 8.2**).

6.4.2 Fuelling crime

The causal links between drug use and crime are complex and contentious among criminologists.[d,13] There is a clear and demonstrable connection or nexus between supply-side criminalisation and actual acts of criminal behaviour.[30] Conflict between high demand for drugs and the laws that prohibit their production, supply and use puts pressure on supply in a market that is demand led. This inflates prices, which has two effects.

- The first is the creation of a lucrative opportunity for criminal entrepreneurs. To give an indication of scale, the Home Office has estimated the value of the UK illicit drug market at £4.6 billion a year,[38] while the 2005 UN *World Drug Report* estimated the global market at $332 billion (around £200 billion) at retail level.[39] There is cogent evidence that organised crime has exploited the opportunities created by drug prohibition. A growing illegal trade is associated with high levels of violence,[40] corruption and money laundering.[41,42]
- The second effect is that inflated prices encourage acquisitive crime among low-income dependent drug users fundraising to support their habits (see **Section 3.4.2**). While estimates are hard to formulate,[43] volumes of such offending are substantial (see **Section 3.4.2**).[44] The high cost of drug use also exacerbates the social harms discussed in **Section 3.4**. The specific role of illegality is underlined by an absence of evidence for acquisitive crime associated with dependent use of alcohol,[45,46] tobacco[47] or prescription drugs, which are all available legally.

6.4.3 Marginalisation of human rights

In many countries, drug enforcement has resulted in serious human rights abuses,[48,49] including torture and ill treatment by police, judicial corporal punishment for drug offenders, executions and extrajudicial killings, arbitrary detention, and denial of basic health services. Poorly scrutinised drug-enforcement practices can additionally exacerbate systematic discrimination against people who use drugs, impede access to essential medicines,[50,51] and prevent access to harm-reduction and HIV-treatment services for marginalised high-risk populations.

Many of these particular issues are of marginal or no relevance to the situation in the UK, where concerns centre essentially around access to HCV treatment for some people who inject drugs (see **Section 10.6**).[52,53] There is some evidence to suggest that UK drug users feel that they are negatively profiled by the police. Research examining drug

d Issues to consider include the influence of intoxication, and links to common exogenous variables such as social deprivation.

users' experiences of street policing in the UK found that the vast majority of the sample (*n*=62) were known to the police and were targeted for attention. Very few relayed stories about receiving help from the police: for most of the sample, contact was a negative experience involving routine '*stopping, checking, questioning, and moving persons on*'.[54] Those who were subjected to this practice tended to perceive it as an unwarranted imposition of authority and control. When conducted in a busy, public place, some of the sample also felt that police actions were intended to shame the user by exposing their drug use to others.[54] Stigmatisation of problematic/dependent drug users, particularly those who inject drugs, remains a serious issue (see **Section 8.2**), with a series of identified negative public health implications; this is made worse by the burden of criminalisation, in addition to the stigma relating to addiction to legal or prescription drugs.[35,55]

An additional human rights issue is the discriminatory use of police powers. White young people in an affluent neighbourhood in New York are many times less likely to be stopped, checked and arrested by police than Black young people in a poor neighbourhood in New York;[56] the same has been documented for California[57] and elsewhere in the USA.[58] Discriminatory stop-and-search patterns have also been well documented for the UK, particularly in London and the Midlands.[59]

6.4.4 Negative impacts on international development, security and conflict

Drug consumption in the developed west cannot be divorced from the regions in which many of the drugs are produced, or through which they are transported. The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.[60,61] Illicit drug production and transit is naturally drawn to the most marginal and underdeveloped regions that already have poor infrastructure and weak governance. This ensures that the threat from enforcement can be kept to a minimum, public officials are relatively easily corrupted, and a ready supply of labour is available from impoverished populations.

The endemic violence and corruption that accompany large-scale illicit drug operations massively increases the challenges involved in bringing development to regions involved in drug production, such as Latin and Central America and Afghanistan,[62] or those involved in transit, such as the Caribbean and West Africa.[62] The resulting destabilisation has disastrous knock-on impacts on a range of public health, human rights and wider development goals, deterring investment, restricting activities of development agencies and NGOs, and diverting limited domestic or foreign aid resources into enforcement rather than public health and development initiatives.[62]

6.4.5 Financial costs

Expenditure on the UK's drug strategy is around £1.2 billion per annum, of which £300-400 million is on enforcement, with most of the rest spent on treatment.[63] This figure is understated, as it includes only direct, proactive, spending on supply-side enforcement, and does not include reactive spending dealing with drug-related crime across the criminal justice system, including police, courts, probation and prisons. When these costs are included, the total criminal justice expenditure is estimated at between £2 billion[64] and £4 billion[65] per annum. These criminal justice costs are in addition to the wider social and economic costs of drug-related crime itself (see **Section 6.4.2**), which have been estimated at around £16 billion a year in England and Wales.[24]

The overall spend (proactive and reactive) on drug law enforcement and dealing with the costs of drug-related crime is significantly greater than the amount spent on drug-related health interventions (see **Section 3.5**).

6.4.6 Consequences for health professionals

The existing legal framework can impact on the ability of health professionals to provide treatment for individuals who need medical intervention. It can, for example, make access to vulnerable populations more difficult and make problematic drug users reluctant either to come forward or to disclose information about their drug use (see **Section 8.2**). It can also create political or practical obstacles to providing certain treatments (eg for hepatitis or HIV) or harm-reduction interventions (eg needle exchange or methadone treatment), especially for individuals who are in prison (see **Section 10.6**).[51-53]

6.5 Debate on the need for reform

Calls for any form of liberalisation of policy, and especially moves towards legalisation and regulation of any currently illegal drug, remain controversial, with debate frequently being polarised. Proposals have increasingly moved into the mainstream political arena. The case in favour of maintaining the overarching prohibitionist status quo has also been put by a range of individuals and agencies.

6.5.1 Maintaining the status quo

The core of the arguments against law reform is that it threatens to reduce or remove existing barriers to availability and will thus lead to increased availability, use, dependence and related harms. It is additionally argued that the potential for increased use would be made worse by the removal of the deterrent effect of criminality and the 'wrong message' that any such reforms would send out, particularly to young people.[66-71] The experience with some legal drugs, specifically alcohol and tobacco, is often suggested as a potential indicator of where levels of use of currently illegal drugs could end up, without the restraining influence of prohibition.[66-71]

While the UK Government has generally refrained from engaging in the detail of this debate, the Home Secretary, writing in the foreword to the 2010 drug strategy, stated unequivocally that the '*Government does not believe that liberalisation and decriminalisation are the answer*', as they '*fail to recognise the complexity of the problem*'.[20]

Similar rejections of any liberalisation of UK drug laws are regularly issued by the Home Office in response to such calls. In 2010, for example, in response to the Government's drug strategy consultation paper, the ACMD recommended that:

> '[F]*or people found to be in possession of drugs (any) for personal use (and involved in no other criminal offences), they should not be processed through the criminal justice system but instead be diverted into drug education/awareness courses* […] *or possibly other, more creative civil punishments.*'[72]

While recognising the harms associated with drug use and the need to support '*those caught in the cycle of dependence*' to live drug-free lives, the Home Office rejected the ACMD's recommendation, stating that '*giving people a green light to possess drugs through decriminalisation is clearly not the answer*'.[73] A very similar response was given to the Global Commission on Drug Policy's report *War on drugs*.[74,75]

More detailed critiques of reform proposals have been made by academics [66,77] and NGO coalitions.[67,68] The UN drug agencies have also produced clear statements. For example, in the preface to the *World Drug Report* 2009, the UNODC Executive Director concludes that '*transnational organized crime will never be stopped by drug legalization*' and calls for '*more control on crime, without fewer controls on drugs*'.[69] The 1997 *World Drug Report* also presents a more nuanced discussion in a chapter dedicated to '*the regulation–legalization debate*'.[70] The US Drug Enforcement Agency has gone further, producing a detailed debating guide titled *Speaking out against drug legalization*.[71]

6.5.2 Changing the status quo

Those who argue that the status quo is not working believe that reform is needed and that the current punitive criminal justice approach to drug use has failed in its key aim of eliminating or substantially reducing the trade and use of illegal drugs and related health harms. They argue that the blanket prohibition of non-medical use of drugs encompassed by the three UN conventions (see **Section 1.2** and **Chapter 5**) has an effect on users' access to healthcare (see **Section 8.2**) and leads to additional social and health harms associated with the illegal drug trade (see **Section 3.4** for a discussion of part of this issue). These arguments are made

while accepting that criminalisation might have had some, positive, deterrent effect. The point is made that a modified and reformed system could be substantially more effective than the status quo. The point is also made that the options for reform are not binary: criminalisation or non-criminalisation. There is a spectrum of alternatives and permutations of alternatives that could be used to potentially improve upon the present system. There may well be some elements of criminalisation that should remain but that should be coupled to other non-criminal approaches.

These broad conclusions have been repeated in a series of UK reports produced in recent years, including those from the Police Foundation,[6] the Home Affairs Select Committee,[77] The Prime Minister's Strategy Unit,[24] the Royal Society for the encouragement of Arts, Manufacture and Commerce,[78] and the UK Drug Policy Commission (UKDPC).[79] They are also endorsed by the Vienna Declaration of 2010, which calls for evidence-based drug polices.[80]

A 2011 report from the Global Commission on Drug Policy, whose members included the former Secretary-General of the UN, Kofi Annan,[e] and a further five former heads of state, summarises the current situation.[74] It states that the vast expenditure and effort involved in enforcing prohibition has failed to curtail supply or consumption of illicit drugs. It cites the health and social harms that are linked to drug use and those that occur as a direct consequence of prohibition and suggests that Government expenditure on '*supply reduction strategies and incarceration displace more cost-effective and evidence-based investments in demand and harm reduction*'.[74]

Most recently, a 2012 report from the UKDPC, *A fresh approach to drugs*, identifies the need for a new approach to policy that changes the ways in which Government and society respond to drug problems, informed by a thorough analysis of the evidence for improvements to polices and interventions.[81]

It calls for *'a clear distinction between the overall goals of drug policy and the tools to deliver it'*, looking at ways to support responsible behaviour, while also focusing on ways in which *'society can enable and promote recovery from entrenched drug problems'*. The report advocates a 'wholesale review' of the Misuse of Drugs Act 1971 and the classification of drugs (see **Section 1.2**), with a commitment to ensuring a strong evidence base to inform all changes to policy.

e Following his appointment as Joint Special Envoy for Syria in April 2012, Mr Annan recused himself as a Commissioner of the Global Commission on Drug Policy, with immediate effect.

6.6 What are the options for an alternative legal framework?

There is a spectrum of alternative legal frameworks available, and a useful, if incomplete, body of evidence to draw on. This includes experience with other drugs, in other countries, and with approaches to regulation and control of other risky products or behaviours.[82]

The options for alternatives range from harshly enforced absolutist prohibition, through a series of regulatory market models, through to (effectively unregulated) free market models (see **Box 5**).[83] Between these extremes, there is a range of options for less punitive approaches, decriminalising drug users, and potentially regulating drug markets.

Box 5 – The range of regulatory market models

Prohibition/criminalisation

Prohibiting/criminalising non-medical production, supply, possession and use, with punitive sanctions. The intensity of enforcement and severity of penalties can vary. Decriminalisation (see **Glossary** and **Section 6.6.2**) of personal possession and use can operate within a prohibitionist framework.

- *Examples*: heroin, cocaine, cannabis, ecstasy
- *Market controller*: criminal entrepreneurs, corrupt officials

Regulated markets

A range of regulatory controls are deployed, covering drug production and trade, products, gatekeepers of supply and users. Some drugs, preparations and activities remain prohibited.

- *Examples*: prescription drugs, OTC drugs, alcohol, tobacco
- *Market controller*: moderate to intense regulation by Government agencies

Free market legislation or 'supermarket model'

Drugs are legal and available for essentially unrestricted sale in the 'free market', like other consumer goods.

- *Example*: caffeinated drinks
- *Market controller*: corporate/private enterprise, with minimal regulation by Government agencies and voluntary codes for retailers

Adapted from Rolles S (2009) *After the war on drugs: blueprint for regulation*. Bristol: Transform Drug Policy Foundation,[83] with the permission of Transform Drug Policy Foundation.

Within each of these of these broad categorisations, there exists a range of sub-options. As highlighted in **Box 5**, different drugs in the UK sit within all three categorisations. While illegal drugs obviously come under 'prohibition/criminalisation', the UK's approach could be described as intermediate between the most punitive and most tolerant of the prohibition models observed around the world.

As discussed in **Section 6.2.1**, the international consensus set out in the three UN conventions (see **Box 2**, **Section 1.2**) means that supply and possession of classified drugs is made a criminal offence. There are a number of legal and policy reforms that can take place within an overarching prohibitionist framework. These are explored below (see **Sections 6.6.1 and 6.6.2**) and can involve moves towards either more or less punitive approaches. Any options that involve legally regulated production, supply and availability of drugs that are currently illegal for non-medical use (see **Sections 6.6.3 and 6.6.4**) face more substantive legal, practical and political obstacles (both domestically and internationally), as they necessarily involve crossing the line established by the UN drug conventions that prohibits any such moves.[f,g,83]

6.6.1 Increasing the intensity or severity of enforcement

Relatively few policy makers, even those such as the UK and US Governments and UN drug agencies who argue against less punitive enforcement, call for increases in the intensity of enforcement against drug users, even if tough talking around drug trafficking remains a key element of the political narrative. In the USA, there has recently been a conscious effort to move away from the 'war on drugs' rhetoric of past decades.[84] Some UK commentators have argued that the evident failures of UK drug policy are not due to failure of the prohibition paradigm per se, but rather the failure to enforce the laws with sufficient vigour and resources. These include members of the police and academia and some media commentators and think tanks.[h,85]

f See *After the war on drugs*[83] Appendix 1 page 165.

g There is the option of denouncing the treaty, withdrawing from the convention, and requesting reaccession with a reservation.[12] Bolivia is part way through this process and has asked to be re-admitted if the UN removes the statute that classifies the coca leaf as illegal.

h Including the Social Justice Policy Group,[85] and the Centre for Policy Studies.

6.6.2 Sentencing reform, including options for non-criminal sanctions for certain drug offences

Various options exist for reforming sentencing for drug offences. The UK has recently concluded a consultation process and review of sentencing guidelines for drug offences under the auspices of the Sentencing Council. Its primary aim has been to improve guidelines to ensure consistency of sentencing, while leaving the average severity of sentencing unchanged.[86] Potential sentencing reforms beyond the remit of this review could consider the severity of sentencing more broadly and examine options for raising or lowering average penalties, or alternative non-criminal disposals for some offences.

This concept of maintaining certain drug offences but reforming sentencing to empower judges to impose more non-custodial sentences, or enabling law enforcement agencies to use administrative (non-criminal) sanctions, is usually explored in reference to possession of small quantities of drugs for personal use. Small-scale production, usually of cannabis, or not-for-profit supply among peer networks, is also occasionally included in such discussions. This is often referred to as **decriminalisation**, although the term is inaccurately and confusingly used in some of the literature.

'Decriminalisation' only describes a process, rather than an actual policy or legal framework, and it is often mistakenly either confused with **legalisation** (which usually includes **regulation**, see **Section 6.6.4**), or assumed to mean the removal of any sanctions, or removal of an offence from law entirely. These terms are defined in more detail in the **Glossary**.

Decriminalisation of use[i] is widespread across the world (see **Glossary** and below), and there is a clear trend of growing support and adoption for such approaches.[87,88] It is difficult to generalise about these experiences, as there are many variations between countries (and often between local Government jurisdictions within countries), as well as different legal structures and definitions of civil and criminal offences and sanctions.[89] There are also significant variations in the threshold quantities used to determine the user/supplier distinction,[90] as well as the non-criminal sanctions adopted. Variations include fines, warnings, treatment referrals (sometimes mandatory) and confiscation of passports or driving licences. The key point is that decriminalisation does not mean deregulation; it means adopting a different (and it is hoped), more effective response than the use of the criminal courts and process.

i Dutch coffee shops go beyond decriminalisation of use. They operate within a regime where a drug (cannabis) can be **purchased** within a highly regulated retail system, as well as used and possessed.[8] New legislation has been introduced prohibiting sales to non-Dutch residents; however, local authorities have been given the power to determine how the laws will be implemented/enforced. A number of cities have enforced the law (eg Maastricht and Tilburg), while others (including Amsterdam) have not.

A distinction is also made between *de jure* decriminalisation, which involves specific reforms to the legal framework, and *de facto* decriminalisation, which involves a similar outcome, but is achieved through 'turning a blind eye' tolerant policing – effectively non-enforcement of criminal laws that technically remain in force. Confiscation of drugs also characterises most decriminalisation policies, with the exception of discretionary approaches adopted by police under some of the more tolerant cannabis policy models (in the Netherlands, Belgium and Spain for example).[89]

There is considerable variation in the approaches operating within the regulatory framework in different countries. **Box 6** presents a list of countries that have adopted some form of non-criminal disposals for possession of small quantities of some or all drugs, and an example case study is set out below.

Box 6 – Countries that have adopted non-criminal disposals for possession of small quantities of drugs

Europe

Austria, Portugal, Spain and the Czech Republic have decriminalised all drugs (*de jure* decriminalisation), while the Netherlands and Switzerland effectively have similar but *de facto* decriminalisation policies. Luxembourg, Belgium and Germany have adopted similar approaches for cannabis (in some German Lander this is applied to all drugs).[91]

Latin America

Argentina, Mexico, Paraguay, Peru and Uruguay have decriminalised all drugs, Ecuador and Brazil have decriminalisation laws pending, Chile and Ecuador have partial decriminalisation, and in Colombia the Government and Supreme Court are involved in an ongoing legal and constitutional dispute over a 1994 decriminalisation law. [j,92,93]

Elsewhere in the world

Four Australian states and 14 US states have decriminalised cannabis possession. Russia has made possession of small amounts of any drugs for personal use an administrative offence, and Kyrgyzstan has administrative responses to small-scale possession offences.[94]

j A 1994 Supreme Court ruling effectively made criminalisation of possession unconstitutional. The constitution was amended in 2009 to recriminalise possession.[92] This has recently been challenged again in the Supreme Court.[93]

Case study: The Portugal experience

The publication in 2009 of a report by the US-based CATO Institute[95] on Portugal's 2001 decriminalisation policy has made the country a focus of global drug debate. The Portuguese policy decriminalised the possession of small quantities of any drug for personal use, alongside expanding drug-treatment and harm-reduction interventions.

The volume of data collected on numerous indicators over 10 years provides many useful lessons but has also provided scope for cherry-picking and filtering through different political and ideological perspectives.[96] Some of Portugal's prohibitionist 'antidrug' organisations, for example, present the data as indicating an unmitigated disaster,[97] in contrast to the arguably rose-tinted perspective of the libertarian-leaning CATO Institute report.[95]

A comprehensive academic study of the Portugal experience has now been published in a peer-reviewed journal. *What can we learn from the Portuguese decriminalization of illicit drugs?*[98] summarises that since decriminalisation, the following changes have been observed:

- small increases in reported illicit drug use amongst adults
- reduced illicit drug use among problematic drug users and adolescents, at least since 2003
- reduced burden of drug offenders on the criminal justice system
- increased uptake of drug treatment
- reduction in opiate-related deaths and infectious diseases
- increases in the amounts of drugs seized by the authorities
- reductions in the retail prices of drugs.

In conclusion, this publication notes:

> '[The Portugal experience] *disconfirms the hypothesis that decriminalization necessarily leads to increases in the most harmful forms of drug use. While small increases in drug use were reported by Portuguese adults, the regional context of this trend suggests that they were not produced solely by the 2001 decriminalization. We would argue that they are less important than the major reductions seen in opiate-related deaths and infections, as well as reductions in young people's drug use. The Portuguese evidence suggests that combining the removal of criminal penalties with the use of alternative therapeutic responses to dependent drug users offers several advantages. It can reduce the burden of drug law enforcement on the criminal justice system, while also reducing problematic drug use.'*

A more recent *Drug Policy Profile of Portugal* produced by the EU's European Monitoring Centre on Drugs and Drug Addiction has supported these conclusions.[99] It observed that the model might be best described as a public health harm-reduction policy rather than a first step towards legalisation of drug use.

6.6.3 Unregulated 'free market' model

While only advocated by a small group of free market libertarians, the free market model has remained a feature of the debate, although more as a thought experiment than a serious proposition. Under this model, a clear description of which can be found in Nadelmann,[100] all aspects of drug production and supply are legalised. Regulation is essentially left to market forces and self-regulation among vendors, with a minimal level of Government intervention (trading standards, contract enforcement and so on) that might be associated with standard consumer products available in a supermarket.[100] There is an argument that tax revenue from sales of drugs could be used to fund the public health costs associated with dependent drug use.[100]

Given the negative health outcomes that under-regulated markets for alcohol and tobacco have produced historically,[46,101] this is a model that is unlikely to be supported by health professionals working to proven public health principles.

6.6.4 Options for legal regulation of drug production and availability

While the UN conventions clearly mandate that the supply of drugs must remain an offence, this section examines models that cannot currently operate for use of drugs classified within this framework. In theory, the conventions can be revisited and changed; Room and colleagues identify four ways in which the 1961 Convention could be altered:

1. by amendment under Article 47. This Article states that *'[A]ny Party may propose an amendment to this Convention'* and requires either unanimous consent or the convening of a Conference of the Parties by action of the Economic and Social Council of the United Nations (UN ECOSOC)
2. by termination of the convention, resulting from a sufficient number of denunciations (withdrawals) from the convention to reduce the number of parties below 40
3. by removing particular drugs from any of the convention's schedules. This would have to be based on the recommendation of a WHO expert committee, and would require a majority vote in the Commission on Narcotic Drugs (CND), and in the UN ECOSOC if any party appealed the CND decision
4. the convention could theoretically fall out of use as conditions change, without any formal termination or denunciation.[12]

These methods highlight that there is scope – in theory at least – to change the drug conventions. Proposals for how post-prohibition models of drug market regulation (legalisation) could function have been published relatively recently.[102-104] In the UK, the Transform Drug Policy Foundation's 2009 *Blueprint for regulation*[83,105] presents a range of potential regulatory models for different drugs that are currently illegal. Options are explored for controls over:

- products (dose, preparation, price, and packaging)
- vendors (licensing, vetting and training requirements, marketing and promotions) and outlets (location, outlet density, appearance)
- who has access (age controls, licensed buyers, club membership schemes)
- where and when drugs can be consumed.[83]

Five basic models for regulating drug availability are proposed:

1. **a medical prescription model**: or supervised venues for the highest-risk drugs (injected drugs including heroin and more potent stimulants such as methamphetamine) and problematic users[k]
2. **a 'specialist pharmacist' retail model**: for moderate-risk drugs such as amphetamine, powder cocaine and ecstasy. A trained and licensed pharmacist would act as both gatekeeper and provider of health/risk information. Systems for named/licensed user access and rationing of volume of sales could be added
3. **licensed retailing**: including tiers of regulation appropriate to product risk and local needs. This could be used for lower-risk drugs and preparations such as lower-strength stimulant-based drinks
4. **licensed premises for retail and consumption**: similar to licensed alcohol venues and Dutch cannabis 'coffee shops', potentially also for smoking opium or drinking poppy tea
5. **unlicensed retail**: minimal regulation for the least risky products, such as caffeine drinks and coca tea.

In making the case for such an approach, Transform has additionally noted that:[83]

- rather than a universal model, a flexible range of regulatory tools would be available with the more restrictive controls used for more risky products and less restrictive controls for lower-risk products
- differential application of regulatory controls could additionally encourage use of safer products, behaviours and environments
- commercialisation of markets would be strictly controlled, with default bans on most or all forms of promotion, branding and marketing
- the oversight and enforcement of new regulations would largely fall within the remit of existing public health, regulatory and enforcement agencies. Activities that take place outside the regulatory framework would naturally remain prohibited and subject to civil or criminal sanctions
- such models would also need to be phased in cautiously over several years, under close evaluation

k Existing examples include Swiss-style heroin 'clinics' where prescribed heroin can be injected in a supervised quasi-clinical setting. UK law already allows for maintenance prescription of cocaine, (injectable) heroin, and amphetamines to dependent users, although only heroin and amphetamines are prescribed in practice (in a similar fashion to methadone) and numbers are small, around 400 and 2,000 individuals respectively.[37]

- the costs of developing and implementing a new regulatory infrastructure would represent a fraction of the resources currently directed towards supply. There would also be potential for translating a proportion of existing criminal profits into tax revenue. It is important to note that there is no clear assessment as to what level of revenue this could generate.[83]

6.7 Call to consider alternative options for drug policy

In 2010, Anand Grover, the UN's Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, presented a thematic report on drug policy to the UN Secretary-General.[106] As well as calling for the decriminalisation of possession and use of drugs, the report's concluding recommendation was to: '*Consider creation of an alternative drug regulatory framework in the long term, based on a model such as the Framework Convention on Tobacco Control*'.[107] This was attempted in 2010 by Room and colleagues who adapted the tobacco model and used it as the basis for a '*draft Framework Convention on Cannabis Control*'.[12]

The Framework Convention on Tobacco Control contains a series of UN-mandated recommendations specifically for the public-health-based regulation of a non-medical drug.[107] Transform has noted that this convention encompasses the same types of regulation proposed in its own blueprint,[83] and has a similar number of signatories (168) to the three UN drug treaties, '*which define parallel contrasting systems for the absolute prohibition of almost all other non-medical drug markets*'.[83]

As noted in **Section 6.5.1** the Government's ACMD has expressed interest in exploring non-criminal sanctions for drug possession[72] and many of the UK's leading drug service providers have expressed support for exploration and debate around the legal framework relating to drug use.[108-113] Internationally, support for such moves is far wider – as demonstrated by initiatives such as the Vienna Declaration in 2010[80] and the Beirut Declaration in 2011.[114] The UKDPC report in 2012, *A fresh approach to drugs*, proposes a new approach to the ways in which Government and society respond to drug problems.[81] It provides an analysis of the evidence for how policies and interventions could be improved, with recommendations for policy makers and practitioners to address the new and established challenges associated with drug use.

While support for moves in this direction has gathered increasingly mainstream intellectual, political and public support, the current legal framework presents an impassable obstacle. The law is absolutist in nature; it does not allow for experimentation with any forms of legally regulated non-medical drug production and supply.

6.8 Conclusions

This chapter highlights the shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability and presents some evidence that the effects are, at best, modest (see **Sections 6.2** and **6.3**). The evidence suggests that the costs of enforcement are high (see **Section 6.4.5**) and prohibition has created a range of unintended health, social and economic costs (see **Section 6.4**).

Some commentators have gone on to argue that the benefits of the UK's current system are questionable and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required. The assumption is that a different policy framework holds the potential to be more effective than the status quo. Other commentators have been more cautious: for this group, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

Doctors have a key role to play in taking this debate forward and this is discussed in **Chapter 11**.

Summary

- For the last half century, prohibition and criminalisation has been the dominant policy for drug control, both nationally and internationally.
- It is very difficult to separate the impact of drug policy from the wider effects of social policy and environmental factors on drug-using behaviour.
- Levels of drug consumption do not necessarily follow predictable economic patterns in a linear way, where an increase in price leads to decreased use.
- It is difficult to predict supply and demand of illicit drugs, as all trade is illegal; decreased availability of one drug may result in users turning to other drugs that are more readily available.
- Illegally sourced drugs are of variable quality and purity, with clear adverse health implications for users.
- Criminalisation increases the health risks of illicit drugs by encouraging use in unsafe environments and through dangerous methods of administration. It also deters users from approaching health professionals for treatment.
- A prohibitionist approach creates a lucrative opportunity for criminality and leads to high levels of acquisitive crime among dependent users.
- The stigmatisation of vulnerable populations of drug users also has significant public health implications.
- The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.

- The national budget required for law enforcement, the criminal justice system and dealing with the costs of drug-related crime is several times higher than the amount spent on drug-related health interventions.
- The existing legal framework directly impacts on the ability of medical professionals to gain access to and treat problematic drug users.
- Debate on liberalisation of drug policy is contentious, with strong feelings on both sides of the argument.
- There is widespread confusion about the use of terms such as 'decriminalisation' and an insufficient understanding that criminalisation can operate in tandem with other forms of regulation, supervision and intervention.
- Alternative legal frameworks include decriminalisation (eg sentencing reform), regulation (within a legislative framework), and free market legalisation.
- There is a shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability.
- The evidence suggests that the costs of enforcement are high and that prohibition has created a range of unintended health, social and economic costs.
- While some commentators argue that the benefits of the UK's current system are questionable, and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required, other commentators have been more cautious. Among this latter group of commentators, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

Chapter 7 – Delaying initiation and minimising the use of illicit drugs

7.1 Introduction

Drug dependence, even after successful treatment, can impact on the lives of individuals and their families. Reducing the number of people using drugs by delaying their initiation into drug use and preventing the transition from experimental or recreational drug use to problematic or dependent use has a role to play in drug prevention.

At present, strategies that aim to reduce the use of drugs fall broadly under two categories:

- reducing the number of people who are dependent on drugs, mainly by means of treatment and other forms of support
- undertaking activities to improve people's knowledge about the risks of using drugs, to influence their attitudes and behaviour and to encourage the development of skills to resist.

Treatment and other forms of support are discussed in **Chapters 8-10**. **Section 9.2** specifically examines evidence on strategies that aim to reduce use in those who are already using drugs. This chapter will explore the efficacy of interventions that aim to delay the onset of drug use. A focus on young people has been chosen because the volume of research among this population is much larger than for prevention in adults.[1] Adolescence is recognised as the period in life when drug use is most likely to begin.[1] While the majority of drug initiates do not progress to harmful use or dependence, for a minority this timeframe represents a crucial period when harmful drug-taking habits can be formed.[1] A large number of interventions are targeted at this population.

7.2 Interventions for preventing drug use

Prevention strategies are recognised as the main policy area aiming to reduce drug initiation and continued use. Traditionally, two main aims of prevention initiatives are recognised. These are:

- **primary prevention**: where the aim is to avert or delay the initial use of a drug
- **secondary prevention**: where the aim is to minimise hazards, or actual harms, among those who have already begun using drugs.

Secondary prevention measures, such as interventions based on harm-reduction strategies, are yet to receive much in the way of attention, in terms of interventions that aim to influence people's knowledge attitudes and behaviour. In relation to alcohol use, available evidence suggests that harm-reduction approaches show considerable promise in reducing alcohol-related harm.[2] Similar research for drug use is not available.

Most preventative drug interventions, known as universal interventions, are directed at unselected populations. A small minority of target groups are known, or believed, to be at a heightened risk of involvement with drug use; targeted interventions are known as:

- **selective interventions**: these strategies target subsets of the total population who are thought to be at an increased risk of using drugs. These approaches are intended for entire groups of people considered at risk, regardless of the degree of risk for any one individual in the group
- **indicated interventions**: rather than affecting groups, indicated interventions focus on identifying individuals who are exhibiting early signs of drug use. The emphasis is placed on identification, intervention, support and, in some cases, referral.

When considering the evidence base for prevention programmes, there are two limitations. Firstly, researchers have studied a fairly narrow band of strategies.[1] Commonly used strategies, such as supporting grassroots coalitions that organise against drug use, have rarely been evaluated.[1] Few conclusions can be drawn by policy makers on the efficacy of the vast majority of interventions for preventing drug use. Interventions that take place in school-based settings have received the greatest amount of attention, usually because of the ease of conducting research in these settings, compared to community-based or mass media interventions.[1] Secondly, while drug prevention strategies are used widely internationally, research into their efficacy has mainly taken place in the USA.

There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK.[3,4] Even for programmes that are delivered effectively, these seem to have little impact on preventing future drug use.[3,4] Drug prevention programmes may have some benefit in terms of delaying the initial onset of drug use. Drug use at an early age is associated with future drug use, particularly for harmful drugs such as heroin or cocaine, and is correlated with a range of other negative behaviours.[1,5-7]

Midford reported in 2000 that the cost-effectiveness of drug education compares favourably with the cost-effectiveness of most law-enforcement approaches.[8] In 1999, Caulkins et al used modelling to indicate that the US drug education programmes led to an average drop in cocaine use of 3.8g per person.[9] The modelling went on to show that for every million dollars spent on drug education, consumption of cocaine would reduce by 26kg, which compared favourably with US law enforcement, but was not as

cost effective as drug treatment programmes.[8,9] Available research indicates that soundly conceptualised and rigorously implemented programmes that are comprehensively provided are likely to produce a net social cost saving to society.[8]

7.2.1 Universal prevention strategies

Universal prevention strategies aim to prevent, delay or reduce drug use and drug-related harms at a general population level. These types of interventions can include programmes that address an entire school population through drug education lessons, parents through parenting programmes, or communities through community-wide prevention efforts.

The vast majority of universal prevention initiatives take place in an educational setting. This is because schools represent the most systematic and efficient way of reaching a substantial number of young people.

Types of school-based interventions

The history of drugs education in UK schools, outside the factual content taught in science lessons, has taken place under a number of conceptual models. Despite the widespread international use of drug prevention programmes in schools, there is limited high-quality evidence about the effect of school-based interventions on drug use.

In the 1970s, drug education and prevention interventions in schools were primarily aimed at reducing drug use through giving young people information about the risks associated with drugs.[10] These interventions operated under the rationale that increased knowledge about the effects of drug use would impact on young people's attitudes to illicit drugs, with a consequent influence on behaviour, and therefore drug use.[10] These programmes generally sought to instil fear of the consequences of experimentation with drugs. Evaluation of this intervention shows that this approach did not reduce young people's drug-taking behaviour.[10] It is posited that the introduction of these interventions at a time when drug use, or at least cannabis use, was becoming more prevalent, led to difficulties for campaigns aiming to convince a population with extensive first-hand knowledge of drug use that it invariably led to serious harm.[1] A 2005 Cochrane review of school-based interventions to reduce illicit drug use found that approaches that simply convey didactic information about drugs and their effects have no impact on drug use.[11]

The early 1980s saw the development of what are termed 'affective programmes'. The theory behind these interventions is that drug use is caused by lack of self-esteem, as opposed to a lack of knowledge about the adverse effects of drug use. Affective programmes aimed to prevent or reduce the scale of drug use, through enhanced personal and social development.[10] While there is some evidence that these interventions improve drug knowledge, attitudes and self-efficacy, there is no evidence

that this type of programme impacts on drug use or behaviour.[10] The 2005 Cochrane review of school-based interventions, noted that programmes that teach social and coping skills were shown to reduce drug use marginally.[4,11] There was no evidence of a long-term impact from these interventions, and it was unclear what elements of skills-based approaches contribute to their effectiveness.[4,11]

The late 1980s saw the growing use of social influence programmes. These were based on the hypothesis that drug use stems from direct or indirect social influences from peers and the media.[10] These programmes aim to strengthen young people's resistance skills. There is little evidence of reduction in the use of illicit drugs as a result of these programmes.[10]

Most recent programmes have attempted to marry elements of all previous approaches into programmes designed to ensure that young people have the knowledge, skills and attitudes to make safe and sensible decisions about drug use. Research, including the 2005 Cochrane review,[11] has found that these high-quality school-based multifaceted programmes show a marked improvement in young people's knowledge and skills, which can have a small impact on illicit drug use, and drug behaviour, most notably in delaying the onset of use.[7-9,12]

Whole-school approaches, involve addressing a school's values and ethos, as well as considering staff training and the involvement of pupils, staff, parents, carers, governors and the wider community. Programmes that change the environment of a classroom or school are thought to be more effective than those that try to change individual behaviour. Research from the USA in 2008, which included interventions on improving classroom behaviour management, demonstrated a 50 per cent reduction in lifetime drug use among young males (aged 14) but no effect on young females. Stronger effects were found in boys who were identified as aggressive and disruptive at a young age.[13] This programme included no discussion of drugs, instead targeting changes in the school environment that promote consistency and reward positive behaviour. The long-term effects of this intervention appear to compare well with the best school-based programmes aimed specifically at drug prevention.[1] A possible explanation for this is the inter-relatedness of drug use and other aspects of young people's lives. Research has demonstrated that factors that predict development of a drug problem are also predictive of school failure, social isolation, aggression and other problems.[1] It should be noted that, of the 32 studies included in the above Cochrane review, none achieved the highest-quality rating for their research methods, and 28 of these were conducted in the USA.[11] This demonstrates the scarcity of high-quality reliable evidence, and presents difficulties in generalising any findings on the efficacy of school-based interventions from within the USA to the UK. It should be noted that, despite this limited evidence base, large amounts of pupil and staff time are invested in these types of intervention.

The current situation in the UK

The most recent guidance on drugs education in schools, published by the DfES in 2004,[14] states that all schools should have a drug education programme that should cover all drugs, and specifically cannabis, volatile substances and Class A drugs, and, to be effective, be supported by a whole-school approach.

This guidance also states that all schools should have a drug policy that sets out the school's role in relation to all drug matters, which includes the content and organisation of any drug education programme. This was reiterated in joint guidance published in 2012 by the Department for Education (DfE) and The Association of Chief Police Officers (ACPO).[15]

In the overwhelming majority of schools, drug education forms part of personal, social and health education (PSHE) programmes.[16] In terms of providing drugs education through PSHE lessons, in recent years the PSHE curriculum has expanded to include new modules (see **Box 7**). With no additional time provided for PSHE, this has had an immediate and negative impact on the time allocated to the provision of drugs education in some schools.[16] This is of concern, given the range of drug-promoting influences that exist (as identified in **Chapter 4**).

Box 7 – Combating the psychological attractiveness and social acceptance of drugs

As identified in **Chapter 4**, heavy exposure to substance use in popular media may influence drug use. Universal interventions aimed at reducing the use of drugs may need to be rethought by policy makers. This is because currently accepted health education usually takes place under the wider umbrella of PSHE in schools. These lessons take place for finite number of hours a year, with information on health behaviours such as drug use often competing with other modules. Over the same time period, the average person is likely to be exposed to a larger number of hours of drug-promoting references in film, television, popular music, video games and the internet. This large disparity between the exposure to drugs in popular media, and interventions to reduce the use of illicit drug use, may result in the efficacy of interventions to reduce the use of drugs being diluted by the widespread exposure to drug imagery. **Appendix 7** explores current and possible policy options to counter the psychological attractiveness and social acceptance of drug use within popular media.

The quality of provision of drug education in UK schools differs across age ranges. The most recent assessment of drugs education in the UK, conducted by Ofsted in 2005, found that the quality of teaching is good in around 80 per cent of lessons at key stages one and two (primary school)[16] and in around 65 and 75 per cent of lessons at key stages three and four, respectively (secondary school).[16] The review also noted that the evidence base for school-based drug programmes is poor, particularly with reference to primary school education.[16,17]

While the majority of young people of school age have never used an illicit drug, a proportion may experiment with illicit drug use, some of whom may then go on to become problem drug users.[18] In 2010, 9 per cent of pupils aged 11 years reported having ever taken drugs, with the prevalence increasing to 40 per cent among 15 year olds.[18] Further information on the prevalence and patterns of drug use can be found in **Chapter 2**.

From a UK perspective, there is a paucity of evidence for the efficacy of school-based drug prevention programmes. The Home Office's *Blueprint drugs education* programme,[19] which ran from 2003 to 2007, was the largest drugs education programme that has ever been run in Britain. The programme provided drug education lessons to school children aged 11 and 12 years, across 23 different schools in England. It aimed to equip pupils with the knowledge and experiences necessary to make informed choices about drug use.[19] The efficacy of the programme is not known, as the study design meant it was not possible to draw any conclusions from this research.

Despite a lack of evidence that UK school-based prevention programmes affect drug use, perception studies suggest that the messages taught in these programmes are reaching pupils, although the extent to which these are affecting behaviour, and therefore drug use, is less strong. The 2011 NHS Information Centre survey of smoking, drinking and drug use among secondary school pupils, surveyed 6,519 pupils aged 11 to 15 years across 219 schools in England.[20] It found that in relation to school-based prevention programmes, most pupils recalled lessons about drugs (60%), and felt they helped them think about the risks of taking drugs (96%).[20] Pupils also believed that lessons helped them realise that taking drugs was against the law (88%), think about what they would do if they were offered drugs (77%) and find out where they could get advice or information about drugs (71%).[20] Fewer pupils reported that the lessons helped them understand that not as many young people take drugs as they previously believed (38%).[20]

Boys were more likely than girls to say they had learnt messages from lessons about drugs.[20] Younger pupils were more likely in general to indicate they had learnt lessons from drug education programmes.[20] A more complex pattern was reported in

relation to pupils' previous experiences with drug use. Those who had never taken drugs were more likely to say that lessons had helped them to avoid drugs, and to think about what to do if they were offered drugs.[20] This contrasts with pupils who had taken drugs, who were more likely to say they had been helped to understand why people took drugs, and to see that not as many people as they thought took drugs.[20]

Drug testing

Drug testing in schools has been suggested as an alternative school-based policy intervention to reduce the use of illicit drugs. This policy has not been extensively evaluated in the UK. Drug testing in schools, whether random or on suspicion, is more common in the USA, albeit in a minority of schools.

In the UK, the DfES guidance on drug testing in schools states that the implementation of drug testing should be considered carefully.[14] It recommends that schools should formulate their own appropriate drugs policies and practices in consultation with staff, parents, governors, local drug services and the police. The guidance also advises that drug testing should be placed within the wider context of educating children about the risks, effects and consequences of drug use. Since the publication of this guidance in 2004, the uptake of drug testing in schools has been limited. It is recommended by the ACPO that drug testing should not be used in cases where there is no evidence of drug use.[15]

Drug testing in schools does not appear to affect the use of illicit drugs. Research has demonstrated that drug use does not differ between schools with and without drug testing.[21] A 2005 review of school-based prevention programmes found no convincing evidence to support random drug testing in schools.[22] It was also speculated that such programmes could have negative effects, which include reduced trust between pupils and staff.[22]

Non-school settings

Non-school settings for universal interventions that aim to reduce drug use can include youth clubs, primary care centres, colleges, and work with families and in the community. In 2006, the Cochrane Collaboration published a systematic review of interventions for the prevention of drug use delivered to young people in non-school settings.[23] The interventions included:

- multicomponent community studies
- family intervention studies
- education and skills training.

The lack of research in this area meant the authors were unable to carry out a meta-analysis and pool results across similar interventions. It was suggested that further high-quality research was needed before any conclusions could be made on the efficacy of non-school-based prevention strategies.[23]

Some evidence of efficacy was found in individual studies but this was not constant across the different study modalities. Significant effects on reducing drug use were detected for individual family interventions.[23] There was insufficient evidence that any of the multicomponent community studies for reducing illicit drug use that had been considered had any advantage over the school-based programmes. Education and skills training were found to have little effect on reducing drug use.[23] Overall, the findings suggest that community-based programmes offer little for reducing the use of drugs, although family interventions may have some impact.

Mass media and social marketing approaches

Mass media campaigns are commonly used as part of universal strategies to reduce drug use. They often involve the use of television, radio and other advertising media.

In the UK, the *Talk to FRANK* initiative (now called *Frank. Friendly confidential drugs advice*) is the most recent example of a mass media prevention initiative. This was established by the Department of Health and the Home Office in 2003 and included an online information source. It is advertised and promoted through television, radio and the internet.[24] As part of the 2010 drug strategy,[25] the UK Government affirmed its commitment to continue enhancing this service.

In 2002, WHO undertook a thorough analysis of mass media approaches for the prevention of psychoactive substance use. An analysis of 13 review papers concluded that the use of mass media alone improved awareness of drug harms in some cases, but overall was not effective in reducing illicit drug use.[26] This was particularly true in countries where the presence of countervailing influences, such as drug club cultures, drug imagery within music, drug-using role models and exposure to images of drug use was high.[26] These influences are common to the UK. Large-scale research, which evaluated the efficacy of the US National Youth Antidrug Campaign between 1999 and 2003 showed exposure to campaign materials had no effect on youth drug use.[27] The widespread use of mass media approaches to reduce drug use may need to be rethought by policy makers.

Using social marketing to enhance mass media approaches may be a useful way of increasing the efficacy of mass media campaigns. [28] Social marketing programmes are designed to bring about social change using concepts from commercial advertising and marketing. Social marketing differs from commercial marketing, in that it tries to sell 'ideas' to consumers, as opposed to products. Social marketing seeks to influence social behaviours and benefit the target audience.

Using social marketing to deliver health messages presents a developing area in reducing the uptake of drugs. An evaluation of social marketing to reduce alcohol and cannabis use found a significant effect in terms of lifetime cannabis use.[28]

Cannabis initiation was shown to be between 10 and 72 per cent less likely two years after exposure to the social marketing. This research has yet to be robustly replicated.

7.2.2 Selective and indicated prevention strategies

Aside from broader questions surrounding the impact of universal prevention strategies on drug use, universal strategies can also be inefficient, as they may address those who are not at risk of using illicit drugs, while not concentrating on those at highest risk. Selective and indicated prevention strategies overcome this by targeting specific groups at heightened risk of using drugs. Research has demonstrated that these groups commonly include the homeless, those looked after by local authorities or in foster care, sex workers, truants and those excluded from school, young offenders, children from substance-using families, and young people with conduct or depressive disorders (see **Section 4.4.4**).[29] There are benefits of these approaches but since selective and indicated prevention programmes are specifically targeted at those at risk of drug use, identifying these individuals also risks stigmatising or labelling those involved in these strategies.[30,31] This in itself is a risk factor for subsequent drug use.[30,31]

Despite the large amount of information concerning risk and protective factors for drug use, relatively little is known about what works to reduce the use and uptake of illicit drugs among high-risk groups. There is a limited amount of high-quality research in this area, but the evidence that is available suggests these interventions have some effect at reducing drug use among vulnerable groups. A 2005 review of US research of the effectiveness of drug use prevention programmes found that selective prevention programmes appear to be effective in reducing short-term drug use among vulnerable young people, although this was not found across all the studies reviewed.[32] A number of school-based programmes that provided life skills training to at-risk groups demonstrated positive effects on drug use, whereas similar studies did not.[32] Results from studies of the effectiveness of counselling services for at-risk groups were mixed, with some showing positive results, some showing negative results, and some showing no change at all.[32] Multicomponent studies also produced similarly mixed reports.[32]

While interventions targeted at vulnerable groups appear to have some effect on reducing drug use, it is not clear what type of intervention works best, and what format these interventions should take. It should be noted that all research from the above review is from the USA, raising issues of comparability to the UK.[32] There is a need for outcome evaluations of targeted drug prevention programmes that take place in the UK.

The age at which interventions take place among vulnerable young people appears to have a significant impact on illicit drug use. The 2005 review discussed above identified the age range 11 to 13 years as a crucial period for interventions.[32] This is a time when young people at high risk start to experiment with drugs.[32] This appears to be an

earlier age of onset than for the general population.[33,34] In the UK, this period traditionally marks the time of transition to secondary school, and it may be that interventions should be targeted at this age range among vulnerable groups within the school setting. For vulnerable children at high risk, interventions in non-school settings may need to be explored, as these children may have higher levels of school truancy. Targeting preventative interventions to those at heightened risk of problematic drug use relies on accurate identification of those groups that are susceptible to drug use. It is essential that all necessary agencies are provided with the appropriate resources to identify at-risk groups.

7.3 Evaluation of prevention strategies: conclusions

Prevention strategies have a relatively small impact on reducing drug use, other than delaying the initiation of use. There is little international evidence, and only a small amount of UK evidence, to suggest that such strategies have any impact on future drug use. Government policy currently focuses on providing universal and selective prevention programmes. While these interventions may have some benefit, this is limited and there is a lack of robust evidence to support their use. The question remains whether alternative policy options should be explored, which could potentially have greater benefit.

Prevention strategies that focus on positive social and behavioural development appear to be effective. Programmes that only provide drug-relevant information, or try to boost self-esteem, are less likely to be effective at reducing demand. Taking action on preventing the underlying causes of drug use may be as effective as, or more effective than, preventing drug use directly.

Summary

- Current prevention strategies aim to reduce drug use by influencing attitudes and behaviour, in order to prevent or delay the initiation of drug use.
- Primary prevention aims to avert or delay initial use, while secondary prevention aims to minimise the harms in those already using drugs. Secondary prevention interventions, such as harm-prevention strategies, are yet to receive much in the way of attention.
- There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK. Drug treatment programmes are more cost effective.
- All schools in the UK are required to have a drug education programme. These programmes improve young people's knowledge about drug use, and have a small impact, notably in delaying the onset of use.

- There is evidence that most pupils recall the content of their drug-education lessons and report that it helps them to make decisions about what to do if offered drugs. Those who had taken drugs said lessons helped them understand why people take drugs and that not as many people as they thought take drugs.
- Programmes that also address classroom behaviour management have been shown to reduce lifetime drug use in boys but not girls in the USA.
- Drug testing in schools does not appear to affect the use of illicit drugs; random testing in schools may have a negative effect.
- There is insufficient research on interventions outside the school setting to prevent drug use to provide evidence on their effectiveness.
- The use of mass media can improve knowledge but is not effective at reducing illicit drug use; social marketing may be a useful way of increasing the efficancy of mass media campaigns.
- Selective prevention strategies target at-risk groups and often address multiple and complex risk factors. There is conflicting evidence about their efficacy in reducing drug use among vulnerable groups, and there is a risk that they further stigmatise already marginalised individuals. The age range 11 to 13 years has been identified as a crucial period for effective intervention.
- Groups that are most susceptible to drug harm should be identified. Taking action on preventing the underlying causes of drug harm rather than preventing drug harm directly may be more effective.

Chapter 8 – Medical management of drug dependence: the doctor's role in managing heroin addiction

8.1 Introduction

This chapter examines management of drug dependence by medical practitioners. It then presents a detailed description of opioid substitution therapy (OST), the evidence for its effectiveness, and an analysis of the ingredients of effective treatment. This analysis provides a model for the components of effective medical management of drug dependence.

OST has been extensively researched, and evidence that it can reduce the adverse effects of heroin addiction has led to its widespread use internationally.[1] OST has always generated disquiet, as it challenges the intuitive notion that the best way to overcome addiction is to stop using drugs, and become drug free.[2] This chapter provides a brief overview of the extensive research evidence indicating that OST is as effective, or more effective, than short-term treatments aimed at 'cure' of heroin addiction, and describes the factors that have been identified as improving the outcomes of treatment.

In **Chapter 9**, medical responses to the use of other illicit drugs and drug-related harms are considered, while **Chapter 10** examines medical management of illicit drug use within the criminal justice system.

8.2 Managing drug dependence as a medical issue

Among people seeking treatment, heroin addiction tends to be a chronic, relapsing and remitting disorder, with few people achieving stable, sustained abstinence after an episode of care. The notion of medical management of chronic disease seems more useful than episodes of care.[3] The medical management of dependence is usually more difficult and challenging than for other chronic disorders. By the time they come for treatment, many dependent drug users are socially marginalised, or in prison, lacking access to the rewards arising from employment, personal relationships and family participation. As a result, there is little in their lives motivating them towards recovery. Treating heroin addiction frequently involves the social reintegration of marginalised individuals lacking in skills and having few and often tenuous social connections.

As outlined in **Section 4.4**, there is a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation. Hospital admission rates for drug-specific conditions have also shown a strong positive association with deprivation. Deprivation appears to be a strong predictor of drug-related harm.

8.2.1 Tackling stigma and the 'addict identity'

The stigma surrounding drug use further complicates management. Drugs, especially illicit drugs, are viewed with fear and disapproval (see **Sections 2.5 and 6.4**). The stigma associated with addiction is a significant barrier in providing healthcare to people misusing drugs, as negative attitudes – on the part of both practitioners and patients – can compromise effective care (see **Sections 2.5 and 6.4**).

Stigma may have a public health benefit, in making certain risky or harmful behaviours less attractive, and the stigma associated with illicit drugs probably discourages many people from using them. Stigma can also attract troubled young people; which probably explains why many drug prevention programmes paradoxically lead to more, rather than less, drug use.[4] Breaking rules, and experiencing the disapproval of family and peers, confirms their sense of badness, while providing a self-defeating sense of autonomy and independence (see **Section 6.3.1**).[5] Drug use is reinforcing, producing wellbeing and relaxation and relieving negative mood states such as pervasive guilt and shame, or alleviating painful conditions. Repeated use can lead to the development of dependence syndrome (see **Section 1.1.2** and **Glossary**), with physical and psychological symptoms that include characteristic narrowing of the individual's range of interests and activities, as drug use comes to displace other activities. This can progress to increasing isolation, disrupted relationships with family, and loss of social supports. All these factors contribute to the development of the 'addict identity' – someone who has become conditioned to see himself existing outside of normal society, isolated and defiant.

For people with an 'addict identity', seeking treatment can seem like a defeat. Once in treatment, and able to stop compulsive drug use, it is not rare for the patient to sabotage his own treatment, for example by dropping out, or missing scheduled appointments, taking refuge in the familiar experience of failure, disapproval and conflict.[6] This desire for the familiarity of experience, and the associated learned behaviour, can be understood as a form of conditioning (see **Section 4.3.2**). There is a major element of behavioural treatment in how doctors, nurses and pharmacists respond to the challenge of disaffected, impulsive behaviour. Clinics delivering the same 'treatment' often achieve dramatically different outcomes, and the quality of the therapeutic relationship is one factor contributing to the greater effectiveness observed in some settings.[7]

8.2.2 Staff attitudes

Managing a chronic disease is based on a partnership between doctor and patient, and the patients' self-efficacy and responsibility for their own wellbeing are critical determinants of outcome. Managing addiction involves long-term support, educating patients about their condition, promoting engagement in and compliance with treatment, monitoring symptoms and dealing with complications.

Practitioners treating drug-dependent patients require not just skills and knowledge, but also a positive attitude towards treatment and recovery. Negative attitudes on the part of drug-dependent patients may sabotage treatment, but so too can negative attitudes on the part of practitioners. Four decades ago, Dole and Nyswander, pioneers of methadone treatment (MT) for opiate addiction, recognised the critical importance of changing the addict identity,[8] a change encapsulated in Marie Nyswander's phrase '*from drug addict to patient*'. Their theme was that, freed from the cycle of addiction and treated with respect and dignity, heroin users can develop a different image of themselves, and behave with self-respect and dignity. They emphasised that negative assumptions about drug users need to be balanced by a belief in their capacity to change, and a sense of the practitioner's role in fostering that change.[8]

8.2.3 Shifting opinion: is drug dependence 'sickness' or 'badness'?

A shift in viewing dependence, from 'sickness' to 'badness', has been documented in the USA, and labelled the '*demedicalisation*' of treatment.[9] The result was widespread delivery of treatment out of line with research evidence,[10] and a proliferation of programmes oriented to abstinence rather than medical maintenance treatment of opioid addiction (see **Section 8.4**). In response to the weight of evidence that OST can reduce the harms of heroin addiction, there has been a 'remedicalisation' of treatment of addiction in the USA over the last 15 years. From the mid 1990s, neuroscience research has been promoted as showing that addiction is a '*chronic relapsing brain disease*' (see **Section 1.1**).[11] In 2000, the passage by Congress of the Drug Abuse Treatment Act liberalised regulations surrounding treatment, permitting the use of office-based treatment of addiction for the first time in the USA.[12]

8.3 Example of managing drug dependence as a medical issue: OST

The following case study illustrates an example of heroin addiction.

Case study: Treatment of heroin addiction with injectable diamorphine

Mr HT is a 42-year-old man who has been receiving injectable diamorphine treatment since March 2010.

Mr HT was adopted at the age of six months. He found school challenging, and truanted from mid primary school. The secondary school he attended recognised that he had learning difficulties and he was sent to a boarding school for children with special needs. His behavioural problems worsened there. At the age of 14 he began using drugs, and he was expelled at the age of 15. He had not learned to read and write.

Instead of returning to his home, Mr HT went to live in a 'hippy compound', supporting himself with occasional manual work, busking and some begging. Aged 22 he came to London, sleeping on the streets and squatting. He was to live on the streets for most of the next two decades. Within two years he was addicted to heroin, spending £150 to £200 daily on the drug, gaining the money by begging, thieving and raiding phone boxes and parking meters. He acquired an extensive criminal history, including five periods of imprisonment. The first thing he would do on release from prison was 'score' heroin.

In 2004, a community drug project found Mr HT sleeping on the streets and offered him a bed in a hostel. He began an MT programme, but continued to inject heroin and crack cocaine. He lost his place in this hostel during one of his spells in prison. In 2007, again homeless, he was picked up by another community drug project and placed in a hostel. He restarted an MT programme, but continued to inject street heroin, and to smoke crack cocaine and cannabis. His health and personal hygiene were poor. When his peripheral veins were scarred and difficult to inject, he began injecting street heroin into his neck, and his hostel referred him to an NHS injectable opioid clinic in 2010. Here, diamorphine (pharmaceutical heroin) is prescribed for patients not responding to oral methadone. Administration of diamorphine is all supervised by trained staff, and the service users attend twice daily and engage in frequent reviews and keyworking (see **Glossary**) sessions.

When first assessed for diamorphine treatment, Mr HT expressed doubt that he would be able to attend the clinic twice daily seven days per week. For the first several months he remained chaotic and disorganised, often missing doses and continuing to use street drugs. His dose was progressively increased, until he was stabilised on 200mg

diamorphine intramuscularly twice daily and 70mg of methadone once a day. In August 2011, although continuing to smoke crack about twice per month, he had ceased illicit heroin use, and his personal hygiene, mood and outlook had improved dramatically. He acquired a publicly funded flat, and began occupational therapy sessions to improve his literacy.

Mr HT presented as someone who, having lived on the streets for most of his adult life, lived 'for the moment', with little capacity for planning, and little motivation or hope that his life might be different. His primary reaction is surprise that he has made such a vast improvement in his life.

Case study details provided by Dr James Bell, Consultant in Addictions Medicine.

The case history starts with a story that is not rare. Mr HT was a vulnerable adolescent with limited education and a disadvantaged background, and went on a downward spiral as a result of dependence on drugs. Criminal sanctions were no deterrent to his drug-using career, and he did not respond to methadone. At present, his downward spiral has been interrupted and reversed by diamorphine treatment. The continuing challenge is to build a sustainable recovery, based on self-care in stable housing and gaining employment. That would provide a basis for progressively reducing his frequency of injecting, and eventually returning to oral medication.

Prescribing diamorphine for heroin addicts is a poorly understood, often controversial, modality of treatment. Diamorphine has been shown to reduce heroin use and improve self-reported quality of life in those who are not responding to MT,[13-15] but there has been little reflection on why injectable treatment has advantages over oral medication. This case history is presented to illustrate some of the reasons why prescribing diamorphine can have advantages over other treatment approaches. This is discussed further in **Section 8.4**.

Opioid substitution therapy is the prescribing and administration of a pharmaceutical opioid as a 'substitute' for illicit opioids, to patients who have become dependent. The most common form of OST is MT, but there is a rapidly increasing experience with buprenorphine, and a small experience with prescribed diamorphine (pharmaceutical heroin) in the management of heroin addiction.

In the 1980s, recognition that injecting drug use represented an important mode of transmission of HIV and other blood-borne viruses led to increasing provision of OST internationally.[16] Methadone is the most commonly used OST medication, and has the most extensive literature surrounding it. There has been increasing delivery of MT in primary care worldwide, placing medical practitioners in the frontline in delivering treatment.

Although it is thought of primarily as a pharmacological treatment, OST has important behavioural and interpersonal elements that contribute to outcome.[7] Opioid substitution requires ritualised, daily attendance for administration in a predictable, safe, non-punitive and non-judgemental treatment space, and establishment of a long-term therapeutic relationship with a keyworker (see **Glossary**) or doctor (see **Section 8.4.3**).[7] For a small proportion of people, the respite from withdrawal offered by MT is not sufficient to allow them to move away from repetitive heroin use.[7,17] For many marginalised individuals with little sense of purpose or planning beyond short-term survival, prescribed diamorphine is sufficiently reinforcing to motivate them to attend and comply with the requirements of treatment. Daily attendance provides a structure and routine in a previously chaotic life. Clear rules and expectations of behaviour, enforced consistently, offer a new (and sometimes challenging) experience for previously asocial or antisocial individuals.

The cornerstone of treatment is an adequate dose of opioid – in the words used by patients on prescriptions, the dose that 'holds' them. Psychodynamic psychotherapy involves 'holding' clients with the experience of empathy, while allowing them to come to terms with their own unacceptable thoughts and impulses. Prescribing opioids 'holds' patients with medication, while allowing them to explore the challenging possibility that they are acceptable, and capable of social reintegration.

8.3.1 The effectiveness of OST

Traditionally, treatment of dependence on alcohol and drugs has been based on two premises – that recovery from addiction requires abstinence from drugs, and that it requires a change of attitude and identity. The principle of OST – that people can recover while still dependent on an opioid – has challenged the assumption that the objective of treatment should be abstinence from all drugs (including methadone).This is currently re-emerging as an issue in the UK, as there are proposals in the *Drug strategy 2010* that the funding of drug treatment services should reward abstinence from all drugs.[18]

A comprehensive Health Technology Assessment undertaken in the UK in 2007 reviewed the evidence for the effectiveness of methadone and buprenorphine, and concluded that both drugs were effective in treating opioid dependence.[17] This finding was based on a synthesis of randomised trials, observational evidence

and expert opinion. This section seeks to go beyond the finding that OST is effective, and investigate how well it achieves the many different objectives of treatment of drug dependence.

8.3.2 Is OST effective in promoting abstinence from all drugs, including OST medications?

International studies suggest that for opioid-dependent persons in the criminal justice system, and those seeking treatment, addiction is a chronic, relapsing and remitting condition. People cycle through differing episodes, and differing modalities of treatment. In 2001, Hser et al reported on a group of heroin addicts in the USA, followed up 33 years after entering treatment.[19] Forty per cent were dead; many remained addicted. Among those who achieved prolonged abstinence, one-quarter had eventually relapsed in subsequent observations. Relapse was observed even among patients abstinent for as long as 15 years. Long-term follow-up studies documenting the natural history of heroin addiction estimate that among subjects who seek treatment, 2 to 5 per cent per year achieve stable abstinence from opioids.[20,21]

It has been argued that this view is overly pessimistic, and many more people can and do recover from dependence on drugs. The phenomenon of spontaneous recovery from addiction has been well documented.[22] Community surveys (notably, the Epidemiological Catchment Area (ECA) study from the USA), have identified a number of respondents who report previous dependent use of drugs, but are no longer dependent, confirming that many people do 'recover' from dependence. The prognosis for people who seek treatment for drug dependence is consistently worse than in non-treatment samples. Among people seeking treatment for addictive disorders, whether alcohol dependence[23] or heroin addiction,[22] the course of dependence tends to be chronic and relapsing, and recovery is less likely in this group than among people who never seek treatment. The reason for this disparity is most likely that people who present seeking treatment have more severe problems – '*problems that will not be resolved just by getting them off drugs*'.[22]

This is not to suggest that individuals cannot leave MT and remain abstinent. People leaving MT are less likely to relapse if they have ceased injecting heroin, and have achieved a degree of social reintegration – employment, a stable relationship, or community connections – before they attempt to withdraw from methadone.[24]

To optimise the effectiveness of OST, the NTA's Recovery Orientated Drug Treatment Expert Group has drawn attention to the importance of delivering OST in line with National Institute for Health and Clinical Excellence (NICE) clinical guidance. In their 2012 report, the group advised doctors and health professionals working with heroin addicts to:

- review all existing patients to ensure they are working to achieve abstinence from problem drugs
- ensure treatment programmes are dynamic and support recovery, with the exit visible to patients from the moment they walk through the door
- integrate treatment services with other recovery support such as mutual aid groups, employment services and housing agencies.[25]

A recent study from Scotland confirmed the protective effect of methadone treatment on mortality, but also found that longer duration of methadone treatment was associated with less likelihood of achieving abstinence from heroin.[26] This has been interpreted as showing that treatment with methadone may actually impede recovery from dependence, but a simpler explanation is that people with more severe problems tend to remain in treatment longer, and have a poorer prognosis.[26]

The implication of the chronic, relapsing nature of heroin addiction is that responding to an individual seeking help for heroin addiction is best conceptualised as management of a chronic disease, characterised by exacerbations and remissions (see **Glossary**), variable levels of disability, and risk of complications. The objectives of long-term management are reduced risk of death and disease, suppression of drug use, improvement in mental health and outlook, and restoration of impaired social roles. These are the key elements of 'recovery', and each element – cessation of heroin use, reduction in other drug use, improvements in health and social functioning – supports each other element in a holistic, biopsychosocial approach to chronic disease management.

8.3.3 How effective is OST in suppressing the use of illicit drugs?

Three major large-scale observational studies from different countries provide a reasonably clear indication of the effectiveness of OST in suppressing use of heroin, use of illicit drugs such as cannabis and cocaine, and misuse of alcohol and benzodiazepines.[27-29] These studies compared the effectiveness of OST with that of residential rehabilitation (RR), a drug-free approach to treatment involving prolonged residential treatment in a highly structured environment based on self-help and mutual support (see **Glossary**). Some observational studies have also compared OST to short-term detoxification (see **Glossary**).

The Treatment Outcome Prospective Study (TOPS) followed a large sample of US patients treated in RR and on MT.[27] The National Treatment Outcome Research Study (NTORS) was undertaken in the UK, using a similar methodology to TOPS,[28] and the Australian Treatment Outcome Study (ATOS) followed samples of heroin users entering RR, MT, detoxification or no treatment.[29]

These studies provide surprisingly consistent results. Over time, heroin use was reduced, with 25 to 35 per cent of heroin users reporting continuing heroin use 3-5 years after beginning their index treatment. Many were still in treatment at follow-up, and the majority of subjects had been though several episodes of treatment, making it difficult to attribute outcomes to any particular treatment modality – and emphasising that treating heroin addiction is best conceptualised as chronic disease management.

Three-quarters of subjects were using other drugs, mainly cannabis and alcohol. This is important, as there are few 'pure' heroin users, and most people entering MT have used, or are using, multiple drugs.[22] Results of large-scale, observational studies suggest both OST and residential, drug-free programmes seldom result in long-term abstinence from all drugs, and that alcohol misuse and cannabis use are common.[27,29]

The NTORS demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed.[30] Economic benefits were largely accounted for by reduced costs of crime. Among clients recruited to NTORS (549 in total, recruited from 54 residential and community treatment programmes), criminal behaviour costs were estimated to fall by £16.1 million during the first year of treatment, and by £11.3 million during the second year.[31] The findings demonstrate that there are clear economic benefits to directly funding treatment of drug users, which far outweigh the costs.

8.3.4 How effective is OST in improving physical and mental health?

Opioid substitution reduces the risk of death by overdose, the commonest cause of death among active heroin users. There is a long-recognised risk of death during induction into MT, and an increased risk of death by overdose after leaving any form of treatment. Clausen and colleagues had the opportunity to follow risk of death in subjects entering MT, and in subjects placed on a waiting list for MT.[32] This study demonstrated the protective effect of entry to treatment; despite risks during induction and an increase in mortality after leaving treatment, subjects entering MT had a lower risk of death than those placed on a waiting list for treatment. There is some indirect evidence that the reduction in risk for those entering treatment translates into a public health benefit. In France, in 1994, there were only 52 people

in treatment with methadone, and an estimated 160,000 people injecting illicit opioids. Five years later, there had been an expansion in MT to 7,000 people, and 60,000 people were being prescribed buprenorphine. Deaths from heroin overdose in France fell from 505 in 1994 to 92 in 1999.[33] A similar observation was made in Sweden following liberalisation of access to OST, particularly buprenorphine.[34] The number of patients in treatment increased more than threefold from 2000 to 2006, with the greatest increase for buprenorphine, which was introduced in 2000. There was a significant 20 to 30 per cent reduction in opioid-related mortality and inpatient care between 2000-2002 and 2004-2006 but not of other drug-related mortality and inpatient care. A small but significant increase in buprenorphine- and methadone-related mortality occurred. The authors concluded that liberalisation of Sweden's drug policy, and expanded access to OST, contributed to a decrease in overall opioid-related mortality and inpatient care.

Opioid substitution also reduces the risk of transmission of blood-borne viruses (HCV and HIV), particularly in conjunction with availability of clean needles and syringes.[35,36] There is considerably less data on which to assess mental health outcomes. Residential rehabilitation programmes usually place emphasis on attitude change and growth of a new consciousness. In TOPS, at five years post treatment, improvements in depression were identical in the MT and RR cohorts.[27] The ATOS study reported substantial self-reported reductions in risk taking and injection-related health problems, and improvements in general physical and mental health.[29] Positive outcomes were associated with more time in maintenance therapies and RR and fewer treatment episodes.

A 2010 review of studies of quality of life among opioid-dependent individuals identified 38 articles addressing the topic.[37] The results were quite mixed, but a few conclusions emerged. The subjective quality of life (QoL) and health-related quality of life (HRQoL) of opioid-dependent individuals is relatively low compared to the general population, and is most comparable with the QoL of individuals with psychiatric problems. Users of opioid drugs reported lower scores on mental health in particular, while their physical wellbeing was less affected. Entry to substitution treatment generally had a prompt beneficial effect on QoL, although this may reflect the fact that people enter treatment in very poor condition.[38]

The influence of drug use on HRQoL was inconsistent, although a negative impact of excessive alcohol use on the HRQoL of opioid users was shown in various studies.[37]

8.3.5 How effective is OST in improving social reintegration of marginalised heroin users?

One of the primary reasons for public support of treatment for heroin addiction is that treatment is associated with reduced acquisitive crime. To the extent that people in treatment reduce their use of illicit drugs (and reduce expenditure on illicit drugs), the level of acquisitive crime diminishes in individuals in treatment.[39] An Australian analysis of community rates of offending has demonstrated a statistically significant link between increased numbers in MT and falling levels of acquisitive crime in the community.[40]

There are very few quantitative data available on which to assess the extent to which people in MT are able to achieve social reintegration. One early randomised trial comparing MT to drug-free treatment included intensive psychosocial input, comprising vocational retraining and limit setting in relation to continued drug use. It is one of few studies demonstrating that MT can dramatically improve social reintegration.[41] The control group received no treatment, as none accepted drug-free treatment. At two years, 12-17 MT subjects were not using heroin regularly, and were employed or undertaking education. The remaining five subjects had been discharged from the programme for continuing drug use. These impressive results were dramatically better than the outcomes observed in subjects randomised to drug-free treatment, and, although the sample size was small, the study provides clear evidence that, with appropriate resources and policies, MT can contribute to social reintegration.

8.4 What are the components of effective OST?

There has been a proliferation of models of MT, with clear evidence that some treatment programmes are more effective than others.[7,42,43]

Ball and Ross investigated what actually occurred in treatment in six clinics in the USA, and compared the outcomes of patients treated in these clinics.[7] They reported that clinics achieving better outcomes had an '*orientation to maintenance*' (as opposed to an orientation to abstinence; see **Section 8.4.4**), had on-site medical services, and were better managed, with stable clinic leadership. They reported that patients who did better had received higher methadone doses, and reported a good relationship with at least one clinic staff member.

8.4.1 Drug and dose – the pharmacology of OST

Drug use starts out primarily as pursuit of the euphoric effects of drugs, but dependent drug use comes to be primarily driven by the compulsion to avoid withdrawal. The appeal of OST for dependent heroin users is that a daily dose of methadone (or buprenorphine) will abolish withdrawal symptoms (see **Section 8.3**). A dose of methadone means opioid-dependent individuals are no longer sick when

they are not using heroin, and this increases their control over their heroin use.[44] Methadone doses of 30-50mg/day are sufficient to block withdrawal for 24 hours in the majority of dependent heroin users. For around 10 per cent of heroin users seeking treatment, respite from withdrawal is sufficient to enable them to cease drug seeking and drug use.[25]

Heroin use is a powerfully reinforcing and motivating factor shaping the behaviour and consciousness of people who have been addicted. Dependence and the additional conditioning (see **Section 4.3.2**) associated with injecting drug use mean that in the first months of treatment, people maintained on low doses of methadone tend to continue injecting. By increasing the daily methadone dose, patients' tolerance to opioids is progressively increased, and high tolerance attenuates the individual's response to injected heroin. Heroin becomes less reinforcing, helping to extinguish the habit. This explains why high-dose methadone is far more effective in suppressing heroin use than low doses. A reasonable approach to dose setting is that after entry to treatment, the methadone dose should be progressively raised until patients cease heroin use, or reach a dose of 100mg/day. Once patients have ceased use of heroin for a period, it may be reasonable to lower the dose of methadone if side-effects are problematic, but there is a significant likelihood that, as doses are lowered, patients will return to heroin use.[45]

Not everyone responds to adequate doses of methadone. Up to one-third of heroin users metabolise methadone sufficiently rapidly that they experience low-grade withdrawal symptoms in the latter half of the dosing interval, when their blood concentration of methadone is falling. These patients experience withdrawal dysphoria, low mood and craving, and are more likely to persist in heroin use and to use other drugs.[46,47] Increasing the methadone dose in these subjects is unlikely to be effective, as the problem is not the absolute blood concentration of methadone, but the rate at which the concentration is falling.[46] In patients who have continued to use heroin despite receiving doses of methadone of 100mg/day, it may be that buprenorphine, or slow-release oral morphine, would be more effective in suppressing withdrawal symptoms and heroin use.

Qualitative interviews with a group of patients maintained on methadone provide an idea of the role of medication in enhancing social reintegration.[44] Gaining control over one's life and daily functioning and no longer being sick when no heroin is available, were only some of the frequently mentioned benefits of following a MT programme. The respondents emphasised that methadone did not cause changes in their lives, but allowed change to occur in important areas such as relationships. Methadone treatment can create the necessary preconditions to deal with a number of issues (eg developing one's skills to practise a job) that can enhance individuals' quality of life. Opiate-dependent individuals valued methadone's ability to help them

function normally, overcome their psychological problems and dependence on illicit opioid drugs, and support them in achieving certain life goals.[44] Stigmatisation, discrimination, dependence on methadone and the drug's paralysing effects on their emotions were mentioned as common negative consequences. A number of consequences (difficulty and unpleasantness of withdrawing from methadone, and stigmatisation) were mentioned as having a negative impact on important aspects of being in treatment.[44]

Buprenorphine

Buprenorphine is a partial opioid agonist, with different pharmacological properties to methadone. It has high mu-receptor affinity, remaining bound to opioid receptors for longer periods than drugs such as morphine or methadone. While receptors are occupied, they can no longer be activated. At low doses, buprenorphine is a potent opioid agonist, but as doses are increased, opioid receptors remain occupied and blocked, meaning that the effects of buprenorphine are self-limiting. Above quite low dosage levels, increasing doses prolong opioid actions, but do not produce increased sedation or respiratory depression. Buprenorphine has greater safety than other opioids in overdose.

Buprenorphine has a prolonged half-life, and a single daily dose produces sufficient opioid activity to block withdrawal for 24 hours or longer. Through prolonged receptor occupancy, buprenorphine also attenuates the response to heroin. It is thus a useful drug in treatment of addiction, and it has been used in OST for many years. A Cochrane review examined trials comparing buprenorphine and placebo, and reported that buprenorphine was statistically significantly superior to placebo in retaining patients in treatment and suppressing heroin use (although low doses of buprenorphine were not effective in suppressing heroin use).[47] Comparisons with methadone were reported as showing that methadone was more effective than buprenorphine in retaining patients in treatment.[48]

Buprenorphine is an important treatment option, for two reasons. Firstly, some patients tolerate methadone poorly, and the availability of buprenorphine provides a valuable alternative. More importantly, buprenorphine treatment is associated with a lower risk of death by overdose than that associated with MT.[49]

Diamorphine

For a small proportion of patients, relief from withdrawal is not sufficient to motivate them to comply with treatment. In this group of '*poorly motivated or treatment-resistant*' patients, who persist in heroin use despite other forms of treatment, injectable diamorphine has been shown to be effective in reducing street heroin use and improving self-reported quality of life.[13,15]

The rationale for this treatment is that, as illustrated by the case study at the start of the chapter, and discussed in **Section 8.3**, diamorphine is a more reinforcing drug than methadone, and provides a greater incentive to comply with treatment than methadone. Most of these participants have lost family support, and are so entrenched in a daily cycle of drug seeking and drug use that they have little other reward in life, and little capacity to hope or imagine that things might ever be different. Injectable diamorphine treatment is highly structured, requiring twice-daily (or more frequent) attendance to administer diamorphine under medical supervision. These onerous requirements deter many individuals who are addicted to heroin from participating in this treatment, but for others, access to diamorphine provides sufficient motivation to comply with the requirements of treatment. For many demoralised trial participants, the transition (not always smooth) from addict to patient begins a process of social reintegration that is made possible because sufficient incentive is offered to participate in structured treatment.

8.4.2 Supervised administration

The randomised trials establishing the effectiveness of methadone, buprenorphine and diamorphine treatment have all involved supervised administration.[13-15,48,50] There has been a substantial deviation from the model of care supported by evidence, namely a reduction in the requirement for supervision of administration. Although the benefits of supervised administration of OST are recognised and understood by patients,[51] they have received relatively little study. There is only one randomised controlled trial (RCT) comparing supervised and unsupervised treatment, and it showed no difference in effectiveness.[52] Entry criteria for the study were restrictive, and only 22 per cent of new entrants to treatment were eligible for randomisation. The main reason for excluding potential subjects was homelessness. For people in chaotic circumstances, it is plausible that structured treatment is more likely to be effective (see **Section 8.2**), while for those who are reasonably high functioning, the requirement to attend daily for treatment may well be a deterrent to participating. By only randomising relatively stable patients, this study would have missed the main potential benefit of supervised treatment, which is to treat marginalised individuals living in chaotic circumstances. At present, all that can be concluded is that for patients who have stable housing and no active mental health problems, treatment without direct observation of administration was as effective as supervised treatment.

Reports from France have shown that less clinical monitoring was associated with more heroin use and more injecting or prescribed buprenorphine,[53] and that less supervision of administration was associated with worse retention and more heroin use.[54]

There have been a variety of studies confirming that clear policies and expectations of behaviour produce better treatment outcomes. The most recent (2010) came from the USA, demonstrating that structured treatment (delivered according to protocol), is more effective than treatment that does not follow protocol.[55]

8.4.3 Counselling

There have been two randomised trials, both from the USA, comparing the effectiveness of differing levels of counselling in MT. The first reported that the provision of counselling and support improved outcomes – several counselling sessions were more effective than few, and few were more effective than none.[a,56] The second showed no difference in outcome between new entrants to MT offered no counselling, monthly counselling or weekly counselling.[57]

Interpretation of these trials is compromised by the fact that neither could be conducted double blind. Treatment is more likely to be effective when staff believe in the treatment they are delivering. In a trial to demonstrate the potential value of interim methadone (without counselling), it is probable that staff believed this approach would be effective – and it was.[58] In the McLellan trial,[56] staff probably believed that those who were randomised to minimal counselling were receiving suboptimal care – and found they were. The most plausible interpretation is that when staff believe in the treatment they are providing, it works better.[58]

The McLellan study,[56] finding benefit from formal counselling, is also at odds with the experience of Dole and Nyswander, who reported that although counselling was offered to their patients, very few availed themselves of it.[8]

Consistent with these observations, a recent Cochrane review analysed the results of trials of psychosocial interventions in conjunction with OST, and found no significant benefit of psychosocial services in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression.[59]

This finding does not negate the possibility that some individuals can benefit from psychological interventions, but in randomised trials no benefit was shown overall. While there is little evidence for formal counselling, there is substantial evidence that the quality of interaction between a patient and staff is an important ingredient of treatment (see **Section 8.2.2**).[7]

a One treatment group received no counselling; the second group received counselling on a weekly or biweekly basis; and the third group received the same as the second but could also access additional sessions with a psychiatrist, an employment counsellor and a family therapist.

It is worth reiterating that daily interaction with health professionals, in a non-judgemental, non-punitive environment in which there are clear rules and expectations of behaviour, enforced consistently, offers safety and structure to previously marginalised and chaotic individuals.

8.4.4 Orientation to maintenance

Longer periods in MT (and in RR)[b] are associated with better treatment outcomes – the duration of treatment is a linear, non-threshold predictor of outcome, with better outcomes from longer treatment.[61] After leaving treatment, relapse is usual.[26] Time-limited MT is not effective.[62,63] For these reasons, there are risks associated with encouraging or pressuring patients to withdraw from treatment, and OST is best regarded as a maintenance intervention.

The majority of patients aspire to an opioid-free life without methadone,[44] and an orientation to maintenance does not mean that people should be discouraged from seeking to withdraw from treatment if they are doing well, and have sufficient 'recovery capital' (social supports such as a relationship, job, family support, affiliation with mutual support groups – see **Glossary**) to sustain long-term abstinence. People who achieve good social reintegration, particularly employment, are more likely to be able to leave treatment without relapse.[24]

While, in general, individuals should be encouraged to remain in treatment, patients who are deriving no observable benefit from treatment, or who are compromising the safety of the treatment space, may need to be discharged. An unstructured environment without enforced expectations is unlikely to be a therapeutic environment.

8.4.5 Patient education and relapse prevention

The controlled withdrawal from an opioid is termed detoxification (see **Glossary**). Patients should be given detailed information about detoxification and the associated risks, including the loss of opioid tolerance following detoxification; the ensuing increased risk of overdose and death from illicit drug use; and the importance of continued support to maintain abstinence and reduce the risk of adverse outcomes.[64] Following detoxification, rehabilitation, or other periods of abstinence from opioid use, relapse is common.[65,66] Relapse prevention is discussed in more detail in **Section 9.5** and is likely to require continued community support in addition to the teaching of relapse prevention skills.

b The therapeutic community (TC) (see **Glossary**) for the treatment of drug abuse and addiction has existed for about 40 years. In general, TCs are drug-free residential settings (residential rehabilitation) that use a hierarchical model with treatment stages that reflect increased levels of personal and social responsibility. Peer influence, mediated through a variety of group processes, is used to help individuals learn and assimilate social norms and develop more effective social skills.[60]

Long-term favourable outcomes are more likely in those who remain in some kind of treatment, whether this includes OST with community support, or abstinence with community support, for example participation in Alcoholics Anonymous (AA), Narcotics Anonymous (NA) or other mutual-help programmes (see **Glossary** for further information on AA, NA and mutual-help groups).[67]

8.4.6 The role of naltrexone in relapse prevention

The opioid antagonist naltrexone is licensed in its oral form for use as an adjunct in relapse prevention for people who have undergone opioid detoxification, to help them remain abstinent. An essential safety precaution for the medical professional to be aware of and educate patients about is the risk of a fatal overdose if they return to heroin use after naltrexone treatment, because of loss of tolerance to heroin.[68]

While pharmacologically it is consistent that naltrexone would be an effective preventive strategy, the use of oral naltrexone requires significant motivation to remain compliant, and thus for it to be an effective therapeutic strategy. The results of studies have not been favourable, except in cases where there are added significant external motivating factors, such as might be the case for an opioid-dependent health professional.[69] Long-acting naltrexone preparations, in the form of an implant or depot, are not currently licensed in the UK. In a series of small trials, and one large study from Russia, implants were demonstrated to be superior to oral naltrexone and to placebo in reducing the risk of relapse.[68]

8.5 The limitations of treatment for heroin addiction

Like all forms of treatment for drug dependence (and like management of most chronic diseases), OST relies on patient motivation – willingness to accept treatment and, more importantly, the willingness, personal resources and social opportunities to take advantage of the respite from dependence to take steps towards sustained recovery.

8.5.1 Patient choice and motivation

The importance of patient choice and motivation was illustrated in an early randomised trial reported by Bale et al in 1980, in which 457 patients completing inpatient detoxification for heroin addiction were randomised to either MT or RR.[70]

Based on a retained-in-treatment analysis, both methadone and a long-term TC were more effective than no treatment or short-term treatment, but – as in other comparisons between these modalities – did not differ significantly in terms of heroin use, other drug use, crime or employment.[70]

The important aspect of this study was the failure of most subjects to accept any ongoing treatment, and especially failure to accept allocation to a treatment that they did not want.[70] It is an important illustration about the treatment of heroin addiction. The assumption underlying most clinical trials in medicine, that people will accept allocation if there is a reasonable expectation that the alternative treatments will be safe and effective, does not apply to people seeking treatment for addiction. Individuals who are addicted to heroin only enter treatment if it is perceived to offer some advantage over their drug-using state.[71] Often this means entering treatment during crisis, and only remaining in treatment until the crisis is past.

In the Bale study,[70] methadone attracted a significantly higher proportion of patients than RR. Methadone treatment is as effective as other modalities of treatment, and the public health rationale for supporting OST is that it attracts and retains in treatment a higher proportion of heroin users than other treatment modalities.[72] Participation in treatment is often patchy, with people cycling in and out of treatment, having periods of heavy drug use, periods of treatment, periods of abstinence or controlled drug use, relapse to dependent use, and return to treatment.[73] The ATOS study established that the best outcomes were associated with people remaining in continuous treatment for prolonged periods, rather than cycling through treatment episodes.[29]

8.5.2 The need for alternative rewards

A second limitation of OST is that people need alternative rewards in their lives if they are to recover from drug dependence. The rewards of everyday life – for most people, a stable, intimate relationship, employment, and family life – are less accessible for people who are marginalised by drug dependence, and lacking in interpersonal and vocational skills. Employment is a key step in social reintegration, and in settings in which unemployment is high, and social cohesion low, prospects for sustained recovery are compromised. There is some evidence that participation in training and employment can be fostered by treatment. In the Swedish trial described earlier,[41] two-thirds of patients receiving methadone were in employment or training two years after programme entry (compared to none in the group randomised to no treatment). Social reintegration in two-thirds of subjects receiving MT is an impressive outcome. This occurred in a programme providing 'intensive' psychosocial input, including vocational retraining. The programme also involved limit setting – subjects persisting in heroin use were discharged. It is not possible without further research to ascertain whether it was psychosocial support, limit setting, or both, that contributed to better outcomes. This is an issue for further investigation.

8.5.3 Subtherapeutic dosing

The greatest limitation on the effectiveness of MT is that subtherapeutic dosing remains common, even among patients who persist in daily heroin use. Evidence suggests subtherapeutic dosing is common in the UK, where the mean methadone dose is 56mg per day,[74] below the 60-120mg range recommended in national guidelines.[75] This low dosing is associated with high levels of persisting heroin use, with more than 60 per cent of patients in treatment reporting heroin use within the preceding month.[76] Indeed, it is common for people who prefer to use heroin to enter MT as a protection against the daily experience of withdrawal, but to remain on low doses in order to be able to use heroin and experience the reinforcing effect. The evaluation of '*low-threshhold*' methadone in Amsterdam showed that failure to suppress heroin use did not protect against blood-borne virus transmission.[77]

8.5.4 Opioid dependence as a chronic medical condition

Part of the problem is that methadone is not really seen as medical treatment – by patients, or by health professionals. Patients and practitioners reflect community assumptions that drug use is a matter of personal responsibility, rather than a disease, and many heroin users are reluctant to see themselves as ill. Adopting the role of 'patient' involves relinquishing their 'addict identity', and they may prefer to see participation in treatment as taking advantage of the supports available to them rather than seeking to recover.[78] Practitioners who prescribe methadone have been noted to have polarised assumptions about the nature of treatment.[79] Some see it as a way to control deviance and reduce crime, others as support and palliation for disadvantaged patients. It is uncommon for doctors to think of it as management of a chronic medical condition.

8.6 The safety of OST

Heroin addiction is associated with increased risk of death, predominantly by overdose. While in MT, heroin users are substantially protected against the risk of death by overdose. The overall protective effect is diminished by two factors.

The first is the risk of death of individuals not in treatment, as a result of diversion (see **Glossary**) of methadone. The primary mechanism for reducing diversion is supervised administration. In the UK, increased supervised administration has been associated with a reduced number of deaths relative to the total amount of methadone dispensed.[80] As discussed earlier, there is evidence that buprenorphine is associated with fewer overall deaths proportionate to the amount prescribed.[81]

The second is that there is an increased risk of death during the first two weeks of treatment, and in the month after leaving treatment.[75] Induction into MT involves inducing a high level of tolerance to opioids, such that usual doses of street heroin cease to be reinforcing. This must be undertaken gradually, starting with doses in the

range 20-30mg/day – doses that would be safe in non-tolerant individuals. There is consistent evidence that during induction into MT, there is an increased risk of death by overdose. This is the basis for clinical guidelines recommending slow induction and close monitoring during the first week of MT.[75]

Overall, as elegantly demonstrated by a Norwegian study, the risk of death for heroin users is diminished by entering treatment.[32] In the short term, the risk of death appears lower for people entering MT than for people entering abstinence-oriented treatment, particularly detoxification.[82]

Offsetting the protective effects on mortality among people who enter treatment is the risk of fatal overdoses resulting from diversion of medication prescribed in treatment programmes. Diversion is an inevitable accompaniment of OST, and around two-thirds of methadone-related deaths occur in people who were not in receipt of a prescription.[83] In the UK, guidelines on increasing supervision of dosing appear to have reduced the rate of fatal methadone overdoses.[80]

8.6.1 Reducing drug-related deaths at times of increased risk

In doses that exceed an individual's tolerance at any one time, opioid drugs can cause respiratory depression and death. Experiencing or witnessing an overdose is a common occurrence among users of illicit opioid drugs,[84] but prescribed opioid drugs also carry these risks. It is essential that the medical professional understands the process of careful and safe assessment and prescribing, as well as recognising the times when a patient is most at risk. While OST has a greater than 85 per cent chance of reducing overall mortality among users of opioid drugs if the average duration approaches or exceeds 12 months,[66] in the first two weeks of OST, the mortality rate has been found to be three times higher (after adjustment for sex, age group, calendar period, and comorbidity) than that during the rest of the time on treatment.[66] Overdose may occur if the initial dose is too high or if patients continue to use non-prescribed opioid drugs during this time.[66,85] Although further research is needed on which to base better and safer management of OST, closer supervision of induction of treatment is important.[66] This requires careful titration, but may also include repeated urinary drug screens, clear safety and educational advice to the patient, and frequent reviews. All patients starting an MT programme must be informed of the risks of toxicity and overdose, and the necessity for safe storage of any take-home medication;[64,86-88] and supervised daily consumption is recommended for new prescriptions, for a minimum of three months.[75]

Overdose in heroin users is common,[84] with intravenous drug use, polydrug use, early heroin use, not being in MT, and the initiation of substitution treatment all being periods of increased risk, in addition to being early in a period of abstinence

following opioid use, whether the abstinence is voluntary (such as detoxification in the community) or involuntary (such as in the prison setting).[84,89] The mortality rate is increased by eight- to nine-fold in the first four weeks after MT has stopped.[66]

Strategies to reduce the mortality rates from opioid overdose at these high-risk times are essential. One important strategy is training users of opioid drugs themselves,[84] and also healthcare staff and carers,[90] in the recognition of opioid (and other drug) overdose in the community and prison setting, and how to respond, including administration of the opioid antagonist naloxone. The possibility of prescribing take-home naloxone to high-risk groups was first suggested in the literature in 1996,[91] and has been proposed by others in the USA.[92] A national programme of naloxone provision and training has recently been rolled out in Scotland to those deemed to be at risk of opioid overdose (and their family, friends, carers and partners), including prisoners who use opioid drugs on release from prison.[93] An ongoing trial in England of supplying naloxone to newly released prisoners with a history of heroin use is described in **Section 10.11**.[94]

8.7 Research, training and resources for effective delivery of OST

8.7.1 Research needs

The foundation of OST remains suppression of illicit heroin use; currently 63 per cent of people in MT in the UK report continuing heroin use.[74] The immediate challenge for researchers and service providers is to find more effective ways to reduce heroin use. Ensuring delivery of a supervised, adequate dose of OST medication is the key to suppressing heroin use. In the UK at present, there is a substantial group of people on low or moderate doses of methadone, who continue to use heroin regularly.[74] Such people have settled into a pattern of treatment and are very resistant to change, whereas if, from the outset, treatment is approached with the objective of suppressing heroin use, outcomes tend to be better. Alternative methods of treatment for people not responding to methadone, such as slow-release oral morphine, could enhance consumer choice. Little is known about the efficacy of such approaches and research is needed in this area.

8.7.2 Training needs

The implication of delivering OST in primary care is that medical practitioners who choose to engage in this practice need the skills, knowledge and attitudes to work with heroin addicts. In order to deliver such care, doctors report that they need not just initial training, but ongoing supervision, support and reflection.[73]

8.7.3 Resource needs

Drug-dependent people, in particular those who inject heroin, are among the most challenging and disadvantaged of patients. Treatment requires structure, support and monitoring, and has been operationalised into clinical guidelines.[89] Compliance with guidelines is more expensive. A recent US study demonstrated that effective implementation of guidelines results in better outcomes, but is also considerably more expensive.[51] The authors reported that, after 12 months, treatment of new clients of highly staffed, guideline-concordant sites cost $10,252, which is significantly more than the $6,476 cost for less-concordant programmes.

In a climate of fiscal austerity, re-tendering of drug treatment programmes has become common, with a view to reducing costs in an already squeezed system. Quite apart from the financial pressure to provide minimalist services, re-tendering in itself risks compromising the quality and continuity of treatment. As reported by Ball and Ross,[7] more effective programmes are characterised by stable management, and frequent restructuring of services may compromise effectiveness. Clinical leadership, with well-understood, protocol-driven treatment and support and supervision for staff, are important ingredients of treatment.

Summary

- Medical management of drug dependence is more difficult and challenging than for other chronic disorders. Many users who present for treatment are socially marginalised, lead chaotic lifestyles and have little to motivate them towards recovery.
- Stigma and staff attitudes may also complicate management.
- Traditional methods for treating opioid addiction were based on two approaches – encouraging abstinence and a change of attitude on the part of the user.
- Although some individuals do recover spontaneously from opioid dependence, it is usually a chronic relapsing–remitting condition.
- The principle of opioid substitution therapy (OST) is to prescribe and administer a pharmaceutical opioid as a substitute for heroin. This attenuates the symptoms of withdrawal from heroin and allows the user to gain control over other aspects of their life, thereby creating the necessary preconditions to cease drug seeking and use.
- Substitution therapy provides a structured routine through daily attendance for administration in a safe non-punitive and non-judgemental treatment space, which may benefit users in restructuring a chaotic lifestyle.
- The basis of effective OST is suppression of opioid withdrawal.
- High-dose methadone is more effective than a low dose, because it progressively increases the patient's tolerance to opioids, making heroin less reinforcing and cessation of use more likely.
- For some users, the respite from withdrawal offered by methadone is insufficient to allow them to move away from heroin use; treatment with diamorphine is more reinforcing and successful in these individuals.

- Long-term studies suggest OST may reduce use of opioid drugs (in a relapsing–remitting manner), but seldom results in long-term abstinence from all drugs. Continued alcohol misuse and cannabis use are common.
- Opioid substitution has been shown to reduce deaths from opioid overdose and the risk of blood-borne viruses.
- Evidence on the effects of OST on mental health and quality of life is limited and equivocal.
- The National Treatment Outcome Research Study (NTORS) demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed. Economic benefits were largely accounted for by reduced costs of crime.
- Opioid substitution has been shown to reduce rates of acquisitive crime and there is some evidence that it contributes to social reintegration.
- There has been little research on the effectiveness of supervised administration of OST, but limited evidence suggests it is more effective at reducing heroin use than non-supervised treatment.
- Randomised trials have shown no benefit overall of additional psychological interventions in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression. There is substantial evidence that good-quality staff interactions are of benefit for recovery.
- Opioid substitution is associated with a risk of diversion of methadone to other individuals, as well as an increased risk of death during the first two weeks of treatment and in the month after leaving treatment. Overall, the risk of death is reduced by entering OST.
- Subtherapeutic dosing is a serious limitation on the effectiveness of OST.

Chapter 9 – Medical management of drug dependence: reducing secondary health harms

9.1 Provision of healthcare and identification of drug use as a health issue

This chapter considers the scope of medical practitioners' involvement in the reduction of drug-related harm, through the provision of healthcare to people using drugs, and the identification of users, provision of information, and monitoring where drug use is a risk factor for health problems.

Some people who use drugs report experiencing disapproval and frustration in their interaction with healthcare services,[1] and this can be a significant barrier to accessing healthcare. As discussed in **Chapter 8**, health professionals who adopt a non-judgemental, non-stigmatising empathic stance are most likely to be effective in delivering healthcare for these patients.

There is consistent evidence that in primary care settings, in hospitals, and in mental health settings, doctors frequently do not address alcohol and drug use.[2-5] A history of alcohol or drug use is seldom documented, even where presenting symptoms or signs provide an index of suspicion that alcohol or drugs may be involved.[2,3] There has been difficulty engaging doctors in the treatment of problems with addiction in Australia,[4] and reports of similar problems in the UK.[5] Possible explanations for the reluctance to explore alcohol and drug use include some doctors' sense of pessimism about being able to do anything, avoidance of antagonising patients, and, possibly, reluctance to work with stigmatised patients (see **Section 8.2**).

The medical frame of reference is a useful one in which to approach drug use – non-judgemental, factual, professional, accurate diagnosis and provision of information and referral, monitoring the response. Contrary to pessimism and reluctance to address drug use as a health issue, there is evidence that, in relation to the legal drugs alcohol and tobacco, medical management can have significant impact,[6-9] but it is unclear how far this can be extrapolated to illicit drugs. Opportunistic identification of drug use, and provision of brief health advice, may be useful in triggering individuals to reflect on, and sometimes to modify, their use of drugs.

If a doctor finds a patient is using illicit drugs, the response should be to undertake an assessment of the extent to which this use is impacting on the person's health and their life and the lives of others around them, while acknowledging the importance of patient autonomy and choice. The appropriate response may involve provision of information about health risks and harms, or referral for management. Referral to a specialist service is not always indicated. Screening and brief advice from physicians can affect the motivation for change among patients, including those with substance dependence.[10,11]

It is important to identify whether the patient perceives that their health, or other aspects of their life or that of those around them is negatively impacted by their drug use, whether their family members perceive this to be so, and whether the doctor, on the basis of the patient's symptoms and presentation, has identified negative effects of their drug use on the person's life. The doctor must also consider the impact the drug use may be having on children and young people. Guidance published by the General Medical Council (GMC) in 2012 on *Protecting children and young people* makes it clear that, while the adult patient must be the doctor's first concern, the doctor also has a responsibility to consider whether the patient poses a risk to children or young people.[12] The new guidance also stresses that, when responding to requests for information for child protection purposes, the doctor should:

> *'include information about the child or young person, their parents and any other relevant people in contact with the child or young person. Relevant information will include family risk factors, such as drug and alcohol misuse, or previous instances of abuse or neglect, but you should not usually share complete records.'*[12]

9.2 Opportunistic brief intervention

In the medical response to addictive disorders, prevention is probably better than treatment – ie opportunistic interventions with people identified as using drugs in ways that place them at risk. Strategies to prevent drug use are discussed in detail in **Chapter 7**. This section looks at strategies to reduce use in those who are already using drugs.

9.2.1 Young people and drug use

A review of randomised trials that evaluated an intervention targeting drug use by young people under 25 years of age, delivered in a non-school setting, noted that overall there is a lack of evidence in this area, so further research is still needed to determine which interventions can be recommended and which are cost effective.[13] Some larger studies show promising results, suggesting that, for medical professionals (and other healthcare workers), brief interventions using motivational

interviewing provide an important means of reducing drug use in young people, including in those who are most vulnerable or most at risk. Some authors have shown positive impact of brief interventions for use of individual drugs in young people,[9,14] while one UK study showed these benefits simultaneously derived across a number of different drugs,[15] which may also have useful implications for the busy primary care or emergency department setting.

McCambridge and Strang tested brief interventions in young people,[16] and found that a single session of motivational interviewing (including discussing illicit drug use) led successfully to reduction in use of these drugs among young people. The intervention took place across 10 further education colleges across inner London, with 200 young people aged 16-20 years who were currently using illegal drugs. Those randomised to motivational interviewing reduced their use of cannabis (and cigarettes and alcohol). Those most at risk benefited the most: for cannabis, the effect was greater among heavier users. The effect of reduction in cannabis use was also greater among youth usually considered vulnerable or high risk according to other criteria – for example young male individuals who smoked cannabis the most frequently, were in receipt of benefits, and had a prior history of selling drugs.

9.2.2 Cannabis

Relapse prevention CBT (see **Section 9.5.2**) appears to be effective for cannabis dependence, compared with a control group awaiting treatment. It appears that individual therapy may be more effective than group therapy.[17]

9.2.3 Stimulant use

Contingency management (see **Section 9.5.2**) is associated with much longer continuous periods of abstinence for cocaine compared with control groups, in both prize and voucher reinforcement studies.[18] This intervention has not been widely used in the UK, possibly due to training needs.[18] Couples-based interventions have also been found to be effective.[18]

9.2.4 Use of opioid drugs

Individuals with opioid dependence who are in close contact with a non-drug-using partner have been found to benefit from behavioural couples therapy, both during treatment and at follow-up.[19]

In order to reduce relapse and the associated increased risk of fatal overdose, services providing residential opioid detoxification should prepare people for admission, strive to retain them in treatment for the full admission period, and actively support their entry into planned aftercare, in order to improve outcome.[20]

9.2.5 Intravenous drug use and associated risks

Opportunistic brief interventions in intravenous drug users have also been shown to have significant impact. A randomised trial across 15 cities and 4,000 participants examined the effect of three sessions of motivation interviewing for intravenous drug users attending healthcare services for other purposes (HIV testing) compared to HIV testing alone. The study found that those who received additional counselling had better outcomes than those randomly assigned to receive just HIV testing. In the group that received additional counselling, there was half the rate of drug injection at 6-month follow-up, four times the likelihood of abstinence (confirmed by urinalysis), and significantly lower arrest rates.[10,11]

9.3 Safe prescribing

Management of illicit drug users is multifaceted. It requires medical management of the drug use and its sequelae, but also includes referring to other disciplines, such as social services, that can help with the wider aspects of improving quality of life. Medical management of dependent drug use focuses directly on treating physical and mental health issues and may involve prescribing. This section presents some of the safety issues that are important in this context. It considers the appropriate and safe prescribing of drugs of dependence and ways to minimise the risks of diversion, misuse and iatrogenic dependence.

Misuse of, and dependence on, prescribed drugs (in particular opioids and benzodiazepines) is a rapidly growing public health problem in many jurisdictions internationally.[21,22] There have been well-documented periods in the past when diversion and misuse of pharmaceuticals was the primary source of street drugs in some UK cities.[23] Caution in prescribing, particularly in patients with histories of drug dependence and misuse, is an essential part of minimising diversion and delivering safe and effective medical management. The most effective deterrent to diversion and misuse is supervised consumption.[22] There is clear evidence from the UK that increasing the level of supervision in patients receiving methadone has been associated with a marked reduction in deaths due to diverted methadone.[24]

In assessing patients seeking analgesics and/or hypnosedatives, it is appropriate to seek a history and family history of drug use, and to examine for any objective signs of use of injected drugs (such as scarred veins), with the patient's consent. Urine toxicology is also useful, to enhance the accuracy of self-report. In addition to minimising misuse, diversion and iatrogenic dependence, the medical professional must consider the physical safety of the prescribed drugs, as is the case in all prescribing. The impact of injudicious prescribing is illustrated in a study from Melbourne, Australia, where researchers investigated the medical attendances of young people who had died of opioid overdoses.[25] In the months leading to their deaths, these young people exhibited a pattern of increasing presentations to doctors, obtaining escalating prescriptions for

opioids and benzodiazepines – the drug combination that led to their deaths. In a UK-wide 17-year GP dataset of patients also prescribed OST, over one-third of prescriptions for benzodiazepines exceeded 8 weeks (twice the maximum timeframe recommended by the NICE guidelines).[26] In other cases, some patients who may initially be prescribed a short-term z-drug or benzodiazepine prescription for sleep problems or an episode of anxiety, but whose symptoms continue, may be at risk of developing dependence.[27,28] It is important for medical professionals to conduct regular reviews and consider the broader care plan options, including a stepped care approach and psychological interventions.[26]

9.4 Management of withdrawal

It is not unusual for patients to present to emergency departments, or sometimes to primary care, in acute drug withdrawal. Occasionally withdrawal from drugs that activate the GABA (gamma-amino butyric acid) system – alcohol, barbiturates and GHB/GBL can present with very severe and potentially life-threatening seizures. Such withdrawal is characterised by autonomic overactivity (tachycardia, hypertension, tremor and sweating), cognitive changes (confusion, agitation, sometimes psychosis) and perceptual disturbances (formication – a tactile hallucination of insects crawling on or in the skin, illusions, visual hallucinations). Fits may also occur. One role of therapeutic detoxification from illicit drugs is management of a clinical emergency, stabilising the individual and slowing the rate of change to allow their physiology to adapt. A second role is to decrease the distressing or uncomfortable symptoms of withdrawal, and, through this, a third role is to enhance engagement and increase the likelihood of continued abstinence. It is also essential that the medical professional promotes continued engagement and continues to provide support after the detoxification process is complete. Relapse prevention is discussed in **Section 9.5**.

9.4.1 Benzodiazepine withdrawal

Fits or a paranoid psychosis may also occur on abrupt withdrawal of benzodiazepines. This is relevant in considering illicit drug use, as it is usual for people who become dependent on illicit drugs to misuse a range of drugs, including alcohol and benzodiazepines. Where withdrawal from most illicit drugs is not associated with severe morbidity, withdrawal from benzodiazepines often poses a greater risk. It is more difficult to recognise, as the onset of withdrawal is often delayed. Withdrawal symptoms come on within two to three half-lives of the particular benzodiazepine (eg 2-3 days after short- and medium-acting compounds and 7-10 days after long-acting compounds) and usually subside within a few weeks.[28,29] Some patients report symptoms that have persisted for months or indefinitely.[30] This has been described as a '*post-withdrawal syndrome*',[31] and may complicate management of withdrawal from illicit drugs.

9.4.2 GBL withdrawal

As with benzodiazepine withdrawal, those with chronic heavy GHB or GBL use can experience severe withdrawal,[32] including delirium and the need for urgent inpatient care or, in some cases, transfer to an intensive therapy unit. Others can be managed by specialists, with high-dose diazepam and baclofen, titrated against withdrawal severity in ambulatory settings, but this needs to be backed up with access to inpatient treatment if required, because of the possible severity of the withdrawal symptoms.[33]

9.4.3 Opioid withdrawal

The distressing symptoms of opioid withdrawal can include dysphoric mood, nausea or vomiting, muscle aches, lacrimation, rhinorrhoea, sweating, diarrhoea and insomnia.[34] In those patients who wish to detoxify from all opioids, withdrawal symptoms are minimised by the process of opioid detoxification, using the same drug or another opioid in decreasing doses. This is discussed in more detail in **Chapter 8**. Methadone or buprenorphine are offered as the first-line treatment in opioid detoxification.[34] As with other withdrawal syndromes, adjunctive medications at low doses may also be considered where clinically indicated (for example, to treat diarrhoea), and where the medication does not interact with the other medications prescribed.

Following successful opioid detoxification, patients should be offered and engaged in continued support and monitoring designed to maintain abstinence.[19] This important topic is covered in **Section 9.5**.

The medical professional must also educate the patient regarding the loss of opioid tolerance following detoxification, and the ensuing increased risk of overdose and death if opioids are used again during this period. This is addressed in greater detail in **Sections 8.4.5** and **8.6.1**.

9.4.4 Stimulant withdrawal

When chronic heavy users abruptly discontinue amphetamine or cocaine use, a withdrawal syndrome occurring within hours to days of their last dose is commonly reported. While the two syndromes are distinct, they share symptoms, including dysphoric mood, fatigue, vivid or unpleasant dreams, insomnia or hypersomnia, increased appetite and psychomotor agitation or retardation.[33] The degree of severity is a relapse predictor in some individuals.[35] This is a distressing experience, and there are reports of suicidal ideation in some during this period.[36-38]

Research on pharmacotherapies for amphetamine detoxification[36,39] and cocaine detoxification[35,40,41] are currently ongoing but, as yet, no medications are licensed for detoxification in stimulant withdrawal. The medical professional's current focus should be on assessment; engagement; safe means of alleviating distressing symptoms, such as adjunctive medications where appropriate; relapse prevention strategies (discussed in

Section 9.5); and monitoring for the use of other potentially harmful substances the patient may be using to self-medicate.

9.4.5 Cannabis withdrawal

In managing cannabis withdrawal, the medical professional should be aware of the frequency and presentation of withdrawal symptoms, which are newly listed in the forthcoming *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V), scheduled for publication in 2013. The medical professional should also be aware of the possible responses of patients aiming to reduce their withdrawal symptoms, including relapsing[42] and self-medication with other substances.[42,43]

Symptoms of cannabis withdrawal in those who are dependent include anxiety, irritability, appetite changes, restlessness, sleeping difficulties, tension, thoughts and cravings for cannabis, and twitches and shakes, in both adults[42,44] and adolescents,[45] and commencing typically within hours to days of ceasing cannabis use. From a US general population study, of a sample of 2,613 individuals using cannabis on three or more days per week, 57.7 per cent (and 59.4% among the subset who did not use other substances) experienced at least one symptom of cannabis withdrawal on cessation, with feeling weak or tired, hypersomnia, anxiety, psychomotor retardation and depressed mood being the commonest symptoms. There was a strong, significant correlation between distress experienced during withdrawals and the use of other substances to relieve the distress.[43]

Research on pharmacotherapies for the management of cannabis detoxification is also ongoing.[46,47] In terms of management of withdrawals, the medical professional should monitor patients for withdrawal; address ways to alleviate significant symptoms to help avoid relapse and self-medication;[42] and engage the patient in other relapse prevention strategies (see **Section 9.5**).

9.5 Relapse prevention

Drug dependence, in particular in users of heroin, other opioids and cocaine, often presents as a chronic condition with periods of relapse and remission.[48] In the case of dependence on opioid drugs, relapse after a period of abstinence is associated with an increased risk of death from overdose due to decreased tolerance (see **Section 8.6**).[49,50] The medical professional has a key role in educating the opioid user[51] and their carers[52] about these risks and how to respond to them. The medical professional must also address relapse prevention strategies with those undergoing detoxification.[51]

9.5.1 The role of medication in relapse prevention

The use of naltrexone for relapse prevention after opioid detoxification is described in **Section 8.4.6**. Its use requires significant motivation for compliance and thus its use as an effective therapeutic strategy is limited.[53]

Prescribed OST (described in detail in **Chapter 8**) is used as treatment in opioid dependence, to maintain abstinence from illicit opioid use.

A Cochrane review addressing the use of psychostimulants to maintain abstinence from cocaine use found studies in this area to be currently inconclusive.[54]

9.5.2 The role of psychosocial interventions in relapse prevention

Relapse prevention CBT focuses on helping drug users to develop skills to identify situations or states where they are most vulnerable to drug use, to avoid high-risk situations, and to use a range of cognitive and behavioural strategies to cope more effectively with these situations.[18,55]

Relapse prevention CBT appears to be effective for cannabis dependence, with individual relapse prevention CBT lasting between four and nine sessions associated with greater levels of abstinence and reductions in drug use for people who use cannabis.[18,55]

In a meta-analysis, contingency management (CM), in the form of voucher-based reinforcement in the treatment of use and dependence on licit and illicit drugs, has been shown to significantly improve treatment outcomes for all substance use disorders apart from for alcohol.[56]

Contingency management has not yet been widely used in the UK,[18] but has been shown to increase the likelihood of abstinence in cocaine dependence, using either prize- or voucher-based reinforcement,[57,58] while relapse prevention CBT and standard CBT have not been shown to be effective for the treatment of cocaine dependence.[18] As Stulza et al highlight,[59] cocaine users are a heterogeneous group, so studying the impact of psychological therapies on this population as though they are psychologically uniform is likely to underestimate the effect size of therapies, which could be more effective when tailored to individual cases or if subgroups with shared characteristics are studied together instead of whole populations.

Individuals with cocaine and/or opioid dependence and who are in close contact with a non-drug-using partner benefit from behavioural couples therapy, both during treatment and at follow-up.[18]

Narcotics Anonymous (NA) and Cocaine Anonymous (CA) are mutual-help groups that offer a recovery programme based on the 12-step approach that began with AA – '*a non-profit fellowship or society of men and women for whom drugs had become a major problem*', which '*encourages its members to abstain completely from all drugs*'.[60] Although there are still only very few UK studies in this area,[61] a longitudinal, prospective cohort study of 142 drug-dependent clients interviewed at intake to residential treatment in the UK, and again at 1-year, 2-year and 4-5-year follow-up, found that those who attended NA/AA, in particular those who attended at least weekly, were more likely to be abstinent of opioid drugs at all follow-up points than those who did not.[15] This study showed reduced stimulant use at 1-year follow-up in those who attend NA/AA following residential treatment, but not at other follow-up points.[61] Other studies have shown that active participation rather than just attendance, at 12-step groups was associated with reduced cocaine use.[15] This is consistent with findings that the efficacy of certain psychosocial treatments, including 12-step programmes, is dependent on individual patient characteristics of cocaine-using populations, which can be subdivided based on personal characteristics, such as belief in the 12-step programme.[59] This emphasises the importance of the medical professional tailoring a treatment package to the individual patient in order to optimise outcomes.

9.6 Illicit drug use in pregnancy

Medical professionals have a responsibility to identify pregnant women who are using illicit drugs, and to engage them in treatment. The earlier members of this population are able to access treatment services, the better the outcome will be for their general physical health, the pregnancy and the neonate.

A sensitive, non-judgemental approach is essential in engaging this population and optimising treatment effectiveness. Medical professionals have a role to play not only in portraying this through their own clinical care and manner, but in leading their clinical teams to be approachable, non-judgemental and patient centred in this situation. This will include attention not only to physical healthcare and management of drug use, but sensitive attention to the coexistent psychological difficulties and social concerns that the patient may be experiencing. The medical professional and the full multidisciplinary team will need to address the woman's fears about the involvement of children's services; anxiety and guilt about the potential impact of their drug use on their baby;[62] and concerns the patient may have about finances, support networks, and coping strategies during pregnancy and their forthcoming parenthood. The NICE guidelines on *Pregnancy and complex social factors*[62] recommend that the first time a woman who uses substances discloses that she is pregnant, she should be offered referral to an appropriate substance use programme. They also recommend that a variety of methods (eg text messaging) should be used to maintain contact and engagement, and to remind women of upcoming and missed appointments.[62]

The medical professional must ensure high-quality effective interagency communication. Multiagency team work is also essential, working with social care professionals and ensuring seamless communication between general practice and the specialist services involved in the patient's antenatal care, including obstetrics, specialist drug services and any other specialist healthcare services. Multiagency case conferences, with prospective parents invited as participating attendees, will facilitate good inter-team communication and optimise clinical care.[63]

The following case study illustrates some of the additional issues to be considered in pregnancy.

Case study: Illicit drug use in pregnancy

Ms B is 23 years old. She is smoking about £30 of heroin and £10 of crack per day. She does not drink any alcohol. She has presented for treatment and is 14 weeks pregnant for the second time.

Ms B was brought up in a small isolated community and was one of six children. Her family were very strict and she was not allowed to have friends outside the community. Between the ages of 10 and 13 she was subjected to regular sexual abuse by an uncle who lived with the family. She once told her mother about the abuse but was told to keep it quiet and not tell anyone, as it would bring shame on the family. Her mother had been seriously depressed when she was a child.

She did well at school and started work in a local estate agent's office when she left school. She began to see Mr Y, who was the brother of one of her school friends. Mr Y was a heroin user and eventually she started smoking cigarettes that he gave her. She thought these were cannabis. After a few months, she noticed that she felt very unwell if she did not smoke and Mr Y told her that the cigarettes had heroin in them. She started rowing with her family and left home to live with Mr Y in a squat. Their drug habits were funded by Mr Y's shoplifting.

When she was 19 she found she was 28 weeks pregnant. She presented to a local GP, who prescribed her methadone and referred her for antenatal care. Social services were involved. She had very little antenatal care and avoided the appointments with the social worker, who she only met once. She continued to use heroin on top of her prescription. She went into labour at 36 weeks and had a baby boy. For a few weeks she went back, with her baby, to live with her parents (with the support of social services) and stopped using heroin but the rows with her mother were so bad she eventually left the baby with her mother and went to live with Mr Y in a big city.

For the next three years she lived in a series of squats with Mr Y and continued to use drugs. Ms B's son lived at home with her mother. She occasionally slept with men to get drugs. Mr Y started drinking alcohol and started hitting her when they argued.

She came into treatment when Mr Y was arrested for aggravated burglary and went to prison. He was sentenced to four years.

Ms B was engaged in treatment by the city's drug services. She registered with a GP. She was prescribed buprenorphine and managed in an antenatal liaison clinic, where she received antenatal care and drug treatment. Social services were involved from the beginning and found her a place in a local women's hostel.

Ms B was able to stop using heroin and begin to think about some of the problems she had with her abusive relationship and her history of sexual abuse. Her second baby, a little girl, was born at full term and was immediately subject to child protection proceedings and taken into foster care but Ms B had regular contact with the baby. She subsequently went, with the baby, to a mother and baby rehabilitation centre where her parenting could be assessed and she could reduce her buprenorphine. Ms B was clear she wanted to stop using all drugs, keep her daughter and re-establish a relationship with her son and her family.

Case study details provided by Dr Emily Finch, a consultant addiction psychiatrist.

9.6.1 Use of opioid drugs during pregnancy

For opiate use in pregnancy, the focus is on stability. It is safest to prescribe opiate substitution (see **Chapter 8**) '*at a dose that stops or minimises illicit use*'.[62] Detoxification may be considered, if requested, during the second trimester, as long as this does not precipitate a relapse in illicit drug use; but it should be avoided during the first and third trimester because of the risk to the fetus.[63,64]

Buprenorphine is not licensed for use with pregnant women, but research suggests no adverse effects on the pregnancy or neonatal outcomes.[65,66] The UK guidelines on the clinical management of drug misuse and dependence[63] advise that if a pregnant woman is stable on buprenorphine and informed of the risks, it is reasonable to leave her on a prescribed dose of buprenorphine, rather than risk inducing withdrawal in the fetus or destabilising the patient's treatment by transferring to methadone, unless otherwise needed. The treatment focus again is on stability and maintaining engagement.

In all pregnant women using or prescribed opioid drugs, particular consideration will also need to be given to their birthing plan, including pain management and the risk of fetal distress at birth.[64,65]

9.6.2 Cocaine use during pregnancy

As in the case of the non-pregnant woman, there is currently no substitution treatment for cocaine. In view of the potential harms to the fetus and to the mother's health, the pregnant woman should be given support to stop using cocaine during pregnancy. A non-judgemental, sensitive approach, with clear and effective multidisciplinary communication and team working are again essential, addressing the full spectrum of psychosocial and physical health needs. Psychological therapies, including family therapy where possible, may be offered.[63] Relapse prevention CBT should be offered, and marked efforts made to ensure continued engagement of the patient.

Summary

- Consistent evidence shows that doctors in primary and secondary care and in mental health settings frequently do not address alcohol and drug use.
- Caution should be exercised in prescribing drugs with potential for dependence, particularly for patients who are at high risk for dependence or diversion.
- Management of medical emergencies related to acute symptoms of withdrawal should be followed by longer-term medical management and support to reduce dependence.
- It is also important to address strategies for relapse prevention after detoxification.
- The use of naloxone for relapse prevention after opioid detoxification is of limited value.
- Psychosocial interventions that help users to identify high-risk situations and use coping strategies have been shown to be helpful in managing cannabis dependence.
- In US studies, contingency management in the form of voucher-based reinforcement has been found to significantly improve outcomes for all substance use disorders apart from alcohol. Couples-based therapy and support groups are also of value.
- Brief therapist interventions and motivational interviewing have been shown to reduce drug use among young people. Opportunistic interventions in patients attending for HIV testing has also been shown to increase the likelihood of abstinence and reduce arrest rates.
- Illicit drug use in pregnancy needs particular care with medical management, to avoid harm to both the mother and her baby.

Chapter 10 – Medical management of drug dependence in the context of criminal justice: illicit drug use, courts and prison

10.1 Introduction

The criminalisation of possession and supply of illicit drugs, and acquisitive crime associated with drug use, result in many illicit drug users being imprisoned. The maximum penalty is life imprisonment for supply of Class A drugs, with seven years for possession, but sentences between two and 14 years are used for possession or supply of Class B or C drugs (see **Chapter 1**). This has implications for the medical professional, as many illicit drug users first come into contact with the medical profession via the criminal justice system.[1]

The general principles of medical ethics apply to all individuals who come into contact with medical professionals through the criminal justice system.[2] This includes their right to confidentiality; the right to choose their own doctor (although this is not a right for convicted prisoners); the requirement for informed consent to medical treatment; the right to refuse treatment; and, for those detained or in prison, the right of access to the same treatments that are available outside the detention setting. This can create particular challenges for medical professionals working within the criminal justice setting, which are highlighted throughout this chapter.[2] These issues are discussed in a recent joint publication by the Royal College of General Practitioners, Royal Pharmaceutical Society and The Secure Environment Pharmacist Group, *Safer prescribing in prisons*.[3]

The controlled environment of prison is, nevertheless, more likely to ensure compliance with drug treatment programmes than is possible after discharge. It offers a valuable opportunity for effective medical treatment of drug use disorder and ultimately the best chance for many dependent drug users to be rehabilitated. This is illustrated by the case study that follows.

Case study: Drug-related crime resulting in drug treatment in prison

A young woman aged 19 years appeared in the Crown Court charged with a series of offences that she had committed while on bail granted in relation to other earlier offences. A report from the Probation Service explained that she had been picked up by police after having collapsed in the stairwell of a housing estate in east London. It also explained that she was homeless; she had been living in a local authority hostel but had been thrown out of it for taking men back into the hostel for the purpose of prostitution in order to raise funds to feed her drug habit. She was barely conscious at the time that she was found by the police and was high on drugs. She was due to be sentenced for a series of offences, which included attempted robberies of mobile phones from young women whom she had threatened with a knife, and attempts to snatch handbags, also from young women leaving a tube station late at night. All the attempts had failed.

The probation report explained that she committed these offences to raise funds to buy drugs and that she was so dependent that, unless she was taken off the streets (and in effect given a lengthy prison sentence), there was a real risk that she would die. She had two children. The oldest was a six-year-old girl, who had been taken away by the grandmother to Belgium (it was said that she had, in effect, abducted the granddaughter to save her from her mother) and she also had a two-year-old child who was in care.

After hearing evidence from the Probation Services, the court imposed a prison sentence at the maximum end of the scale for offences of that nature. The court discussed the possible range of sentences with defence and prosecution counsel and the discussion proceeded upon the basis that it was, in effect, common ground that, for her own good, she needed to be given a custodial sentence of the longest duration that was proper in the circumstances. This would give the defendant the best chance of receiving drug treatment in prison. The case was unusual in that the Probation Service was able to make enquiries about which prison the defendant would be sent to, and about the availability of drug treatment courses in that prison. This was exceptional, since it is very rare indeed for a sentencing judge to know anything about the prison to which a defendant is to be sent, or about the availability of drug rehabilitation courses in that prison.

Case study details provided by Nicholas Green QC, who has a special interest in the impact of drugs policy upon the administration of the justice system.

10.2 Drug use prior to, during and after incarceration

The prevalence of problem drug use among prisoners in the UK is high. While drug treatment programmes delivered in a controlled prison environment may offer some prisoners the opportunity to be rehabilitated, rates of drug use during incarceration remain high. A survey of nearly 1,500 new UK prisoners in 2005-2006 found lifetime use of heroin, crack cocaine, cocaine powder, amphetamines or cannabis was reported by 79 per cent of prisoners, with approximately one-third having used heroin or crack cocaine during the year before custody.[4] These figures mirrored findings from a 1997 National Survey of Prisoners in England and Wales,[5] showing high rates of drug use prior to and during incarceration. It has been estimated that up to half of all recorded crime is drug related.[1]

Rates of first initiation of use of drugs in prison are also high. Analysis of the findings of the 1997 National Survey found that over a quarter of the men who had used heroin reported first initiating use in prison.[6] A study across 13 prisons in England and Wales found that prisoners were also much more likely to continue to use heroin than either cocaine or amphetamines while in prison.[7]

10.2.1 The Drug Interventions Programme

The bidirectional links between drug use and offending have already been highlighted. The Drug Interventions Programme (DIP) was introduced by the Home Office in April 2003, with the aim of developing and integrating measures for directing adult drug-using offenders into drug treatment and thereby reducing offender behaviour.[8] The majority of DIP referrals into treatment are achieved via drug testing in police custody suites. The DIP also provides for interventions at other stages in the criminal justice process, such as during an initial bail hearing or sentencing. DIP also has links with treatment-related community sentencing and the provision of treatment in prison.

Each person entering the DIP is unique and their care needs and treatment will be tailored to them. Care planning is integral to the process; this is an agreed plan of action between the service user and the Criminal Justice Intervention Team worker, which involves setting goals based on the individual needs identified. This plan documents and enables routine review of the service user's needs, goals and progress across four key domains:

- drug and alcohol use
- physical and psychosocial health
- offending
- social functioning (including housing, employment and relationships).[9]

Research by the Home Office has found the DIP to be effective in reducing reoffending behaviour.[8] Each person completing a DIP had a care plan with medical treatment at one or four levels or tiers dependent upon their individual needs, for example, the nature of their drug use (frequency of use, and number and types of drugs used). The different levels/tiers of treatment reflected their intensity and ranged from non-specialist general healthcare through open drugs treatment and community-based drug treatment to residential drug treatment.[8] The overall volume of offending of a cohort of 7,727 individuals was 26 per cent lower following identification through a positive DIP test. Around half the cohort showed a decline in offending of around 79 per cent post DIP.[8] Earlier research by the Home Office, conducted before the introduction of DIP, lent support to the idea that drug-using offenders who are not directed towards treatment are unlikely to change in their pattern of drug use.[10]

10.2.2 Drug Rehabilitation Requirement

The Drug Rehabilitation Requirement (DRR) was introduced as a sentencing option under the Criminal Justice Act 2003. This requirement is one of a menu of 12 requirements to which offenders can be sentenced. The DRR involves drug treatment and testing and is a rehabilitative as opposed to a punitive requirement. The period of treatment can last between 6 months and 3 years. There are three levels of intensity of contact, which include, but do not entirely consist of, medical treatment. These levels correspond to the criteria of low, medium and high seriousness.

Before making the requirement, the court must be satisfied that:
- the offender is dependent on or has a propensity to use any controlled drug
- he or she would benefit from treatment
- the necessary arrangements can be made for the treatment
- the offender agrees to comply with the requirement.

Arrangements for treatment are available through the Probation Trusts, which operate at a local level. Several private or charitable organisations also work in partnership with the Probation Trusts/the National Probation Service to deliver DRR programmes and testing.

There is provision for the court to review the progress of the offender during the order, and to agree changes in the treatment.

The treatment can be residential or non-residential, which is decided by the court, and must be supervised by a suitably qualified person. The type of treatment and the treatment provider must be written in the order.

In 2009-2010 there was an 11 per cent decrease in the number of DRR commencements in England and Wales, while the completion rate increased from

47 per cent to 56 per cent.[11] The 11 per cent reduction was partly due to police initiatives which diverted offenders from charge, and a change in focus so that targets were more focused on completion and not commencement.[11]

Accessing treatment, however, can be problematic for drug users subject to a DRR. A review of the National Drug Rehabilitation Requirement found a variation in treatment delivery across England and Wales.[12] In some cases this was due to *'local service level agreements or communication protocols not being set up between probation and treatment agencies, so that only a minimum number of agencies were seen as "DRR friendly"'*.[12]

10.2.3 Drugs courts

Since 2004, six pilot Dedicated Drug Courts (DDCs) specialising in dealing with offenders who are illicit drug users were introduced in magistrates' courts in England and Wales. Building on existing arrangements available through the drug treatment and testing order and DRR, a pilot model for England was launched in 2005 in Leeds and London, while a further four pilots (in Barnsley, Bristol, Cardiff and Salford) opened in 2009.

The DDC pilots in England and Wales were aimed at reducing illicit drug use and reoffending amongst drug-using offenders who commit low-level crime to fund their addiction.[8] The DDC model introduced a new framework in magistrates' courts for dealing with such offenders. Sessions were set aside in existing magistrates' courts for dedicated panels of magistrates or particular district judges to sit for sentencing. A drug-using offender who was convicted of a low-level 'acquisitive' offence, for example shoplifting, could be referred to the DDC for sentencing.

Appropriate sanctions and other rehabilitation services that could be included in community sentences were available to all courts in England and Wales. The DRR included conditions such as: increasing the offender's likelihood of successful rehabilitation through early, continuous and intense judicially supervised treatment; mandatory periodic drug testing; and community supervision.

In January 2011, the Ministry of Justice published *The Dedicated Drug Courts Pilot Evaluation Process Study*.[13] The evaluation did not attempt to measure the actual impact of the DDC on reducing reoffending through decreased drug use. Instead, it focused on identifying the factors that may have had an impact on the effectiveness of the DDC, such as the structure of the court and the styles of engagement used by staff. The findings indicated that the DDC model was perceived to be a useful addition to the range of initiatives aimed at reducing drug use and offending.[13] Continuity of judiciary when working with drug-using offenders was seen to be a key element of the model: offenders reported that they felt accountable to the DDC through seeing the same

judicial panel and through the formal monitoring of drug use, and that this continuity helped to reduce drug use and offending.

10.2.4 Ethical issues

Referrals for treatment from police custody suites, as in the DIP, and the power of courts to 'sentence' an offender to receive medical treatment rather than a custodial sentence or other type of punishment raise concerns about informed consent to treatment. It also leads to a blurring of the distinction between judicial and therapeutic strategies, with the result that a drug user may view the doctor treating them as part of the judicial system and be confused about whether they are being punished, or treated as a patient. Effective communication is essential to ensure that those undergoing treatment fully understand their rights as outlined in **Section 10.1**.

Issues that arise for health professionals include the following:

- high rates of illiteracy and learning disability in offenders, often coupled with a lack of time and/or privacy for consultations, which raise serious questions about their freedom to give informed consent
- the perception of offenders that the doctor is not impartial but is working for the police or prison
- the ethics of providing treatment when the patient has effectively been coerced to consent.[2]

It should additionally be noted that:

- it is unlawful to give compulsory mental health treatment in a setting other than a hospital
- all patients are owed a duty of confidentiality but this is never an absolute duty
- when governors or managers need information in order to protect the safety of other detainees or patients, doctors must make decisions about whether to disclose health information in the public interest, on a case by case basis and, where disclosure is necessary, only the minimum amount of information should be shared.[14] People detained in police custody have a right to request examination by their own doctor, and individuals held on remand have a right to consult a doctor of their choice; convicted prisoners have no general freedom of choice regarding the doctor that they see.[2]

It is paramount to build up trust between the doctor and patient, and to reassure all patients that the doctor is impartial and not working for the judicial system.[2]

10.3 Reducing the supply of drugs entering prisons

Drugs are introduced into prisons through a variety of means,[15] including being smuggled into prisons with prison visitors, being projected or catapulted (quite literally) '*over the wall*',[15] being hidden in items sent to prisoners in the post and in parcels, by prisoners themselves when they return from day release, and through corrupt staff.[15] The precise quantification of the problem is very difficult. It has been estimated that the value of illicit drugs within prison is about £100 million.[15] The incentive to supply drugs into prisons is exacerbated by the fact that the value of drugs in prison is greatly inflated relative to outside prices.[15] Controlling illicit supplies is very difficult; when the authorities succeed in curbing one supply route, this serves to increases supplies through other routes.

There is disagreement as to which of the routes of illicit supply is the most prominent. A report in 2008 by Blakey,[16] commissioned by the Director General of the National Offender Management Service (NOMS), did not differentiate between the frequency and extent of different routes of supply.[a,15] Recent analysis suggests that the major problem is staff corruption. A Policy Exchange report in 2010 contends that the majority of drug dealing within prison is highly organised and involves the collusion of around 1,000 corrupt staff, which equates to around seven prison officers per prison.[b,15] It is reported that they are able to introduce drugs into prisons due to lax security arrangements.[15] Given the inflated value of drugs in prison, it is suggested that prison officers are able to make substantial profits, effectively without fear of detection;[c] a prison officer bringing a gram of heroin into prison every week (about the size of two paracetamol tablets) could expect to more than double their basic salary.[15]

a This was the essential criticism made of the Blakey Report[16] by the Policy Exchange Report;[15] see the latter report pages 14,15, 21-5.

b The figure of 1,000 is based upon a 'leaked' internal Metroplitan Police investigation report conducted in 2006.

c Ministry of Justice data provided on 4 May 2011 (to a Channel 4 programme on illicit drug supplies in prison) indicates that between 2008 and 2011, 92 prison staff had been dismissed, 78 had been convicted and 167 staff who worked for other agencies within prisons had been excluded as a result of illicit drug supplies.

10.4 How effective are current treatment modalities?

It is important that medical professionals are able to make independent clinical and ethical decisions about the most appropriate treatment for individuals in prison, in exactly the same way as for those living in the community outside prison. It is also important to fulfil the requirement for informed consent to any treatment, including OST and opioid detoxification. This includes the right of patients to refuse any treatment offered.[2]

The Integrated Drug Treatment System (IDTS), jointly developed by the NOMS and the DH, aims to increase the volume and quality of drug treatment available in prisons, and the NOMS Drug Strategy 2008-2011 lists as one of its aims to '*Increase the access to and quality of drug interventions, matched to individual needs*'.[17] A national evaluation of the prison IDTS programme is now taking place, assessing post-release outcomes, including whether there are increased numbers of people remaining in treatment on release, and reduced offending.[18]

The effectiveness of MT (see **Chapter 8**) in prisons can be measured by key outcomes, including its impact on continued heroin use by those in treatment, continued levels of drug use in prisons, and the impact on drug-related harms, including blood-borne virus transmission and overdose (described in more detail in **Sections 10.5** and **10.6**). Treatment with methadone in prison has been shown to significantly reduce heroin use among those treated.[19] Lasting benefits of continued engagement with treatment services after release into the community have also been shown – those initiated in MT in prison in the USA have been shown to be significantly less likely to have urine drug screen results that are positive for either heroin or cocaine at 12 months after release.[4,20] A 4-year follow-up study after the initiation of MT in New South Wales, Australia showed that retention in MT was associated with reduced mortality, reduced reincarceration rates and reduced hepatitis C infection.[19]

10.5 Opioid detoxification in the prison setting

In 2005, the predominant method of clinically managing the majority of problem drug users in prison was detoxification (see **Chapter 8**),[21] while the following year, the IDTS sought to increase the available treatment options, akin to those available in community treatment settings.[21] As in the community, medical professionals managing opioid dependence in the prison setting must consider in each case the most appropriate treatment pathway or the individual's needs and circumstances. Treatment options will include continued opioid prescribing or slow reduction or detoxification if appropriate, with regular reviews, and clinical decisions based on a careful and full assessment, including risk assessment, in collaboration with the full team and the patient.

For those with shorter sentences, or soon to be released back into the community, an additional factor to consider is the reduced opioid tolerance following a break in opioid use, and the well-documented increased risk of drug-related death soon after release from prison.[22,23]

In addition to safety considerations (see **Section 8.6**), the medical professional will need to consider effectiveness. There is a paucity of research evaluating the most effective treatment for opiate detoxification in prisons. The Leeds Evaluation of Efficacy of Detoxification Study (LEEDS) Prisons Project Study, an RCT comparing methadone and buprenorphine for opiate detoxification, is currently under way,[24] and will help to provide an evidence base for medical professionals in considering detoxification care plans in the prison setting.

A randomised trial of the long-acting opioid antagonist oral naltrexone for treating opioid-dependent offenders after release from prison (6 months of either 300mg per week oral naltrexone plus standard psychosocial treatment as usual or standard psychosocial treatment as usual without naltrexone) in the USA reported large drop-out rates in both groups,[25] emphasising the limitations of giving oral naltrexone without supervision. A study in which prison volunteers were randomly allocated to naltrexone implants or methadone before release showed reductions in both groups in the frequency of use of heroin and benzodiazepines, as well as criminality, six months after prison release.[26] With the emphasis on patient choice and safety, clinicians may consider the option of naltrexone in their discussions around opioid detoxification with prison patients.

10.6 Reducing blood-borne virus transmission

It is important that detainees have full access to information about transmissible diseases, including TB, hepatitis and HIV; an ethical requirement is that they have the same access as those outside prison to harm-reduction measures and treatment.[2] As emphasised in **Section 8.3.4**, OST reduces the risk of transmission of blood-borne viruses (HCV and HIV), particularly in conjunction with the availability of clean needles, syringes and other injecting paraphernalia.[27,28]

Opioid substitution has been found to play an important role in reducing the transmission of HIV in the prison setting.[29] The high prevalence of problem drug use by the prison population[4,5] is accompanied by high rates of blood-borne viruses. In one meta-analysis, the pooled odds ratio of being positive for HCV was 24 times higher among inmates who were currently or formerly using drugs intravenously, compared with inmates who were not doing so.[30] Rotily et al found the HIV prevalence among users of intravenous drugs was 4 per cent (versus 1% among those not injecting drugs intravenously).[31]

10.6.1 Needle exchange

A cross-sectional survey carried out in six European prisons (including in Scotland), found that 27 per cent of respondents had ever injected drugs and 49 per cent of these reported they had injected while in prison.[31] Stark et al assessed the impact of a needle-exchange programme in a prison in Berlin.[32] They found baseline seroprevalences for HIV, HBV and HCV of 18, 53 and 82 per cent, respectively, among the prisoners. The seroprevalence of HIV and HCV at baseline was significantly associated with drug injection in prison prior to the introduction of a needle-exchange facility.[32] The provision of needle-exchange facilities was linked to a decrease in syringe sharing from 71 per cent during a 4-month period of previous imprisonment to 11 per cent during the first 4 months of follow-up, and to virtually zero thereafter. No HIV and HBV seroconversions occurred during the study period after the introduction of the needle-exchange facility, although four HCV seroconversions occurred.[32] (Although not the focus of this chapter, this emphasises the importance of also involving other coordinated approaches in the prevention of blood-borne virus transmission, such as the provision of condoms and sterile tattooing equipment.)

For those who use drugs intravenously, the provision of needle- and syringe-exchange facilities in the prison setting is an important harm-reduction measure, just as it is in the community (see **Chapter 9**). The provision of such needle-exchange programmes in prisons is part of the guidance from the WHO, the UNODC and the Joint United Nations Programme on HIV/AIDs (UNAIDS).[33] Proposals for such programmes in prisons have also been met with concerns about staff safety.[34] The 2011 DH document *Tackling blood-borne viruses in prisons: a framework for best practice in the UK* comments, '*nowhere in the UK currently offers needle exchange to prisoners*'.[35]

In Scotland, plans to pilot an in-prison injecting equipment initiative in the Scottish Prison Service as one of a range of harm-reduction measures to reduce the transmission of HCV were raised in the *Hepatitis C Action Plan for Scotland Phase II: May 2008-March 2011*.[36] The Scottish Prison Service also carried out its own review of the literature on prison-based injecting equipment provision (IEP) services in 2005. They reported on 46 prisons in four European countries with IEP schemes in operation for around 10 years, and found that these schemes resulted in lower transmission rates of HIV and HCV, and no increase in drug use or injecting among prisoners. They also noted that, since the introduction of the schemes, there had been no attacks on staff or other prisoners with injecting equipment.[37,38]

10.6.2 Hepatitis B vaccination

Screening and vaccination can reduce the likelihood of infection and transmission, and therefore need to be considered along with harm-reduction strategies.
The overall improvement in uptake of the HBV vaccine probably reflects improved provision through drug services and the prison vaccination programmes.[39-41]
There has been a marked increase in the number of injecting drug users receiving the hepatitis B vaccine, with over two-thirds now reporting vaccination.[41] In 2009, 80,762 doses of hepatitis B vaccine were reported to have been delivered to prisoners in England and Wales.[42] Medical professionals play an educative role in ensuring that staff and prisoners are aware of the importance of HBV vaccination in the prison setting.

10.7 'Drug-free' wings

According to its 2008-2011 strategy, the NOMS will aim '*within existing resources, subject to a detailed needs assessment, to offer to every prisoner who wants to make the commitment to lead drug-free lives, access to accommodation designated as drug-free*', also offering engagement in prison treatment, and interventions such as the 12-step programme (see **Section 9.5.2**).[17]

10.8 Reducing drug-related deaths in custody and after release

Some authors warn against the risks of death from methadone prescribing in the prison setting, in particular where the same dose is prescribed as that reportedly used in the community, where it may not have been consumed under supervised conditions, and some may have been diverted over a period of time, so the tolerance of the patient may be far lower than assumed.[43] There is evidence that '*...in the past patients have died as a consequence of uncontrolled vomiting during detoxification in prison*',[21] so careful assessment is essential.

The 2006 DH report on the clinical management of drug dependence in the adult prison setting makes recommendations to reduce this risk,[20] which include the following:

- clinical drug testing to include morphine, methadone and buprenorphine
- use of an opioid withdrawal assessment scale (eg short opiate withdrawal scale,[44] and intoxication monitoring)
- ensure the patient is fully alert, responding appropriately and that there are no signs of drowsiness/sedation; withhold medication in the event of any concern
- gradual dose induction, with divided doses
- a minimum of twice-daily monitoring of withdrawal and intoxication during stabilisation
- staff training in the administration of naloxone.[21]

The role of the medical professional includes careful assessment and careful prescribing, taking into account the unknown tolerance of the patient whose medication may not have been supervised in the community, and the possibility of polydrug use increasing their risk of overdose, balanced against the importance of engagement of the patient and minimising their seeking to engage with illicit drug use in prison.

The information in **Section 8.6.1** on reducing drug-related deaths at times of increased risk is particularly relevant for individuals who are newly released from prison. Prevention of relapse is discussed in **Section 9.5**.

10.9 Seamless transfer to community services from prison release

A meta-analysis of drug-related deaths soon after release from prison confirmed that there is an increased risk during the first 2-4 weeks after release from prison,[26] as found by other authors.[19] Drug-related deaths among men were more likely to involve heroin, and deaths among women were more likely to involve benzodiazepines, cocaine and tricyclic antidepressants.[22] The increased risk of drug-related death soon after release from prison is well documented.[22,45] A database linkage study covering 48,771 prisoners found that, relative to the general population, male prisoners were 29 times more likely to die during the week following release, while female prisoners were 69 times more likely to die during this period, with the prime cause of death being overdose of heroin or other opioids.[22]

Authors have highlighted the importance of ensuring that drug-dependent prisoners are linked with community drug services on release from prison,[46,47] and the DH gives guidance in this, including the role of CARAT (counselling, assessment, referral, advice and throughcare) workers in directly linking the patient with community clinical teams.[21] In cases where the patient-prisoner is being released late on a Friday and it has not been possible to link them directly with a pharmacist (although most pharmacists are also available for contact on Saturdays) or community drug service, the medical professional may play a role in carrying out a risk assessment in terms of the doses to be prescribed and taken home during the period before the patient will be reviewed in the community.[21]

10.10 Take-home naloxone

As described in **Chapter 8**, overdose in heroin users is common and is a particular risk with involuntary abstinence, as may occur in the prison setting.[48,49]

Strategies to reduce mortality rates from opioid overdose are described in detail in **Chapter 8**. A national programme of naloxone provision and training recently rolled out in Scotland for those deemed to be at risk of opioid overdose (and their family, friends, carers, and partners) includes prisoners who use opioid drugs on release from prison.[50] In England, a large randomised trial is currently under way,[51] in which naloxone is given on release to prisoners with a history of heroin use by injection. It is hypothesised that this will reduce heroin overdose deaths in the first 12 weeks after release by 28 per cent.

10.11 Promoting recovery after release from prison

While social integration is an important part of the purpose and function of prison, in many cases,[52] for those with drug dependence, the challenge of social reintegration, of moving away from drug use and to '*personal health and citizenship*'[53] continues after prison release. Liaison with community teams is essential at this crucial stage. In a primary care clinic setting, MT is effective in reducing convictions, cautions and incarceration over an extended period.[54] A study of 382 imprisoned male heroin users who had participated in an RCT of prison-based MT in 1997-1998 followed up subjects over a 4-year period, either in the general community or in prison, and found, among other benefits, that the risk of reincarceration was lowest during MT episodes of 8 months or longer.[19] A key role that treatment of drug use and drug dependence can play in promoting social reintegration is by reducing the likelihood of reincarceration. Recovery is about much more than avoiding harms, and while there is still debate about its definition,[55] it is generally agreed to be about positive elements – positive development, achieving potential, contributing to the social milieu, and accessing and benefiting from the rights of that shared society. Recovery capital has been described as the '*breadth and depth of internal and external resources that can be drawn upon to initiate and sustain recovery*' from substance use.[56] Medical professionals are an essential external resource, who may also help the patient identify some of their internal resources and access other external resources to utilise these, in their recovery journey.

10.12 Research, training and resource needs

10.12.1 Research needs

As discussed in this chapter, there are many gaps in evidence on the treatment of drug dependence in the prison setting. Robust research evidence is particularly required in the following areas:

- study of the impact of drug rehabilitation availability on drug-related harms in the prison setting and after release, including drug-related deaths after release
- study of the impact of drug rehabilitation in prisons on decreased recidivism and social reintegration
- continued work on improving systems for prompt and accurate communication with community services pre and post incarceration, with a view to limiting overdose in custody and after prison release
- study of the impact of increased treatment choices on the demand for and availability of illicit drugs in prisons and/or in the rates of initiation of drug use in prisons and the rates of relapse in prison of those in MT or post detoxification
- audit of the provision of HBV vaccination programmes and needle-exchange facilities in high-risk environments, including prisons.

10.12.2 Training needs

Medical professionals have an important role in day-to-day communication with non-medical colleagues in the prison setting, to enhance their understanding of issues in the management of problem drug users. They also have an important role in educating patients in the prison setting about reducing risks associated with drug use. In addition to the needs identified at the end of **Chapter 8**, training needs include:

- training on the beneficial impacts of harm reduction on increasing treatment choices, including opioid maintenance treatment
- training for all staff in recognising opioid and other drug overdose in custody and in the prison setting, and training in how to respond to this, including contacting emergency medical services and administration of naloxone
- training for prisoners in overdose recognition and use of naloxone
- training in the importance of needle exchange in reducing blood-borne virus transmission and the importance of HBV vaccination in this population.

10.12.3 Resource needs

The needs identified at the end of **Chapter 8** are relevant here. Optimising the response of hospitals to drug problems requires the presence of consultation-liaison services to support staff in the management of withdrawal. This is particularly important for the prison population and for those newly released from prison.

Summary

- Many illicit drug users first present to medical practitioners via the criminal justice system.
- Treatment of illicit drug users creates particular ethical challenges for medical professionals, especially in relation to coercion and informed consent within the criminal justice system. It is essential to recognise that these individuals have the same rights to accept or refuse treatment as the rest of the population.
- There is a high prevalence of drug use among prisoners in the UK, and high rates of first initiation of drug use.
- The Drug Interventions Programme (DIP), introduced by the Home Office in 2003, aims to develop and integrate measures for directing adult offenders who are illicit drug users into drug treatment and thereby reduce offender behaviour. Most DIP referrals into treatment are achieved via drug testing in police custody suites. This raises ethical issues about coercion to treatment.
- Methadone treatment in prisons has been shown to significantly reduce heroin use among those treated; retention in treatment is associated with reduced mortality, reincarceration and hepatitis C infection. It is hoped that a research study currently in progress in the UK will provide evidence about the most effective treatment for detoxification in prisons. Naltrexone may have a role in this treatment.
- Safety considerations are paramount in opioid detoxification treatment, especially in those soon to be released.
- Opioid substitution therapy has been shown to have an important role in reducing transmission of HIV in the prison setting.
- Needle-exchange programmes are important for harm reduction and are recommended for all illicit drug users in priosons in guidance from the World Health Organisation (WHO), the United Nations Office on Drugs and Crime (UNODC) and the Joint United Nations Programme on HIV/AIDs (UNAIDS). Nowhere in the UK offers such programmes in the prison setting.
- Vaccination for hepatitis B in the prison setting is important but not yet offered in every prison in England and Wales.
- The National Offender Management Service (NOMS) aims to offer all prisoners who want to commit to leading a drug-free life access to accommodation designated as 'drug-free'.
- There is a high risk of drug-related deaths in prison and shortly after release. Medical management must take this into account in planning treatment.
- It is important to ensure patients are linked with community drug services immediately on release from prison.
- The use of naloxone may reduce mortality from drug overdose.

Chapter 11 – The role of healthcare professionals

11.1 Introduction

There are three levels at which doctors are involved in responding to illicit drugs. All doctors in clinical practice will encounter patients whose health is affected by use of psychoactive drugs. The basic competence required of all practitioners is the ability to recognise when drug use is contributing to health risks. This is achieved by history taking and examination, provision of appropriate advice, diagnosis of drug-related harm, and prescribing safely in a way that minimises the contribution of prescribed drugs to drug-related harm.

Some doctors, particularly GPs and psychiatrists, will have greater involvement, requiring additional competence in treating drug dependence, in managing withdrawal and relapse prevention and in maintenance prescribing. The specific competencies required are discussed in more detail in a recent report from the Royal College of Psychiatrists and Royal College of General Practitioners, *Delivering quality care for drug and alcohol users: the roles and competencies of doctors. A guide for commissioners, providers and clinicians*.[1]

Many doctors involved in public health, and in specialist management, will also have a further role in advocating policies to minimise drug-related harm in the community. Medical practitioners' knowledge and experience of the biological, psychological and social factors predisposing to illicit drug use, and of the direct and secondary health harms of illicit drug use, have an important contribution to the development of prevention and treatment programmes.[1]

This chapter reviews the current situation in the UK and the competencies required of doctors to fulfil the responsibilities associated with these levels of involvement in responding to illicit drug use.

11.2 Current trends in the UK

As noted in **Chapter 2**, current use of illicit drugs has been declining in the UK since the 1990s, but this is not reflected in a long-term decline in problem drug use, drug-related deaths, recorded drug law offences or the number of people in/expenditure on drug treatment. These trends should inform medical professionals' response to illicit drug use in the UK.

The following list summarises the data related to drug use, offences and treatment presented in various parts of this report.

- It has been estimated that in 2009-2010, 35.9 per cent of 16 to 59 year olds in the UK had used drugs in their lifetime (ever), while 8.7 per cent had used drugs in the last year (recent use), and 5.0 per cent had used drugs in the last month (current use) (see **Section 2.1**).
- Current drug use in adults aged 16 to 59 years in England and Wales was reported to be 6.7 per cent in 1996, and fell to 5.2 per cent in 2011-2012 (see **Section 2.2**).
- This has largely been driven by a decrease in cannabis use. Over this time period, opiate and ecstasy use has remained relatively stable, amphetamine and hallucinogen use has declined slowly, and use of any cocaine has increased slightly (see **Section 2.2**).
- A survey of nearly 1,500 new UK prisoners in 2005-2006 found lifetime use of heroin, crack cocaine, cocaine powder, amphetamines or cannabis was reported by 79 per cent of prisoners, with approximately one-third having used heroin or crack cocaine during the year before custody (see **Section 10.2**).
- Rates of first initiation of use of drugs in prison are also high. In a 1997 survey, over a quarter of the men who had used heroin reported first initiating use in prison (see **Section 10.2**).
- The number of problem drug users aged 15 to 64 years in the UK has increased from 357,160 (9.26 per 1,000 population) in 2006 to a peak of 404,884 (10.10 per 1,000 population) in 2009, an increase of 9.07 per cent. This has since declined to 379,262 people (9.31 per 1,000 population), and represents approximately 10 per cent of all UK drug users (see **Section 2.2**).
- There were 1,930 (3.1 per 100,000 population) drug-related deaths in the UK in 2010, an increase of 67.5 per cent from 1996, although there are year-on-year fluctuations (see **Section 3.3**).
- The rate of drug-related deaths in 2010 was highest in the 35-39 years age group and 79.4 per cent of the deaths were men and most continue to be related to use of opioid drugs (see **Section 3.3**).
- The data from 2010 show a reduction in drug-related deaths for all age groups except the oldest (60 plus years), suggesting there is an ageing cohort effect (see **Section 3.3**).

- From 2005-2006 to 2010-2011, recorded drug law offences in the UK increased by 19.7 per cent from 255,670 in 2005-2006 to 270,045 in 2010-2011. Of the offences in 2009, 15.7 per cent were for trafficking and 83.8 per cent for possession (see **Section 3.4**).
- In 1994, around 67,000 people were counted as being in treatment, rising by 26.9 per cent to 85,000 in 1998-1999 and a further 129.9 per cent to 195,400 by 2006-2007, giving an overall rise from 1994 to 2006-2007 of 191.6 per cent (see **Section 5.10).**
- There is a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation. Hospital admission rates for drug-specific conditions for both male and female individuals have shown a strong positive association with deprivation (see **Section 4.4**).
- The most recent data available indicate that there are around 5,800 NHS hospital admissions for drug-related mental health and behavioural disorders each year in England, and over 11,500 admissions for drug poisoning (see **Section 3.5**).
- The budget for drug treatment interventions in the criminal justice system in England and Wales was over £330 million in 2006-2007 and spending on drug treatment in prisons increased from £7 million in 1997-1998 to £80 million in 2007-2008 (see **Section 5.10**).
- Expenditure on the UK's drug strategy is around £1.2 billion per annum, of which £300-400 million is on enforcement, with most of the rest spent on treatment. It is estimated that at least as much again is spent each year dealing with drug-related offences in the criminal justice system and prisons, while the wider social and economic costs of drug-related crime are estimated at around £16 billion a year in England and Wales (see **Section 6.4**).
- The economic and social costs of Class A drug use (cocaine, crack cocaine, ecstasy, heroin, methadone, LSD and psilocybin (magic mushrooms)) in 2003-2004 in England and Wales were estimated to be £15.4 billion, equating to £44,231 per year per problematic drug user (see **Section 3.5**). The costs of drug-related deaths were estimated to be £923 million.

11.3 Issues arising from these trends

In the general population in the UK, around 10 per cent of adults have ever used drugs and a little over half this number are current users. Of these, only around 10 per cent are problematic drug users (see **Glossary**). The level of use of opioid drugs has remained relatively unchanged over the last 15 years and most problematic drug use and drug-related deaths are associated with opiate use. Use of opioid drugs is an important area to target.

These population figures do not reflect the findings in socially deprived groups and those who are in prison, where rates of problematic drug use and treatment are many times higher. The problem of illicit drug use in the UK requires a multifaceted approach that tackles social deprivation and inequality, alongside dealing with the health consequences of drug use.

11.4 Basic medical competence

Doctors have a responsibility to treat all their patients. Many patients who use illicit drugs come from the most marginalised sectors of society, and present with distinct and complex medical and social issues. By the time they present for treatment, they are likely to be socially marginalised or in prison. Their presenting complaints can be either directly or indirectly related to their drug use, but often mean that each patient requires a high level of care and attention. These patients are likely to be difficult to treat, as a result of feeling they have little to lose. It is essential that they are offered treatment in a non-judgemental way that includes aspects to support their social reintegration. As set out by the GMC in *Good Medical Practice*:[2]

> '*You must not refuse or delay treatment because you believe that a patient's actions have contributed to their condition. You must treat your patients with respect whatever their life choices and beliefs. You must not unfairly discriminate against them by allowing your personal views* [including your views about a patient's lifestyle] *to adversely affect your professional relationship with them or the treatment you provide or arrange.*'

11.4.1 Maintain an awareness of the non-medical facets of drug use

Drug problems (and even more so, alcohol problems) are common, and although they often bring individuals into contact with the health system, they are frequently overlooked or ignored (see **Section 9.1**).[3-6] Failure to address underlying factors contributing to ill health is suboptimal care. Maintaining an awareness of the non-medical facets of drug use, taking a drug use history, and providing personalised health advice regarding drug use, are the three basic responsibilities of medical practitioners.

Patients are often defensive, and are not always open or truthful about drug use (see **Section 8.2.1**). History taking is more effective if undertaken in a neutral, non-judgemental manner, framing drug use as a medical rather than an ethical issue.

11.4.2 Undertake opportunistic brief interventions

Brief interventions are intended to prevent or reduce drug use, through getting patients to think differently about drug use and possible treatment. These interventions aim to increase the motivation of drug users to change their behaviour. The spectrum of advice ranges from stopping drug use to using drugs in ways that are less risky (see **Section 9.2**). Interventions that attend to the immediate priorities of people who inject drugs, such as advice on vein care for injecting drug users, have the potential to engage individuals and set them on a path towards treatment and social reintegration.

11.4.3 Prescribe safely

Doctors have the power to exert an immediate and powerful influence on drug use through their prescribing practices. Prescription regimes are the control structures that enable psychoactive substances to be consumed for approved medical purposes while preventing their use for non-approved purposes.[7] As indicated in **Section 9.3**, the non-medical use of, and dependence on, prescribed drugs is a rapidly growing public health concern. Prescribing safely in a way that minimises the contribution of prescribed drugs to drug-related harm is thus crucial. It also raises many issues for health professionals. Prescribing doctors accept absolute clinical and legal responsibility for their prescribing decisions,[8] and must exercise particular caution when prescribing to patients with a history of, or predisposition to, illicit drug use and dependence. Medications used for the relief of pain, including opioid drugs and certain sedatives, have the potential to trigger a relapse in recovering addicts, reactivating the original addiction or precipitating an addiction to a previously unknown substance.[9] Avoiding stimulating or exacerbating existing addictive disorders requires a rigorous assessment of the patient. The GMC's *Good practice in prescribing medicines* states that doctors must:

> *'Be in possession of, or take, an adequate history from the patient,including: any previous adverse reactions to medicines; current medical conditions; and concurrent or recent use of medicines, including non-prescription medicines.'*[10]

This can be particularly challenging to those in primary care, who operate under immense time constraints. It is important to refer to the *British National Formulary* as appropriate, to inform prescribing behaviour. When prescribing for a patient, doctors should also consider whether ongoing monitoring and supervision are required, such as:

> *'…further consultations; blood tests or other investigations; processes for adjusting the dosage of medicines, changing medicines and issuing repeat prescriptions.'*[10]

Supervision is particularly important when OST is prescribed. This tends to be provided by the dispensing pharmacist. Good communication between the prescriber and the pharmacist is essential: the DH recommends that prescribers liaise with the pharmacist when first prescribing controlled drugs for a patient, to ensure that the pharmacist is:

- introduced to the new patient
- part of a suitable local scheme and can provide supervised consumption of the prescribed medicine if requested by the prescriber
- able to confirm that the prescriber and prescription are genuine.[11]

Ongoing communication can also help to alert the prescriber to any concerns the pharmacist may have about the patient's health and wellbeing, as well as their treatment compliance.[11] Sharing information in this way should be conducted in line with locally determined confidentiality agreements.

Other interventions aimed at minimising the contribution of prescribed drugs to drug-related harm focus on preventing the diversion of psychoactive substances from the medical system into the illicit marketplace. Control strategies adopted in the UK include restricting the type and quantity of medicines that can be sold over the counter, enforcing prescription guidelines (including requirements for detailed record keeping), restricting the settings in which the drug in question can be administered (eg hospitals, specialist clinics) and withdrawing a drug from the legal market.[7] There are also limitations placed on the number of doctors who have the authority to prescribe particular drugs. Under the Misuse of Drugs (Supply to Addicts) Regulations 1997, doctors must hold a general licence that is issued by their relevant health department in order to prescribe, administer or supply diamorphine, dipipanone or cocaine in the treatment of drug addiction.[12]

The control strategies outlined above do not eliminate non-medical use of psychoactive drugs, since they can be sourced through other channels, including theft, prescription forgery/alteration, and via the internet.[13,14] In addition, doctors are increasingly advised to be vigilant for '*doctor shoppers*' – individuals visiting numerous physicians to obtain multiple prescriptions, often for the same drug.[14]

11.4.4 Lobbying medical schools for improved training on drugs of dependence in the medical curriculum

Those who use drugs will inevitably be seen by doctors. For this reason, it is vital that, as a part of the undergraduate medical curriculum, medical students have the core skills and knowledge to identify and understand the complexities of drug use.

Medical students receive very limited training in issues of drug use and dependence at an undergraduate level. Surveys of medical schools' curricula from the mid-1980s onwards have all indicated that the education of medical students about drug use is typically patchy and uncoordinated.[15-19] Although medical schools currently include some teaching and learning about drug use, this topic is often taught within psychiatry or public health,[19] with the result that drug use is often seen by students as a specialised, or peripheral subject, rather than the common pervasive problem that it is in reality.[19] It is essential that medical schools and medical students are encouraged to place a greater emphasis on the care of those who use drugs.

11.5 Managing patients with drug-related health problems

There is wide variation in the extent to which primary care physicians become engaged in managing illicit drug users.[20] As identified in **Chapter 9**, this may be because of a sense of pessimism about being able to effectively treat drug-using patients, avoidance of antagonising patients and, possibly, reluctance to work with stigmatised patients.

A 2005 joint report from the Royal College of Psychiatrists and Royal College of General Practitioners estimated there were around 130 consultants in addiction psychiatry in the UK.[21] In 2005, a random sample of GPs in England and Wales, found that over half of those surveyed provided treatment to users of opioid drugs.[20] The findings published suggest that during the time of the survey, between 41,000 and 62,000 users of opioid drugs were receiving GP treatment.[20] The previous survey of opioid treatment in general practice settings, which took place in the mid-1980s, found only 19 per cent of GPs were treating patients who used opioid drugs.[22,23] Over two-thirds (61%) of these patients were approaching their GP for help with withdrawal, rehabilitation, or both, indicating a demand by users of opioid drugs for help with initiating abstinence from drugs.[22] The findings suggest that not all drug users are receiving treatment in general practice settings, especially given recent estimates of there being over 260,000 users of opioid drugs in the UK.[24]

Both GPs and addiction psychiatrists provide services such as drug-related information and advice, screening, brief psychosocial interventions and harm-reduction interventions.[1,21,25] Community-based drug assessment, coordinated care planned treatment and drug specialist liaison can be conducted or arranged by GPs, but more complex patients are best managed by practitioners with specialist

experience and knowledge.[1,21,25] Inpatient specialised drug-treatment settings are usually headed by consultant psychiatrists, although this is often with the support of supervised junior medical staff.[1,21,25]

In 2007, NICE, in association with the National Treatment Association for Substance Misuse and the four UK health departments, published *Drug misuse and dependence: UK guidelines on clinical management*.[11] These guidelines, commonly known as 'The orange guidelines', provide guidance to all clinicians on the treatment of drug use and dependence, at all levels of interaction with drug users.

While 'The orange guidelines' have no specific statutory status, the standards and quality of care set out in the guidelines are taken into account in any formal assessment of clinical performance in this area. There are also separate defined legal obligations in relation to the prescribing of controlled drugs published in both 'The orange guidelines'[11] and the *British National Formulary*.[26,27] Clinicians should act in accordance with these. They include ensuring that prescribers act within Home Office licensing arrangements for the prescription of restricted medications such as diamorphine for the management of illicit drug use.

Chapter 8 discusses in detail the logistics of managing opioid-dependent patients using OST. **Chapter 9** details how patients may present to either primary or secondary care in states of acute withdrawal. In these instances, healthcare professionals have a responsibility to manage the clinical emergency, stabilise the individual, and slow the rate of change so that their physiology can adapt and the distressing and uncomfortable symptoms of withdrawal are reduced.

Doctors are also responsible for addressing the individual healthcare needs of patients who use drugs. As noted in **Chapters 8-10**, blood-borne viruses, such as hepatitis B and C as well as HIV, are common among drug users, especially those who use drugs intravenously. In addition to harm-reduction measures, an essential part of managing this aspect of drug use should include offering immunisation against hepatitis to patients who want it.

Harm reduction focuses on the safe use of drugs, and includes provision of clean injecting equipment and education on how to use drugs safely. There have been arguments over the ethics of harm reduction,[28] and there is a perception among some healthcare professionals that harm-reduction techniques may lead to an increase in drug use by individuals who would otherwise be deterred. Those who support harm reduction assert that, rather than encouraging drug use, it offers a realistic way to help keep drug users safe, as well as respecting their choice and individual freedoms.[28] **Chapters 5 and 6** also highlight some of the public health benefits for society at large that arise from harm-reduction and prevention methods.

The most serious potential harms associated with illicit drug use are overdose and death. **Chapter 8** details how this is particularly true for use of opioid drugs. Maintaining patients in high-quality treatment is the most effective preventative measure for these risks. Clinicians can also prevent the risk of drug overdose by providing education to drug users on the risks of overdose, the dangers of combining drugs, and how to respond effectively if overdose takes place. In the event of an overdose at a healthcare facility, all services working with drug users should have an emergency protocol in place that covers the management of drug overdoses (see **Section 8.6.1**).[11]

Chapter 4 explores the high comorbidity between drug use and mental health problems; this comorbidity is associated with complex factors that often impact negatively on treatment.[11] To ensure the needs of the individual patient are met, medical professionals should undertake a comprehensive assessment, produce an individual care plan and ensure appropriate care pathways are in place.

11.6 Promoting public health policies and practices to reduce drug-related harm

Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.

The drug debate, both nationally and internationally, has been influenced by emotions and ideologies, when, in reality, a subject as important as the use of drugs should be based on rationality and scientific evidence. What is needed is a solid and pragmatic approach to drug use, which is informed by the best available evidence and puts health at the centre of any decisions.

As highlighted in **Chapter 6**, there are strong views in this debate. There is a widely held view within the drugs field that the prohibition of production and supply of certain drugs has not only failed to deliver its intended goals, but has been counterproductive.[29] This is especially so with regard to health.[30] Stringent user-level enforcement does not necessarily reduce levels of drug use,[31,32] as many other factors are also involved (see **Chapter 6**). It may be that a new approach is required. Before this can occur, rational debate is needed to inform an understanding of what is, and what may not be, working with the current approach to drug use, and options for change. As emphasised by the 2012 UKDPC report, *A fresh approach to drugs*,[33] such deliberations must be independent, evidence based, and centred on the health and wellbeing of all. An essential component of this will be ensuring that all relevant parties, including health professionals, and the organisations that represent them, are consulted, so that a clear, unbiased and effective approach is achieved.

These conclusions are echoed by the 2012 Home Affairs Select Committee report, *Drugs: breaking the cycle*, which is based on a year-long inquiry into national and international aspects of drug use.[34] It focuses on the need to 'break the cycle' of drug addiction and concludes that *'…there is now, more than ever, a case for a fundamental review of all UK drugs policy in an increasingly globalised world'*. The report recommends establishment of a Royal Commission – to be set up immediately and report in 2015 – to *'consider the best ways of reducing the harm caused by drugs'* and *'instigate a public debate on all of the alternatives to the current drug policy'*. It presents strong arguments for focusing on problem drug users, with interventions that are 'tailored to the individual', and calls for the setting of measurable targets that are based on evidence of what works. Recognising the lack of reliable data in some areas, it further recommends allocation of ring-fenced funding to drugs policy research.

11.7 Conclusion

Medical practitioners responding to drug dependence need a frame of reference that helps them to respond empathically and effectively to challenging patients. Dependent drug users have the same rights to medical treatment as any other individuals with a chronic disorder, and effective medical management is likely to include harm reduction, maintenance treatment and support to eventually abstain from drug use.

An effective drug policy must take account of the complex biological, psychological and social factors involved in illicit drug use and aim to distinguish the harms associated with drug use from the unintended adverse consequences of attempts to minimise drug use.

An effective policy that significantly reduces the harms associated with illicit drug use would have enormous benefit for individuals and generate large savings to society in terms of the cost of medical treatment and the financial and social costs of associated crime.

There is a widely held view within the drugs field that the current legal framework has failed to deliver its intended goals of reducing illicit drug use. There are strong views on both sides of this debate, but it should be informed by the best evidence. While it must be accepted that international consensus dictates that supply and possession of illicit drugs must remain a criminal offence, this framework deserves to be re-examined in a way that takes account of all the evidence available.

Doctors are ideally placed to play a key role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and founded on rigorous scientific evidence.

Summary

- Medical training should provide graduates with basic knowledge about the social and personal factors increasing the risks of illicit drug use, the adverse health consequences of the illicit use of drugs, and the role of doctors in identifying drug-related harm and initiating intervention.
- Doctors should maintain an awareness of the non-medical facets of drug use, and exercise caution in prescribing drugs with the potential for non-medical use.
- Doctors should take a drug use history when indicated, undertake brief opportunistic interventions to reduce drug-related harm, and refer to specialist services as appropriate.
- Guidance on clinical management of drug use and dependence is provided by 'The orange guidelines', available to all clinicians.
- Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.
- Doctors with knowledge and experience of helping patients affected by illicit drug use are ideally placed to engage in debate to promote a rational approach to drug policy that is evidence based and health oriented.

Appendix 1: Membership of the BMA Board of Science Reference Group

Professor Sue Bailey

President, Royal College of Psychiatrists

Professor Sue Bailey is a Consultant Child and Adolescent Forensic Psychiatrist at the Greater Manchester West NHS Foundation Trust, and was recently elected the President of the Royal College of Psychiatrists. Professor Bailey was dual trained in child and adolescent psychiatry and forensic psychiatry. The focus of her clinical and research work has been on developing needs- and risk-assessment programmes, as well as evidenced-based interventions to improve outcomes for young people with complex mental health needs who present as high risk of harm to others and themselves. She has worked in specialist inpatient and community services, and has interests in human rights in practice, and mental health and social care policy in national and international contexts. Through various roles in the Royal College of Psychiatrists, Professor Bailey has worked to support stronger partnerships between users, carers and families. She has sought to increase recognition of the importance of mental health across medicine, as well as the negative impact of psychosocial adversity on the mental health of the individual, their families and local communities.

Declaration of interests:
Professor Bailey declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Dr James Bell

Consultant in Addictions Medicine, South London and Maudsley NHS Foundation Trust

Dr James Bell is a physician specialising in addiction medicine. He is a consultant in addictions at South London and Maudsley NHS Foundation Trust. Dr Bell has been active in the development of training programmes for health professionals, and was a leading figure in establishing the Chapter of Addiction Medicine within the Royal Australasian College of Physicians. His major research interest is the treatment of opioid dependence but he has also recently developed a 'party drugs' clinic in South London, and has been involved in developing a new clinical pathway for management of acute alcohol withdrawal presenting to emergency departments.

Declaration of interests:
Dr Bell is in receipt of research funding from Reckittbenckiser PLC, manufacturers and distributors of buprenorphine. He has been funded to attend conferences and seminars by Reckittbenckiser, Schering-Plough Corporation and Titan Pharmaceuticals.

Dr Owen Bowden-Jones

Consultant Psychiatrist, Addictions Directorate, Central and North West London NHS Foundation Trust; Chair, Faculty of Addictions, Royal College of Psychiatrists; and Honorary Senior Lecturer, Imperial College, London

Dr Owen Bowden-Jones is a Consultant in Addiction Psychiatry at the Chelsea and Westminster Hospital and Honorary Senior Lecturer at Imperial College. He oversees three teams providing treatment for alcohol, drugs and mental health problems. Recently, Dr Bowden-Jones set up the UK's largest multidisciplinary service for people using novel psychoactive substances ('legal highs') and 'club drugs' and is developing innovative approaches to treat dependence on these substances. Dr Bowden-Jones is the Chair of the Faculty of Addictions, Royal College of Psychiatrists. In this role he sits on a number of working groups. The position also requires regular meetings with Government and other professional groups. Other responsibilities include clinical lead for a large quality improvement project for blood-borne virus treatment in west London and Chair of Medicines Management for his trust.

Declaration of interests:
Owen Bowden-Jones declares that he has no conflicts of interests.

Ms Amanda Feilding

Director, The Beckley Foundation

Ms Amanda Feilding established the Beckley Foundation in 1998 to help reform national and global drug policy by creating evidence-based, health-orientated, harm-reducing, cost-effective drug policies that recognise human rights. The Foundation has organised nine influential international drug policy seminars, hosted mainly at the House of Lords, and has commissioned over 35 books, drug policy reports and proceedings documents, including *Cannabis policy: moving beyond stalemate*. The Foundation has also recently commissioned two important reports: (1) *Roadmap to reforming the UN drug conventions*, which describes possible amendments to the United Nations drugs conventions that would give individual signatory countries more freedom to experiment with alternative drug policies; and (2) *A cost/benefit analysis of a regulated and taxed cannabis market in England and Wales.* The Beckley Foundation Scientific Programme investigates the neurophysiology and psychopharmacology of cannabis, psilocybin, MDMA (ecstasy), LSD (lysergic acid diethylamide) and novel psychoactive substances ('legal highs'), to better understand how these compounds work, and identify potential therapeutic applications, as well as to inform policy.

Declaration of interests:
Amanda Feilding declares that she has no conflicts of interests.

Dr Emily Finch

Clinical Director, Addictions Clinical Academic Group, South London and Maudsley Foundation NHS Trust

Dr Emily Finch is a Consultant Addiction Psychiatrist working for the South London and Maudsley NHS Foundation Trust. Emily is Clinical Director for the Addictions Clinical Academic Group, with responsibility for addiction services across Lambeth, Southwark, Bexley, Greenwich and Croydon, and inpatient services based at the Maudsley Hospital. From 2004 to 2007, Emily was the Clinical Team Leader at the National Treatment Agency, where she took a lead in the clinical aspects of national drug policy and in liaising between the National Treatment Agency and the professionals working in the field. She was part of the secretariat for the 2007 joint publication of the Department of Health (England), the Scottish Government, the Welsh Assembly Government and the Northern Ireland Executive, *Drug misuse and dependence: guidelines on clinical management,* and a member of the guideline development group for the National Institute for Health and Clinical Excellence guideline on opiate detoxification. Emily is also a member of the Addictions Executive of the Royal College of Psychiatrists. Emily is a tutor, lecturer and examiner on the MSc in Clinical and Public Health Aspects of Addiction, and is an experienced expert witness in family and criminal cases. Emily is a Trustee of Phoenix Futures. Emily is currently Chair for the National Institute for Health and Clinical Excellence Drug Use Disorders Quality Standard Topic Expert Group.

Declaration of interests:
Emily Finch declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Professor Sir Ian Gilmore

Immediate Past President, Royal College of Physicians

Professor Sir Ian Gilmore is a Professor of Medicine at the University of Liverpool and was a consultant physician at the Royal Liverpool University Hospitals until April 2011. His specialty interest is liver disease. He is the immediate past president of the Royal College of Physicians and is president-elect of the British Society of Gastroenterology. He has particular interest in harms related to alcohol misuse and the role of regulation in reducing this. He chaired a Royal College of Physicisns Working Party in 2001, producing the report *Alcohol – can the NHS afford it? A blueprint for a coherent alcohol strategy*. He chairs the UK Alcohol Health Alliance, in which relevant agencies work together in a coherent and focused framework. He has also been appointed as Chair of the European Alcohol and Health Forum Science Group and chairs the global science group of a European Commission cofunded multimillion Euro project on reframing addiction. He is a member of the Climate and Health Council and of the National Quality Board. He received a Knighthood in the Queen's Birthday Honours in 2010.

Declaration of interests:
Sir Ian is a trustee of Alcohol Research (UK) and of the British Society of Gastroenterology. He is Chair of the Alcohol

Health Alliance UK, Liverpool Health Partners, and the Global Science Group of ALICE-RAP, a European Commission cofunded project on reframing addiction in Europe. Sir Ian is also a Special Adviser on Alcohol and Public Health to the Royal College of Physicians.

Ms Arsha Gosine

Policy Adviser, Crown Prosecution Service

Arsha is a Policy Adviser with the Crown Prosecution Service and is their policy lead for drugs. Arsha holds a Masters in International Law and has presented on criminal law issues in the UK and abroad. For the last four years Arsha has acquired an expertise in drug-related offences and provides legal guidance and updates for prosecutors nationally. Arsha is a member of the Association of Chief Police Officers Drugs Committee.

Declaration of interests:
Arsha Gosine has no competing interests that might be perceived as posing a conflict or bias.

Mr Nicholas Green QC

Barrister, Brick Court Chambers

Nicholas Green is a barrister specialising in all aspects of competition, European, regulatory and administrative law. He appears before all levels of the domestic English courts and appears regularly in international courts and tribunals. In 2010 he was the Chairman of the Bar Council of England and Wales. In his capacity as Chairman of the Bar he was involved in leading negotiations with Government on behalf of the profession on all issues from reform of criminal and civil justice systems to legal aid reform. He represented the profession internationally at conferences and in bilateral negotiations and discussions with foreign Bars and Governments. Prior to becoming Chairman he had been a member of the Bar Council for nearly 10 years. He has subsequently been appointed as the Chairman of the Advocacy Training Council, a body that facilitates and coordinates the training of and professional support for the Bar. He has held a long-term interest in the impact of drugs policy upon the administration of the justice system. He sits as a Recorder in the Crown Court. He is also joint Head of Chambers at Brick Court Chambers in London.

Declaration of interests:
Nicholas Green has no interests that conflict or compete with the issues being considered in the report and that would affect his views.

Mr Tim Hollis CBE

Chief Constable of Humberside; Vice President, Association of Chief Police Officers; and Chair, Association of Chief Police Officers Drugs Committee

After attending Bristol University and undertaking a short service commission in the Parachute Regiment, Tim Hollis joined the Metropolitan Police in 1977. He subsequently served in Sussex Police and as a Chief Officer in South Yorkshire Police, during which time he also held national responsibilities for public order policing. In 2002, he moved to Her Majesty's Inspectorate of Constabulary prior to becoming Chief Constable of Humberside Police in 2005. He leads nationally on drugs and is one of the Vice Presidents of Association of Chief Police Officers. He was awarded the QPM (Queen's Police Medal) in January 2000 and CBE (Commander of the British Empire) in January 2010.

Declaration of interests:

Tim Hollis declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have an interest in the submitted work in the previous three years.

Baroness Molly Meacher

Chair, Parliamentary International Drugs Policy Reform Group; Chair, East London NHS Foundation Trust; and House of Lords

Baroness Molly Meacher is the Chair of the All Party Parliamentary Group on Drug Policy Reform. She is also the Chair of East London NHS Foundation Trust and a crossbench member of the House of Lords. Formerly she has been the Chairman of the Security Industry Authority and Deputy Chairman of the Police Complaints Authority. In the 1990s, Molly worked in Russia for four years, advising the Russian Government on the development of a system to handle unemployment. She is the author or editor of a number of books on the benefits system, mental health and the tax system. She was actively involved in the development of the 1983 Mental Health Act and spent five years as a Mental Heath Act Commissioner. Her political interests include mental health, criminal justice, welfare benefits and social care.

Declaration of interests:

Baroness Meacher declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Dr David Pickersgill

Immediate past Treasurer, British Medical Association

Dr Pickersgill was Treasurer of the BMA from 2002 to 2011. He is a long-serving member of BMA Council and has served on many other BMA committees, including its Private Practice and Forensic Medicine Committees, both of which he previously chaired. David was a GP in North Norfolk for 30 years, running a market town dispensing practice. For approximately half of that time he was a local police surgeon.

Declaration of interests:
David Pickersgill declares that he has no conflicts of interests.

Dr Kylie Reed

Honorary SpR and Research Worker, National Addiction Centre, Institute of Psychiatry, King's College London, and South London and Maudsley Foundation NHS Trust

Dr Kylie Reed is an Addiction Psychiatrist working for the National Addiction Centre, Institute of Psychiatry, and South London and Maudsley NHS Foundation Trust. Kylie has worked in clinically diverse settings in addiction psychiatry, including inpatient units and the smoking cessation service at the Maudsley Hospital, community treatment centres, a homelessness hostel, and a clinic prescribing injectable opiates as second-line treatment. From 2008 to 2009, Kylie worked as an adviser in the Substance Misuse Policy team at the Department of Health. Kylie tutors, lectures and is an internal examiner on the MSc in Clinical and Public Health Aspects of Addiction, at King's College London. She completed her MA in clinical sciences at St John's College, Cambridge, and her degree in medicine (BMBCh) at Oxford University. She trained in psychiatry at the Maudsley and Bethlem Royal Hospitals and Southampton University Hospital. Her clinical and research interests include dual diagnosis, the healthcare of opiate users, dependence on prescribed medications, smoking cessation and homelessness healthcare.

Declaration of interests:
Kylie Reed coordinated a Department of Health-funded review of published English and international evidence and available data to inform consideration of the extent of dependence on and harm from prescribed benzodiazepines and z-drugs and of over-the-counter codeine-containing products in England. Kylie has received support from Schering-Plough to attend a conference on new advances in opiate addiction treatment, and has received honoraria for two small reviews for a market research company that works with Acetelion, a pharmaceutical company that does not currently produce any medicines for use in the addiction treatment field. In the past, Kylie has been seconded to work at the Department of Health, and has worked with the World Health Organisation, the General Medical Council and currently works with National Institute for Health and Clinical Excellence. Kylie Reed has worked in the field of addiction psychiatry since 2006.

Mr Stephen Rolles

Senior Policy Analyst, Transform Drug Policy Foundation

Steve is Senior Policy Analyst for Transform Drug Policy Foundation, where he has worked since 1998. Transform is a UK-based drug policy think tank and registered charity working in the field of drug policy and law reform. As well as publications in journals, periodicals and book chapters, Steve has been lead author on a range of Transform publications including *After the war on drugs: blueprint for regulation* (2009). Steve has been a regular contributor to the public debate on drug policy and law: in print and broadcast media, as a speaker at UK and international conferences/events, and at various UN, UK Government and Parliamentary Select Committee hearings and inquiries. Before Transform, Steve worked for the Medical Research Council and Oxfam, having studied Geography at Bristol University (BSc) and Development Studies at Manchester University (MA).

Declaration of interests:

Transform Drug Policy Foundation is a charitable think tank. Its purpose is to draw public attention to their opinion that drug prohibition itself is the major cause of drug-related harm to individuals, communities and nations. Transform campaigns for drug prohibition to be replaced by effective, just and humane Government control and regulation.

Professor John Strang

Professor of the Addictions and Director, Addiction Research Unit, Institute of Psychiatry, Kings College London

Professor John Strang is the Head of the Addictions Department at King's College London and has been a Consultant Psychiatrist in addictions treatment for over 30 years, first in Manchester and subsequently at the South London and Maudsley NHS Foundation Trust. He has had extensive experience in charge of a wide range of treatments in community and residential settings. His area of particular clinical expertise is heroin addiction. Professor Strang completed his undergraduate medical (MBBS) and postgraduate psychiatry studies at Guy's Hospital, London. He trained in psychiatry at the Maudsley/Bethlem Royal Hospital between 1976 and 1982. In 1995, he was awarded a thesis-based higher degree (MD) at the University of London. Research interests include: supervised injecting clinics for managing entrenched heroin addicts who cannot otherwise be engaged in treatment; new approaches to preventing drug-overdose deaths, involving family members; and contingency management to improve treatments to reduce drug use and associated harms. He has made contributions to the Department of Health, Home Office, Royal College of Psychiatrists, BMA, General Medical Council, General Dental Council, Royal Pharmaceutical Society, National Treatment Agency, World Health Organisation and United Nations, and has published over 400 papers.

Declaration of interests:
Professor Strang declares that he has worked with UK and international Government agencies on treatment guidelines, including chairing UK Department of Health and National Institute for Health and Clinical Excellence clinical guidelines committees; has contributed to the work of organisations that review evidence of effectiveness of drug policy; has received research and educational grant support or honoraria, consultancy payments, and travelling, accommodation, or conference expenses from pharmaceutical companies that produce, or have been considering producing, new medicines or new formulations for use in the addiction treatment field, including (past 3 years) – Genus (Britannia),Viropharma (Auralis), Martindale (Catalent), Reckitt-Benckiser, Schering-Plough, Lundbeck, UCB, Napp (MundiPharma), Lightlake, and Fidelity International. He works within an integrated university and NHS academic health sciences centre (Kings Health Partners AHSC) and is supported by the National Institute for Health Research Biomedical Research Centre for Mental Health at the Institute of Psychiatry, Kings College London and South London and Maudsley NHS Foundation Trust, which provides treatments and undertakes research study; and has close links with various other treatment provider organisations.

Mr John Witton

Researcher, King's College London

John Witton is a researcher at the Addictions Department at King's College London and previously worked in the Library and Information Service of the Institute for the Study of Drug Dependence (now DrugScope) 1977-1997. He has received project grant support and/or honoraria and/or consultancy payments from the Department of Health, National Treatment Agency, Home Office, European Monitoring Centre for Drugs and Drug Addiction and United Nations Office on Drugs and Crime. He is on the management board of Drug and Alcohol Findings and a trustee of Bromley Mind.

Declaration of interests:
John Witton declares that he has received no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Professor Jonathan Wolff

Professor of Philosophy and Director of the Centre for Philosophy, Justice and Health, University College London

Professor Wolff's work has largely concentrated on issues of distributive justice, with a particular interest in the relation between theory and policy. Recently, he has worked on topics such as disadvantage, disability, risk and the measurement of health, and was principal investigator on the Arts and Humanities Research Council funded project, *The Ethics of Risk*. He is a member of the Nuffield Council on Bioethics, and the Ethics Committee of the Royal College of Obstetrics and Gynaecology. Formerly, he was a member of the Gambling Review Body, the Nuffield Council Working Party on the Ethics of Research Involving Animals, and the Academy of Medical Sciences Working Party on Brain Science and Addiction. He is currently advising an interdepartmental government committee on the valuation of life and health. His recent books include *Ethics and public policy: a philosophical inquiry* (2011) and *The human right to health* (2012).

Declaration of interests:

Professor Wolff declares that he has worked with the Academy of Medical Sciences and the Nuffield Council of Bioethics on issues related to the topic of this report, and has received research and educational grant support or honoraria, consultancy payments, and travelling, accommodation, or conference expenses from Pfizer UK Ltd and Merck Sharp and Dunne. He has had no support from any organisation for the submitted work and, other than the above, no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Appendix 2: The nature and addictiveness of commonly used illicit drugs

Drug	What is it?	Desired effect	Addictiveness
Amphetamine	A synthetic drug that can easily be produced on a small scale. It can be snorted, swallowed or smoked or, less frequently, injected.	Stimulant used for a 'buzz' of alertness and energy and the sense that anything is possible. Relieves boredom and tiredness. Effects last for about 6 hours.	People can become dependent on the psychological effects and although amphetamines do not create physical withdrawal, stopping can produce strong feelings of depression and anxiety.
BZP	A synthetic stimulant derived from piperazine, often seen as an alternative to ecstasy or amphetamine, although usually considered to be less potent than these drugs. It is sold as a tablet, capsule, or off-white powder. BZP pills are marketed under a huge variety of names and the tablets come in many different shapes.	Provides a sense of euphoria and increased alertness, enhanced senses and a raised heart rate. Depending on the dose taken, the effects of the drug can last for up to 6-8 hours.	Early studies have suggested that people can become dependent, as is the case with amphetamine use.

Drug	What is it?	Desired effect	Addictiveness
Cannabis	Naturally occurring plant used as leaves ('grass', 'ganja', 'marijuana', 'weed'), resin ('hash', 'hashish') or oil that can be smoked or eaten. There are many different varieties of varying strengths. Around 100 varieties have high levels of the psychoactive component tetrahydrocannabinol (THC). These are often given the generic name 'skunk'.	A mild hallucinogen that also has some sedative and disinhibiting properties. It induces relaxation and heightens the senses. Positive uses to relieve symptoms in chronic illnesses like multiple sclerosis and glaucoma are being actively researched.	There is some evidence of physical dependence associated with cannabis use, which can lead to withdrawal symptoms. It may be psychologically addictive if people depend on it as part of a coping strategy or as a way to relax.
Cocaine	Derived from natural coca leaves. Usually snorted as a powder but can be injected or smoked.	A powerful stimulant to the central nervous system (CNS) and a local anaesthetic. It gives a powerful physical and psychological rush of exhilaration and excitement, alertness, confidence and strength within 3 minutes of ingestion and the effects last 15-40 minutes.	High. Produces psychological dependence, owing to changes in the brain. Does not produce physical dependence to the same degree as heroin, but its physical effects are powerful and withdrawal creates very unpleasant symptoms.

Drug	What is it?	Desired effect	Addictiveness
Crack cocaine	Smoked version of cocaine, derived by 'freebasing': heating cocaine powder with water and a reagent such as baking soda. It is called crack after the crackling sound it makes when smoked using a pipe, glass tube, plastic bottle or foil.	Stimulant. Has the same effect as cocaine, but far more intense: crack makes users feel alive, exhilarated, confident and wide awake. It kills all feelings of pain, tiredness and hunger.	Potentially very high. The very steep high and 'come-down' can produce strong and immediate cravings, which can rapidly develop into a 'binge' pattern of drug use.
Ecstasy	Synthetic drug, derived from the chemical 3,4-methylenedioxymeth amphetamine (MDMA). Usually taken in tablet form.	Stimulant. Gives a rush of alertness and energy and a feeling of being in tune with one's surroundings and other people. The effects can last 3-6 hours.	Not considered to be physically addictive, but it is possible to build up a tolerance and require larger doses to achieve the same effect. It may be psychologically addictive.
GHB/GBL	Synthetic chemicals. Once GBL enters the body, it is rapidly converted to GHB.	Depressant and anaesthetic. Lowers inhibitions and increases libido. Used as a club drug. Associated with date rape.	May produce physical and psychological dependence.

Drug	What is it?	Desired effect	Addictiveness
Heroin	Painkiller derived from the morphine from the opium poppy. It is injected, smoked or snorted. When pure, it is a white powder, but it is usually brownish-white by the time it is sold on the street.	Depressant. Acts to depress the nervous system and slow down body functioning. Users experience a rush, a warm sensation and sense of being cut off from physical and psychological pain.	Very high. No instant dependency, but physical dependence will develop if it is used for a number of days consecutively, even at relatively low levels.
Ketamine	Synthetic chemical, ketamine hydrochloride, found as liquid or tablets.	Anaesthetic. Can produce euphoria at lower doses, hallucinations and out-of-body experiences at higher doses.	May produce psychological dependence. Tolerance develops quickly.
LSD	Synthetic chemical known as LSD or acid. Usually sold as tiny squares of paper, often with pictures on them, but also found as a liquid or as tiny pellets.	Hallucinogen, mind and mood altering effects, which may last up to 8-12 hours, include heightened and altered perception.	Not addictive. Very dose sensitive.
Psilocybin (magic mushrooms)	Mushrooms growing in the wild. There are two main types: *Psilocybe*/liberty cap and *Amanita muscaria*/fly agaric. Can be eaten raw, cooked in food or made into tea.	Hallucinogens, producing much the same effects as LSD, only milder.	Not addictive, but tolerance may develop, resulting in increasing use during the short growing season.

Drug	What is it?	Desired effect	Addictiveness
Methamphetamine	Synthetic drug. Can be swallowed as pills, snorted as powder or smoked as crystals.	Stimulant. Produces euphoric effects similar to those of cocaine, but longer lasting.	Highly addictive.
Spice (synthetic cannabinoids)	A collection of herbs or plant material that has been sprayed with synthetic cannabinoid receptor agonists, and that mimic the psychoactive effects of THC.	When smoked, they produce cannabis-like mild hallucinogenic effects, sedation and relaxation.	Not known to induce physical dependence. As with cannabis, they may be psychologically addictive if people depend on them as part of a coping strategy or as a way to relax.

Source: www.drugscope.org.uk and Royal Society for the encouragement of Arts, Manufactures and Commerce (2007) *Drugs – facing facts*. London: Royal Society for the Encouragement of Arts, Manufactures and Commerce.

Appendix 3: Health-related harms of emerging and established licit and illicit drugs commonly used in the UK

Source: Jones L, Bates G, Bellis M et al (2011) *A summary of the health harms of drugs*. London: Department of Health.

Amphetamines*
Acute adverse effects associated with the use of amphetamines

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Excitation syndrome • Abnormal heart rhythms (arrhythmias) associated with collapse/cardiac arrest leading to sudden death **Vascular accidents** • Increase in blood pressure (hypertension) • Stroke • Heart attack (myocardial infarction) • Cardiovascular shock	**Acute intoxication** • Agitation/aggression • Pupil dilation • Headache • Tremors and writhing movements of the body and limbs (dyskinesia) • Nausea, abdominal cramps • Dry mouth • Sweating • Anorectic effects, decreased appetite • Increase in body temperature (hyperthermia) • Increased breathing rate, blood pressure and heart rate (possible arrhythmia) • Dizziness, tremor, irritability and confusion • Hallucinations • Convulsions *Methamphetamine* **Acute intoxication** • More pronounced CNS stimulant effects and longer duration of effect than amphetamine sulphate **Lifestyle factors** • Use strongly associated with risky sexual practices	**Organic/neurological** • Toxic delirium with amnesia • As stimulant effects dissipate, users may experience drowsiness, reduced ability to concentrate and/or judgement and learning impairment **Personality/mood** • Low mood (dysphoria) • Anxiety, depression • Irritability, aggression **Acute paranoid psychosis** • Psychotic reaction similar to acute paranoid schizophrenia (vivid visual, auditory, or tactile hallucinations, paranoid ideation possibly resulting in aggressive behaviour) • May develop after single or repeated ingestion of amphetamines • People with underlying mental problems are at greatest risk

* Including amphetamine sulphate and methamphetamine.

Chronic adverse effects associated with the use of amphetamines

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Excitation syndrome • Abnormal heart rhythms (arrhythmias) associated with collapse/cardiac arrest leading to sudden death **Cardiovascular complications** • Inflammation of the blood vessels (vasculitis) • Aortic dissection • Cardiovascular shock **Other complications** • Depression leading to suicide	**Cardiovascular complications** • Cumulative risk of cardiac and coronary artery disease • Abnormally high blood pressure in the arteries of the lungs (pulmonary hypertension) • Inflammation of the blood vessels (vasculitis) • Bleeding into and along the wall of the aorta (aortic dissection) **Lifestyle factors** • Negative health effects from lack of food and sleep, such as lower resistance to disease	**Organic/ neurological** • Cognitive deficits associated with damage to the nervous system and brain (eg impairment of memory, learning and monitoring of complex goal-directed behaviour [executive function]) • Behaviour stereotypes – mechanical hyperactivities, repetitive actions, stereotype motor phenomena (eg teeth grinding)	**Dependence** • High abuse potential due to mood-elevating properties • Good evidence for an amphetamine dependence syndrome • Typically occurs after a period of sustained regular use **Withdrawal** • Rarely life threatening • Symptoms may include depression (increasing risk of suicide), seclusiveness, craving, fatigue/exhaustion, weakness, lack of energy and sleep disturbance • Psychotic symptoms may also be a feature of the methamphetamine withdrawal syndrome

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	Complications in pregnancy • Use in pregnancy has been associated with low birth weight, prematurity and increased fetal morbidity • Confounded by the impact of other situational, health and lifestyle factors, and polysubstance use	**Chronic paranoid psychosis** • Psychotic reaction similar to paranoid schizophrenia – hallucinations, paranoid ideation, possibly resulting in aggressive behaviour, potentially reversible • Incidence and severity of methamphetamine psychosis is related to the frequency of use and injection or smoking as the route of administration • Symptoms usually resolve with abstinence, but case reports suggest some methamphetamine users may experience prolonged or recurrent psychosis, even after stopping use	**Tolerance** • Users may become tolerant to the euphorigenic, anorectic, hyperthermic and cardiovascular effects

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Personality/mood • Irritability • Suspiciousness • Dysphoria • Anxiety • Paranoid psychosis • Depression • Restlessness • Delirium • Depersonalisation • Feelings of persecution • Lethargy *Methamphetamine* **Personality/mood** • User reports of physical aggression	

Cannabis
Acute adverse effects associated with the use of cannabis

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
• No cases of fatal overdose have been reported • No confirmed cases of human deaths	**Acute intoxication** • Irritant effects of smoke on the respiratory system (coughing, sore throat and bronchospasm among people with asthma) • Facial flushing • Abdominal pain, nausea, vomiting • Can cause an increase in heart rate (tachycardia) and in some cases increased blood pressure (hypertension) • Difficulty in motor coordination and performance *Synthetic cannabinoids* • Not documented, limited evidence base	**Organic/neurological** • Perceptual distortion (hallucinations) • Amnesia/forgetfulness • Confusion of thought processes, impaired judgement **Personality/mood** The effects of cannabis upon mental state vary considerably between individuals; they are determined by dose, route of administration, expectations, concomitant use of other drugs, emotional state and psychiatric illness: • temporary psychological distress (especially naive users) • low mood (dysphoria) • anxiety • confusion • drowsiness • depression • panic attacks • agitation • symptoms indicative of a persistent and pervasive elevated (euphoric) or irritable mood (hypomanic symptoms)

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
		• short-lived and reversible psychotic reaction *Synthetic cannabinoids* **Organic/neurological** • Suggestion that overdose could include significant alterations in mental state with paranoia and perceptual distortions

Chronic adverse effects associated with the use of cannabis

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Cancers • No conclusive evidence that cannabis causes cancer • Cannabis use may be an important risk factor for the development of respiratory cancers but the relationship is unclear[a] **Chronic respiratory disease**[a] • Chronic bronchitis • Lung damage • There are a number of reports in the literature of an association between cannabis use and bullous lung disease in relatively young users	**Cancers** • No conclusive evidence that cannabis causes cancer **Immune function** • Evidence for the effects of cannabis on human immune function is limited **Complications in pregnancy** • Like tobacco, cannabis use in pregnancy may be harmful to fetal development; studies show a consistent association between cannabis use in pregnancy and reduced birth weight – though less so than as a result of tobacco smoking during pregnancy	**Organic/ neurological** • No evidence of structural change in the brains of heavy long-term cannabis users • No severe or grossly debilitating impairment in cognitive function (subtle impairment in higher cognitive functions of memory, learning processes, attention and organisation and the integration of complex information – may or may not be reversible after abstinence)	**Dependence** • Good evidence for a cannabis dependence syndrome • Frequent, heavy users are at the greatest risk of dependence **Withdrawal** • Irritability • Anxious mood • Physical changes (tremor, perspiration and nausea) • Sleep disturbance **Tolerance** • Tolerance to psychoactive and physical effects is unlikely to occur unless there is sustained heavy exposure

[a] Studies of the harms associated with cannabis use are limited by confounding factors, as many users smoke tobacco as well as cannabis, or use tobacco as a vehicle for smoking cannabis resin. Although tobacco smoke and cannabis smoke are known to contain a similar range of mutagens and carcinogens, actual exposure to these compounds may differ between tobacco and cannabis users in terms of the frequency and duration of use, and because of factors such as the depth of inhalation.

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• There are some reports that children born to women who have used cannabis in pregnancy may face mild developmental problems; however, the evidence is mixed and confounded by the other situational, health and lifestyle factors and polysubstance use in this population, eg cannabis users are more likely to use tobacco, alcohol and other illicit drugs during pregnancy **Reproductive disorders** • Use may inhibit reproductive functions and disrupt ovulation, sperm production and sperm function **Other complications** • Persistent sore throat	**Personality/mood** • Evidence that early initiation and regular, heavy cannabis use is associated with a small but significantly increased risk of psychotic symptoms and disorders in later life • Complex association between cannabis use and schizophrenia – some evidence that use may exacerbate psychotic symptoms and is linked with relapse but it is unknown whether this is a universal risk or due to differences in individual vulnerability • Insomnia, depression, aggression, anxiety	*Synthetic cannabinoids*

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		• Inconsistent and mixed evidence for whether heavy, chronic cannabis use is associated with a persistent 'amotivational syndrome' characterised by social withdrawal and apathy	**Withdrawal** • Some evidence of a withdrawal syndrome among heavy users **Tolerance** • Suggestion that users may develop tolerance quickly

Cocaine*
Acute adverse effects associated with the use of cocaine

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Toxic reactions (eg cardiovascular complications) are not predictable from the route of administration, quantity taken, an individual's pattern of drug use, or blood concentrations of cocaine (or its metabolites) • Injection of cocaine powder or crack cocaine is associated with a greater risk of death than infrequent, intranasal use of cocaine powder alone; this appears to be linked to factors associated with injecting (such as more frequent use and higher levels of cocaine dependence) rather than the route of administration per se **Vascular complications** • Abnormal heart rhythms (arrhythmias) • Heart attack • Inflammation and injury to the intestines (mesenteric ischaemia) • Stroke	**Cardiovascular complications** • Increase in blood pressure • Accelerated heart rate • Abnormal heart rhythms (supraventricular/ventricular tachycardia, torsade de pointes) • Increased risk of heart attack, particularly in the first hour after use **Respiratory complications** • Chest pain • Shortness of breath • Rapid breathing **Neurological complications** • Stroke • Convulsions **Other complications** • Hyperthermia • Muscle spasms, tremor • Abdominal pain, nausea, vomiting • Insufficient blood flow (ischaemia) • Bleeding (haemorrhage) • Liver damage	**Personality/mood** • Sleep disturbance • Anxiety • Paranoia • Grandiosity • Transient psychotic reactions • Hallucinations (visual, auditory and tactile) after large doses • Aggression and possible violence (especially associated with crack cocaine use)

* Cocaine hydrochloride (eg cocaine powder) and cocaine base (eg crack cocaine and freebase cocaine).

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Allergic reaction from intravenous use of cocaine • Based on anecdotal citations – possibly caused by additives in street cocaine **Excited delirium syndrome** • Characterised by hyperthermia, delirium and agitation • Associated with cardiac/respiratory arrest and subsequent death	**Genitourinary** • Increased sexual appetite and desire	

Chronic adverse effects associated with the use of cocaine

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Cardiovascular complications • Increased risk of cardiovascular disease through toxic effects on the cardiovascular system (including premature atherosclerosis, vasospasm and thrombus formation) • Heart attack • Heart failure • Abnormal heart rhythms (arrhythmias) • Aortic dissection • Inflammation and injury of the heart muscle (endocarditis, cardiomyopathy) • Sudden death	**Vascular complications** • Increased risk of cardiovascular disease through toxic effects on the cardiovascular system • Abnormally high blood pressure in the arteries of the lungs (pulmonary hypertension) • Inflammation and injury of blood vessels (vasculitis) **Neurological complications** • Stroke • Inflammation and injury of the blood vessels of the brain (cerebral vasculitis) **Renal complications** • Kidney failure – commonly associated with rhabdomyolysis	**Personality/mood** • Anxiety, depression • Obsessional rituals/ preoccupation, repetitive behaviours • Sleep disturbance (decrease in quantity and quality of sleep) • Irritability, restlessness • Auditory hallucinations • Paranoid delusions and psychosis • Hyperexcitability • Exhaustion • Aggression and possible violence (especially associated with crack cocaine use)	**Dependence** • Good evidence for a cocaine dependence syndrome • A minority of users may exhibit cocaine dependence soon after onset of cocaine use (in the first 1-2 years of use) – risk is greater among those who smoke crack cocaine and those who begin use at an earlier age **Withdrawal** Symptoms may be mild to moderate but the type and severity vary from person to person: • craving • exhaustion/lack of energy, fatigue • over-eating • depression • low (dysphoric) mood • unpleasant dreams

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
	Lifestyle factors • Anorectic effect – may contribute to malnutrition and weight loss • Chronic use diminishes sexual appetite and ability – reversible on stopping use **Localised effects** • Dental erosions • Perforation of the nasal septum • Chronic rhinitis • Loss of sense of smell • Nosebleeds **Complications in pregnancy** • Premature rupture of the membranes and placental abruption are associated with use during pregnancy	**Toxic syndrome** • Psychotic reaction similar to acute paranoid schizophrenia and psychoses with vivid auditory and tactile hallucinations, picking and excoriation of skin, delusions of infection from parasites, paranoid ideation **Neurological** • Studies have shown that chronic cocaine use may contribute to cognitive impairments in the group of processes involved in the learning, control and monitoring of complex goal-directed behaviour (executive function) • May include deficits in memory function and inhibitory control	• insomnia or hypersomnia, psychomotor retardation • agitation, irritability • anxiety, restlessness • aggression *Substance specific* **Withdrawal** • Craving – possibly of a greater magnitude for crack cocaine as compared to that for cocaine powder

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Effects of cocaine exposure may persist into childhood; suggestion that this may impact on behaviour problems, attention, language and cognition • Situational, health and lifestyle factors and polysubstance use in this population may also affect pregnancy outcomes		

Dissociative anaesthetics*
Acute adverse effects associated with the use of dissociative anaesthetics

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
Acute complications • Death is more often a result of accidents due to loss of coordination/ control, disassociation and analgesia (eg jumping from heights, road traffic accidents, drowning) • Risk of respiratory depression *Ketamine* **Acute complications** • The evidence base is limited, but there is a low risk of mortality associated with the medicinal use of ketamine • Rare reports of overdose deaths from heart attack or respiratory problems • The majority of fatalities have been attributed to polysubstance use (multiple drug toxicity)	**Acute intoxication** • Increased heart rate and respiration • Loss of consciousness, coma • Muscle jerking, repetitive movements, outbursts (automatic behaviour) • Gastric/stomach pain • Many effects are polarised among users (ie reports of opposing responses in different individuals) *Ketamine* **Injury** • Increased risk of injury from jumping from heights, road traffic accidents and drowning; associated with loss of coordination/temporary paralysis and/or dissociative effects (eg depersonalisation, derealisation and reduced perception of pain)	**Organic/neurological** • Hallucinations, distorted sensory perception • Impaired attention, memory and learning • Altered body perception • Impairments of cognitive function and verbal fluency **Personality/mood** • Confusion • Depersonalisation • Derealisation • Panic attacks, agitation, paranoia • Delirium • Depression • Night terrors • Behavioural effects resembling certain symptoms of schizophrenia • Extreme loss of motor skills (catatonia)

* Ketamine and phencyclidine (PCP).

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
PCP **Acute complications** • Substantially more toxic than ketamine • Death as a result of hyperthermia, convulsions	*PCP* **Acute intoxication** • Increase in body temperature (hyperthermia) • Stroke • Respiratory arrest • Nausea, vomiting • Loss of coordination (ataxia) • Hypersalivation	*PCP* **Organic/neurological** • Toxic psychosis (catatonia or paranoia)

Chronic adverse effects associated with the use of dissociative anaesthetics

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Very low risk of mortality	*Ketamine* **Chronic complications** • Ketamine-induced ulcerative cystitis (marked thickening of the bladder wall and severe inflammation) has been described in clinical case reports; only following heavy use • Vague abdominal pains (gastritis) *PCP* **Chronic complications** • No human evidence to suggest long-term physical damage • Evidence from animal studies of congenital malformations and reproductive disorders	**Organic/ neurological** • Memory impairment • Prolonged hallucinations, flashbacks, persistent perceptual changes **Personality/mood** • Night terrors • Evidence of triggering depression, post-traumatic stress disorder, or mania in susceptible individuals • May aggravate psychotic symptomatology	*Ketamine* **Dependence** • There have been few published reports of ketamine dependence; however, cases have been noted among regular, heavy users **Withdrawal** • No evidence to suggest withdrawal symptoms or syndrome **Tolerance** • Evidence to support the rapid development of tolerance over regular repeated dosing *PCP* **Dependence** • Evidence to suggest a dependence syndrome for PCP

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Ketamine **Organic/ neurological** • Evidence from animal studies suggests that ketamine may accelerate nerve cell death in the brain – no evidence that such an effect occurs in humans • Some evidence of cognitive impairments among regular, heavy users *PCP* **Personality/mood** • Anorexia • Insomnia • Auditory hallucinations • Disorientation • Paranoid delusions	**Withdrawal** • Some evidence to suggest withdrawal syndrome • Craving • Increased appetite • Hypersomnia • Depression

Gamma-hydroxybutyrate and gamma-butyrolactone*
Acute adverse effects associated with the use of GHB, GBL or 1,4-BD

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Loss of consciousness – difficult to get dose right and solutions of GHB often vary in concentration • Deaths solely caused by GHB appear to be rare – fatalities appear to be mostly in combination with alcohol or other CNS depressants	**Acute intoxication** • Loss of consciousness • Coma • Respiratory and cardiac depression, bradycardia • Hypothermia • Nausea, vomiting • Seizures • Confusion • Involuntary muscle twitching or spasm (myoclonus, dystonia) • Breathing difficulties • Agitation	• Limited evidence for the psychological/psychiatric effects of GHB, GBL and 1,4-BD **Personality/mood** • Agitation • Combativeness

*Gamma-hydroxybutyrate (GHB), gamma-butyrolactone (GBL) and 1,4-butanediol (1,4-BD).

Chronic adverse effects associated with the use of GHB, GBL or 1,4-BD

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Withdrawal • Severe cases of withdrawal, including fatalities have been reported	• Not documented	• Not documented	**Dependence** • Evidence of a dependence syndrome associated with heavy, frequent use • No dependence syndrome has been observed at low doses of GHB **Withdrawal** • Examples in the literature of physical dependence evidenced by a withdrawal syndrome • Anxiety • Insomnia • Increased heart rate (tachycardia) • Hallucinations, delirium and psychosis • Sweating • Aches • Abdominal pain • Impotence • Severe depression • Reports of severe withdrawal symptoms (eg rapid onset of delirium) associated with unplanned detoxification

Khat and *Salvia divinorum*

Acute adverse effects associated with the use of khat and *Salvia divinorum*

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
• Not documented, limited evidence base	*Khat* **Acute complications** • Dry mouth • Hyperthermia • Sweating • Aching **Cardiovascular complications** • Transient facial and conjunctival congestion • Increased heart rate (tachycardia) • Raised blood pressure • Heart palpitations (extra-systoles) • Myocardial insufficiency and cerebral haemorrhage through stimulation of adrenergic pathways **Gastrointestinal complications** • Constipation **Genitourinary complications** • Increased libido	*Khat* **Personality/mood** • Insomnia • Transient confusional states *Salvia divinorum* **Organic/neurological** • Hallucinations • Giddiness/dizziness • Confusion/disorientation

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
	Salvia divinorum **Acute complications** • Some users report experiencing physical and mental tiredness • Flushed sensation • Tachycardia	

Chronic adverse effects associated with the use of khat and *Salvia divinorum*

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented, limited evidence base	*Khat* **Cardiovascular complications** • Transient facial and conjunctival congestion • Increased heart rate and raised blood pressure • Heart palpitations (extra-systoles) • Myocardial insufficiency and cerebral haemorrhage through stimulation of adrenergic pathways **Gastrointestinal complications** • Brown staining of the teeth, periodontal disease • Inflammation of the mouth and digestive system • Anorectic effect and delayed intestinal absorption; may contribute to malnutrition	*Khat* **Personality/mood** • Anxiety • 'Mood swings' (lability of mood) • Nightmares • Irritability, aggressive behaviour • Psychotic phenomena • Khat psychosis cases have been reported in the literature; individuals had recorded family histories of psychotic disorders **Organic/ neurological** • Cognitive dysfunction including disturbed perceptual-visual memory function *Salvia divinorum* • Not documented	*Khat* **Dependence** • Limited evidence for a khat dependence syndrome • Elements of ICD-10 stimulant dependence have been described among users including: compulsive consumption; tolerance; borderline withdrawal syndrome of tiredness, fine tremors and nightmares; craving and the urge to seek out khat are well known *Salvia divinorum* **Dependence** • Limited evidence base but one survey found little evidence of dependence among users

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Constipation – may lead to laxative abuse • Liver cirrhosis **Respiratory complications** • Increased prevalence of respiratory diseases including tuberculosis may be related to secondary malnutrition and heavy tobacco smoking **Reproductive disorders** • Limited evidence suggests that khat chewing during pregnancy may have an impact on fetal growth and development; low mean birth weights have been reported in some studies • No published evidence that khat causes teratogenic effects in humans		

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Limited evidence base for effects on male reproductive health but suggestion that use may be associated with decreased fertility *Salvia divinorum* • Not documented		

MDMA and related substances*

Acute adverse effects associated with the use of MDMA and related substances

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Overheating/heat stroke (hyperthermia) • Major acute symptom of MDMA-related toxicity that can lead to death • Associated with serotonin syndrome, and complications including rhabdomyolysis, abnormal blood clotting (disseminated intravascular coagulation), kidney failure and liver failure **Swelling of the brain (cerebral oedema)** • Caused by low sodium levels (hyponatraemia) secondary to water intoxication • Propensity for women to be disproportionately affected	**Acute intoxication** • Elevated blood pressure and increased heart rate (palpitations) • Nausea, vomiting • Fatigue, dizziness and/or vertigo • Overheating, dehydration • Headache • Dry mouth and throat • Loss of appetite • Difficulty with bodily coordination, muscle aches or tightness • Agitation/aggression • Convulsions	**Personality/mood** • Anxiety, panic attacks • Confusion • Depressive symptomatology • Insomnia • Restlessness • Fatigue • Anorexia • Paranoia • Visual and auditory hallucinations are rare – tend to be associated with high doses • Suggestions that use may have mild and transient effects on cognition after acute administration • Individual or unpredictable psychotic episodes may occur • Incorrect interpretation of emotions and other social cues

* 3,4-Methylenedioxymethamphetamine (MDMA; ecstasy) and related analogues, including 3,4-methylenedioxyamphetamine (MDA), 3,4-methylenedioxyethylamphetamine (MDEA), methylbenzodioxolylbutanamine (MBDB), 3-methoxy-4,5-methylenedioxyamphetamine (MMDA), 4-methylthioamphetamine (4-MTA).

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Other complications • Fatal cases of liver damage are rare • A small number of case reports have linked the use of ecstasy with cerebrovascular accidents (eg stroke) • A few fatalities have been reported in the literature associated with the use of 'counterfeit ecstasy' containing paramethoxymethamphetamine (PMMA) and/or paramethoxyamphetamine (PMA) • Many MDMA-related fatalities are attributable to polysubstance use (multiple drug toxicity)	**Other complications** • May inhibit orgasm in men and women, and male erection • Examples of acute liver injury reported in the literature – may be secondary to hyperthermia or caused by direct drug toxicity • Associated with risk taking in general, and sexual risk taking in particular • Teeth grinding and clenching (bruxism)/teeth problems	*4-Methylthioamphetamine (4-MTA)* **Personality/mood** • 4-Methylthioamphetamine (4-MTA) has a greater propensity to cause visual hallucinations than MDMA

Chronic adverse effects associated with the use of MDMA and related substances

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented, limited evidence base	**Immune function** • Emerging evidence that MDMA may have immunosuppressive properties – users report increased susceptibility to minor ailments including colds, flu and sore throats **Other complications** • Possible liver damage	**Organic/ neurological** • Unclear whether long-term use is associated with memory and learning (cognitive) impairment • Growing evidence that chronic, heavy use is most strongly associated with subtle cognitive effects • Unclear whether deficits reflect the use of MDMA or the combination of MDMA and other substances **Personality/mood** • Repeated use may have long-lasting effects on mood and personality characteristics, such as depression and anxiety, but evidence is inconsistent	**Dependence** • Evidence for a dependence syndrome is limited • In cases of dependence, the psychological aspects of dependence appear to predominate **Withdrawal** • Features of a withdrawal syndrome are not clearly defined and are mainly based on user reports **Tolerance** • Tolerance potential, but evidence is based on self-report

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Animal studies • An excess of serotonin in the CNS (serotonergic toxicity) has been demonstrated in experimental animal studies of MDMA • Inconsistent effects in humans – may result in increased risk of depression or other mental illness later in life but the equivalence is uncertain	

Nitrites*
Acute adverse effects associated with the use of nitrites

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Death may be caused by a lack of oxygen (hypoxia) resulting in severe injury to red blood cells and reduction in the supply of oxygen to vital organs • Users may lose consciousness and die through choking on own vomit • 'Sudden sniffing death syndrome' fatality caused by abnormal heart rhythms (cardiac arrhythmia) • Some cases of death have been reported from direct oral consumption of nitrites	**Acute intoxication** • Nausea • Headache • Loss of consciousness, sedation, anaesthesia • Loss of coordination (ataxia), weakness (less common) **Lifestyle factors** • Associated with high-risk sexual practices **Cardiovascular complications** • Profound hypotension (low blood pressure) • Rebound tachycardia • Flushed skin followed by vasoconstriction **Other complications** • Rash around the nose and mouth and contact dermatitis • Irritation of the nose and throat • Increased ocular pressure, blurred vision	**Personality/mood** • Disorientation • Distorted perceptions • Delirium

* Amyl nitrite, butyl nitrite and isobutyl nitrite.

Chronic adverse effects associated with the use of nitrites

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Carcinogenic properties • Use produces nitrosamine which is carcinogenic – however it is still to be determined whether this is formed in sufficient quantities to make the risk clinically significant **Lifestyle factors** • Some evidence that, by facilitating unsafe sexual practices, use indirectly increases susceptibility to Kaposi's sarcoma in people who are HIV positive **Immune function** • Limited evidence that immunologic function may be suppressed – use of nitrites has been associated with facilitating the transmission of HIV	**Chronic medical problems** • Rash and irritation around the nose, mouth or other exposed areas • Sinusitis **Blood-related (haematological) complications** • Anaemia • Difficulty circulating oxygen through the blood stream (methaemoglobin-aemia)	**Organic/ neurological** There is some evidence to suggest impairment to: • cognition • movement • vision • hearing	**Dependence** • No evidence for a dependence syndrome **Withdrawal** • No withdrawal syndrome documented **Tolerance** • Evidence to suggest chronic, regular users may develop tolerance

Novel psychoactive substances*
Acute adverse effects associated with the use of novel psychoactive substances

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Substituted cathinones (primarily mephedrone) have been implicated in deaths in England and Scotland – however, with a limited evidence base, the exact role of cathinones in causing or contributing to death is still to be determined • One case of fatal overdose has been reported in the international literature relating to the use of 2C series phenethylamines • One case of fatal overdose has been reported in the international literature relating to the use of tryptamine derivatives	**Acute intoxication** • Few clinical data are available for novel psychoactive substances, most data regarding harms are self-reported • Chest pain is a common feature of acute intoxication *Substituted cathinones and piperazines* **Acute intoxication** Consistent with sympathomimetic toxicity: • agitation • palpitations • seizure • vomiting • sweating • headache • reduced appetite • severe vasoconstriction of the extremities, leading to bluing of the fingers or hands (cathinone users)	*Substituted cathinones and piperazines* **Personality/mood** Consistent with sympathomimetic toxicity: • mood swings • anxiety • strange thoughts • irritability, confusion *Substituted cathinones* **Organic/neurological** • High doses may be associated with hallucinations and psychosis *2C series phenethylamines* **Organic/neurological** • One case of acute intoxication associated with psychosis has been reported in the international literature *Tryptamine derivatives* **Organic/neurological** • Hallucinations

* Substituted cathinones, piperazines, 2C series phenethylamines and tryptamine derivatives.

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
	2C series phenethylamines **Neurological complications** • One case of damage to the blood vessels in the brain associated with persistent neurologic deficits has been reported in the international literature *Tryptamine derivatives* • Not documented, limited evidence base	

Chronic adverse effects associated with the use of novel psychoactive substances

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented	• Not documented	• Not documented	*Substituted cathinones and piperazines* **Dependence** • Suggestion that they are similar to amphetamine in terms of abuse and dependence potential **Tolerance** • Some evidence to suggest that substituted cathinone users may develop tolerance quickly

Opioid drugs*
Acute adverse effects associated with the use of illicit opioids and abuse of prescription opioids

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Overdose • Respiratory depression and drop in blood pressure resulting in respiratory arrest • Illicit opioid use is associated with the majority of illicit drug-related deaths in the UK, primarily from overdose **Common correlates of overdose fatality** • Long history of opioid dependence • High level of opioid dependence • Recent abstinence (eg prison, detoxification release) • Polydrug use (particularly with alcohol and benzodiazepines) • Being male • Increasing age (most fatalities occur among those in their 30s) • Social isolation • Neurocognitive deficits	**Common features of acute intoxication** • Nausea, vomiting • Depressed nervous system activity • Constipation • Drowsiness, decreased consciousness • Sedation, mental confusion **Infrequent features of acute intoxication** • Sweating • Facial flushing • Itching (pruritus) • Dry mouth • Hallucinations • Dysphoria • Difficulty in passing urine (urinary retention) **Rare features of acute intoxication** • Complications associated with non-fatal overdose eg hypoxia causing brain damage	• No acute psychological adverse effects • Cause little psychomotor or cognitive impairment in tolerant users

* Including illicit (ie heroin) and prescription (eg methadone, buprenorphine, tramadol, dihydrocodeine and oxycodone) opioids.

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
• While drug treatment generally provides a protective effect, there is a significantly enhanced risk in the first 2 weeks of methadone treatment, following detoxification treatment and on cessation of naltrexone treatment • Recent abstinence on release from prison	• Disease of the white matter of the brain (leukoencephalopathy) resulting from inhalation of heroin vapours, which does not seem to occur with injection; there are sporadic reports of cases in the literature *Prescription drugs* **Serotonin syndrome** • A few cases of tramadol use associated with serotonin syndrome, a potentially life threatening condition, have been reported in the literature	

Chronic adverse effects associated with the use of illicit opioids and abuse of prescription opioids

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Overdose • Increased mortality risk from overdose and route-specific hazards **Suicide** • Suicide rate higher than in the general population; associated with situational, health and lifestyle factors	**Chronic complications** • Non-injected opioids carry little risk of chronic adverse health effects • Chronic constipation • Dry mouth • Menstrual irregularity • Malnutrition, anorexia; associated with situational, health and lifestyle factors • Tooth decay • Decreased sexual desire and performance **Respiratory complications** • Respiratory diseases (asthma, chronic obstructive pulmonary disease)	**Personality/mood** • Depressive disorder is common among those who are dependent on opioid drugs but it is difficult to attribute causality • Instability of mood • Lethargy • Opioid drugs are not causally linked to chronic psychiatric disorder	**Dependence** • Characterised by profound psychological and physical dependence • Develops after repeated administration over a period of time, which varies according to the quantity, frequency and route of administration – factors of individual vulnerability and the context of drug use also play a role **Withdrawal** • Rarely life threatening • Dependent on opioid used, dose, route of administration, the interval between doses, duration of use, and users' physical and psychological health

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	Hormones and immune function • Modest suppression of hormone levels • Suppression of immune system; social deprivation and malnutrition may also be factors **Complications in pregnancy** • Intra-uterine growth of the fetus may be inhibited • Neonates exposed to illicit opioid drugs may have low birth weight compared to non-exposed children, be born prematurely, and experience respiratory depression and withdrawal symptoms – these symptoms may contribute to the increased risk of perinatal mortality associated with use of illicit opioid drugs in pregnancy		• Symptoms include watery eyes, nasal discharge, yawning, sweating, sleep disturbance, dilated pupils, anorexia, gooseflesh, restlessness, irritability, tremor, sneezing, weakness, depression, nausea, vomiting, abdominal cramps, muscle spasms and diarrhoea **Tolerance** • Characterised by shortened duration and decreased intensity of the drug's depressant effects; there is marked elevation in the average lethal dose

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Evidence for a direct effect of illicit opioids is confounded by other situational, health and lifestyle factors (eg use of other drugs, mother's nutritional status, lifestyle, infections and exposure to trauma) that may be at least as decisive for the outcome of the pregnancy • Suggestion that a deprived social environment may also contribute to problems with neurological development		

Serotonergic hallucinogens*
Acute adverse effects associated with the use of serotonergic hallucinogens

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Risk of injury and accidental death owing to perceptual distortions and impaired decision making *LSD* **Acute complications** • One case of fatal overdose has been reported in the literature; associated with a high dose of LSD *Psilocybin* **Acute complications** • Fatal poisoning owing to mistaken identity of mushrooms	**Violence and injuries** • Self-harm, accidents or violence while intoxicated *LSD* **Common effects** • Adrenergic 'fight or flight' effects • Tachycardia • Flushing • Dry mouth • Sweating • Exhaustion, tiredness, weakness **Rare effects** • Ataxia • Convulsions • Hyperpyrexia *Psilocybin* **Acute intoxication** • Nausea, vomiting, stomach pains – commonly owing to mistaken identity of mushrooms • Dizziness *DMT* **Acute intoxication** • Nausea and vomiting	**Personality/mood** • Dysphoria • Unpleasant distortions in shapes and colours • Frightening illusions, delusions; 'true hallucinations' in psychiatric terms (ie indicative of psychiatric morbidity) are very rare • Anxiety, panic, depression • Dizziness, disorientation • Impaired concentration • Frequent mood changes (emotional lability) • Recall of psychologically troubling memories • Depersonalisation and derealisation at high doses • Short-lived psychotic episode (hallucinations, paranoia) • Precipitates relapses in schizophrenia

* Lysergic acid diethylamide (LSD), psilocybin, mescaline and *N*,*N*-dimethyltryptamine (DMT).

Chronic adverse effects associated with the use of serotonergic hallucinogens

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Limited evidence base	• No known physical dangers associated with long-term LSD use	**Personality/mood**[a] • Persistence of low-level hallucinations, known as hallucinogen persisting perception disorder – rare • Brief flashbacks or recollection of previous hallucinatory experience may occur days or months after use • Depression • Feelings of isolation • Delirium **Psychosis** • It is uncertain whether this is a drug-induced condition or unmasking of a latent mental illness	**Dependence** • Evidence suggests that few users of hallucinogens experience signs or symptoms of dependence **Withdrawal** • A withdrawal syndrome has not been identified **Tolerance** • Tolerance develops rapidly to behavioural effects, and sensitivity returns after a comparable drug-free interval; tolerance to cardiovascular effects is less pronounced • Cross-tolerance between serotonergic hallucinogens

[a] Post-exposure.

Appendix 4: UK illicit drug usage data

Percentage of 16 to 59 year olds reporting lifetime, last year and last month use of individual drugs in England and Wales, 2009/2010, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	42.8	29.9	36.4	11.9	5.4	8.6	7.3	2.6	5.0
Amphetamines	14.6	8.7	11.7	1.4	0.6	1.0	0.5	0.2	0.3
Cannabis	36.7	24.5	30.6	9.3	4.0	6.6	5.7	2.0	3.9
Cocaine	11.5	6.0	8.8	3.6	1.5	2.5	1.7	0.6	1.1
Ecstasy	11.4	5.2	8.3	2.4	0.8	1.6	1.0	0.3	0.6
LSD	7.5	3.1	5.3	0.3	0.1	0.2	0.1	0.0	0.1
Magic mushrooms	10.7	4.1	7.4	0.6	0.2	0.4	0.1	0.0	0.1
Opioid drugs	1.2	0.5	0.9	0.2	0.1	0.2	0.2	0.0	0.1

Source: Home Office (2010) *Drug misuse declared: findings from the 2009/10 British Crime Survey. England and Wales*. London: Home Office.

Percentage of 16 to 64 year olds reporting lifetime, last year and last month use of individual drugs in Scotland, 2008/2009, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	37.2	25.6	31.3	13.4	5.5	9.4	8.0	3.0	5.5
Amphetamines	12.2	6.6	9.3	1.8	0.7	1.3	0.6	0.3	0.4
Cannabis	34.3	22.6	28.4	11.2	4.3	7.7	6.5	2.2	4.4
Cocaine	11.8	5.1	8.4	5.5	1.5	3.5	2.6	0.6	1.6
Ecstasy	12.1	6.0	9.0	3.6	1.0	2.3	1.5	0.4	0.9
LSD	9.2	3.0	6.1	0.8	0.1	0.5	0.3	0.0	0.2
Magic mushrooms	10.4	3.4	6.8	0.7	0.1	0.4	0.4	0.0	0.2
Opioid drugs	1.7	0.9	1.3	0.6	0.2	0.4	0.4	0.2	0.3

Source: The Scottish Government (2010) *2008-09 Scottish Crime and Justice Survey: drug use*. Edinburgh: The Scottish Government.

Percentage of 16 to 64 year olds reporting lifetime, last year and last month use of individual drugs in Northern Ireland, 2008/2009, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	32.0	21.3	26.3	8.3	4.5	6.2	4.9	2.5	3.6
Amphetamines	8.8	5.6	7.1	0.4	0.7	0.5	0.1	0.1.	0.1
Cannabis	23.7	15.6	19.4	6.5	2.9	4.6	3.9	1.4	2.6
Cocaine	5.9	3.2	4.5	1.4	0.6	1.0	0.7	0.4	0.5
Ecstasy	9.1	5.9	7.4	1.0	1.0	1.0	0.6	0.4	0.5
LSD	5.5	3.0	4.2	0.4	0.4	0.4	0.2	0.1	0.2
Magic mushrooms	7.0	2.8	4.8	0.2	0.1	0.2	0.1	0.1	0.1
Opioid drugs	1.1	0.9	1.0	0.2	0.0	0.1	0.2	0.0	0.1

Source: Department of Justice (2010) *Experience of drug misuse: findings from the 2008/09 Northern Ireland Crime Survey*. Belfast: Department of Justice.

Appendix 5: Overview of drug adulterants

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Illicit drugs	Sucrose Lactose Dextrose Mannitol	Sugars	To dilute/add bulk Legally and readily available	Inactive adulterants	Minimal risk of adverse health effects. Can cause nasal irritation
	Lead	Soft, malleable metal	*Heroin* Potentially a by-product of the use of lead pots in illicit drug manufacture *Methamphetamine* Sometimes used in methamphetamine manufacture. Poor manufacturing can result in lead residue in drug product	In low dosages lead poisoning can have mild effects. Injecting of illicit drugs adulterated with lead causes severe adverse health effects	• Abdominal pain and cramping • Headaches • Anaemia • Dizziness • Nausea/vomiting • Muscle weakness • Seizures • Coma • Renal injury • CNS damage

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Caffeine	Psychoactive stimulant drug	Caffeine is legal, cheap and more readily available than illicit drugs *Heroin* Vaporizes heroin at lower temperature when smoked – slightly increases efficiency *Cocaine/ amphetamine/ methamphetamine/ ecstasy* Stimulant properties of caffeine can create similar, although usually milder, effects to the primary drug	In small doses there are few serious health repercussions Moderate to large doses can cause considerable harms	• Mood disturbances • Induces anxiety • Addictive • Sleep disturbance • Increases risk of a range of health problems

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Procaine	Local anaesthetic	*Heroin* Facilitates smoking of heroin and may relieve the pain of intravenous injection due to anaesthetic properties *Cocaine* Similar anaesthetic and subjective effects as cocaine	Risk of toxicity at high doses	• CNS problems • Nausea • Vomiting • Dizziness • Tremors • Convulsions • Anxiety

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Paracetamol/ acetaminophen	Over-the-counter pain-relief medication	Easily available, relatively cheap *Heroin* Analgesic effects and bitter taste of paracetamol may disguise poor-quality heroin May be used because it has similar melting point to heroin	Low dosages should have minimal impact Risk of toxicity at high doses	• Liver damage • Gastrointestinal effects • Adverse effects when mixed with alcohol

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Strychnine	Pesticide	A fine motor stimulant. Low doses act as a muscle stimulant *Heroin* Enhances retention of heroin when volatised. Has only been found at non-life threatening quantities *Cocaine* Reason for inclusion unknown. May have been unintentional	While it has only been reported in non-life threatening quantities, small increases could potentially be fatal	• Muscle spasm • Opisthotonos (holding of body in awkward rigid position)

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Heroin	Phenobarbital	Barbiturate	Psychoactive drug that facilitates smoking of heroin	Risk of overdose in intravenous drug users who are hypersensitive	• Overdose • Death
	Quinine	Antimalarial medication	Bitter taste similar to heroin and may be used as a diluent Also mimics the respiratory 'rush' felt by injecting heroin users shortly after administration	Can cause overdose and a host of other adverse health reactions	• Acute renal failure • Cinchonism • Gastric disturbances • Thrombosis and hypotension (intravenous use) • CNS overstimulation • Visual disturbances (blindness) • Death

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Clenbuterol	Asthma decongestant and bronchodilator drug	Reason for inclusion unknown but may have been unintentional contamination	Can cause overdose and poisoning at moderate to high dosages Low doses typically cause adverse cardiovascular effects	• Cardiovascular effects • Neuromuscular syndrome • Mydriasis (excessive pupil dilation) • Agitation
	Scopolamine	Anticholinergic alkaloid	Colourless, odourless and tasteless and therefore not easily detectable	Low doses cause sleepiness and drowsiness High doses can cause euphoria	• Anticholinergic toxicity • CNS depressant

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Diazepam	A benzodiazepine derivative drug used to treat anxiety disorders, muscle spasms, and alcohol withdrawal	To enhance the euphoric effects of heroin by increasing its depressant effects on the CNS	Can cause overdose – increased risk of coma, respiratory depression and death associated with use in combination with CNS depressants Risk of injury arising from sedative properties	• Low rates of mortality but implicated in a significant proportion of opioid overdose • Mood disturbances • Dependence syndrome and withdrawal symptoms (eg convulsions, dysphoria, anxiety, tremors, nausea and vomiting)

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Cocaine	Lidocaine	Local anaesthetic	Similar, but stronger, anaesthetic effects than cocaine and gives the impression of higher-quality cocaine	Adverse cardiovascular and CNS reactions can occur at low doses Overdose can occur at excessive doses; it increases the toxicity of cocaine	• CNS problems • Nausea • Vomiting • Dizziness • Tremors • Convulsions
	Hydroxyzine	Sedative, anxiolytic, used as an antihistamine	Unknown, but potentially used in the final processing stages of cocaine manufacture	Use in combination with sedative drugs can cause unconsciousness Rare cases of overdose resulting in CNS problems	• Dizziness • Drowsiness • Gastrointestinal effects • Tinnitus • Headaches

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Phenacetin	Analgesic substance	Pain-relieving properties and similar physical properties to cocaine	Phenacetin is banned in many countries due to links with renal failure and suspected carcinogenicity	• Analgesic nephropathy • Haemolytic anaemia • Methaemoglobin-aemia • Kidney cancer • Bladder cancer
	Levamisole	An anthelmintic medication (used for expelling parasitic worms)	Unknown; however, it is theorised that it gives a more intense 'high'	Generally no longer used with humans, but still available as a veterinary medicine Highly toxic	• Fever • Agranulocytosis

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Methamphetamine	Methylsulfonyl-methane (MSM)	Naturally occurring in some foods and also marketed as a dietary supplement	MSM is readily available and is physically similar to methamphetamine (odourless, white, crystalline powder) Methamphetamine adulterated with MSM creates the impression of high-purity methamphetamine	None identified	None identified

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Ecstasy	Dextromethorphan	Antitussive drug (cough suppressant)	A high dose can cause an individual to feel 'high' in a similar way to ecstasy Dextromethorphan is legal and therefore cheaper and easier to obtain than MDMA	High doses can cause adverse health effects	• Lethargy • Tachycardia • Ataxia • Nystagmus • Heatstroke
	Amphetamine/ methamphetamine	Illicit stimulant drugs	Amphetamines have similar properties to the stimulant effects of ecstasy, although these adulterants are not entactogens Amphetamine substances are often sold as, or in combination with, MDMA	Moderate doses can cause a range of adverse health effects and high doses can cause overdose and death	• Mood disturbance • Induce anxiety • Addictive • Sleep disturbance • Increases risk of a range of health problems

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Paramethoxymetham phetamine (PMMA) and paramethoxyam-phetamine (PMA)	Illegal psychoactive chemical	Purposefully added to ecstasy due to stimulant properties	Relatively unknown, but high dosages have caused death	
Cannabis	Lead	Soft, malleable metal	To increase weight	Lead poisoning	• Abdominal cramps • Anaemia • Nausea • Fatigue • Polyneuropathy • Toxic effects • Seizures • Coma • Death
	Aluminium	Soft, malleable metal	Unknown, but aluminium contamination may have resulted from impure water supply	Contribute to smoking-related diseases	Smoking-related adverse health effects

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Glass		Unknown, but potentially to improve apparent quality and increase weight	Inhalation of hot glass fumes	• Sore mouth • Mouth ulcers • Chesty persistent cough • Tight chest

Source: Cole C, Jones L, McVeigh J et al (2010) *CUT: a guide to adulterants, bulking agents and other contaminants found in illicit drugs*. Liverpool: Centre for Public Health, Liverpool John Moores University; and Jones L, Bates G, Bellis M et al (2011) *A summary of the health harms of drugs*. London: Department of Health.

Appendix 6: UK government strategies for reducing illicit drug use

England

In England, the 2010 Home Office drug strategy, *Reducing demand, restricting supply, building recovery: supporting people to live a drug-free life*,[a] sets out two overarching aims: to reduce illicit and other harmful drug use, and increase the numbers recovering from their dependence. This includes action in the following three areas:

1. **reducing demand***:* creating an environment to discourage people from starting to take drugs and making it easier for those that do to stop, through measures that will:
   - break intergenerational paths to dependency by supporting vulnerable families
   - provide good-quality education and advice so that young people and their parents are provided with credible information to actively resist substance use
   - use the creation of Public Health England (PHE) to encourage individuals to take responsibility for their own health
   - intervene early with young people and young adults
   - consistently enforce effective criminal sanctions to deter drug use
   - support people to recover

2. **restricting supply**: making the UK an unattractive destination for drug traffickers, through a coordinated response across Government and law enforcement to make the country a more challenging environment for organised crime. This includes the cross-Government organised crime strategy, *Local to global: reducing the risk from organised crime*, published in July 2011[b]

3. **building recovery in communities**: the Government will work with people who want to take the necessary steps to tackle their dependency by creating a recovery system that focuses not only on getting people into treatment and meeting process-driven targets, but getting them into full recovery and off drugs for good.[a]

a Her Majesty's Government (2010) *Drug strategy 2010: reducing demand, restricting supply, building recovery: supporting people to live a drug free life*. London: Her Majesty's Government.

b Her Majesty's Government (2011) *Local to global: reducing the risk from organised crime*. London: Her Majesty's Government.

Wales

The Welsh Assembly Government's substance misuse strategy for 2008-2018, *Working together to reduce harm*,[c] sets out action in the following areas:

1. **preventing harm**: through the provision of information about the damage that substance use can cause to health, families and the wider community, and where to seek help and support. This includes raising awareness among parents and carers, and targeting young people

2. **support for substance users to improve their health and aid and maintain recovery**: the provision of support for substance users, through improved access to basic harm minimisation, outreach, treatment and social services

3. **supporting and protecting families**: engaging substance-using parents in effective treatment programmes, developing a multiagency approach to identifying and supporting vulnerable families, and supporting greater use of family intervention projects and the role of carers

4. **tackling availability and protecting individuals and communities via enforcement activity**: focusing on tackling the supply of drugs to children and young people, through improved local intelligence gathering in communities and stronger links between drug enforcement activities at a local and regional level.[c]

c Welsh Assembly Government (2008) *Working together to reduce harm. The substance misuse strategy for Wales 2008-2018*. Cardiff: Welsh Assembly Government.

Scotland

The 2008 Scottish Government strategy, *The road to recovery: a new approach to tackling Scotland's drug problem*,[d] set out the following priorities:

1. better prevention of drug problems, with improved life chances for children and young people, especially those at particular risk of developing a drug problem

2. to see more people recover from problem drug use so that they can live longer, healthier lives, realising their potential and making a positive contribution to society and the economy

3. having communities that are safer and stronger places to live and work because crime, disorder and danger related to drug use have been reduced

4. ensuring that children affected by a parental drug problem are safer and more able to achieve their potential

5. supporting families affected by drug use

6. improving the effectiveness of delivery at a national and local level.

d Scottish Government (2008) *The road to recovery: a new approach to tackling Scotland's drug problem*. Edinburgh: Scottish Government.

Northern Ireland

In 2006, the Department of Health, Social Services and Public Safety published the *New strategic direction for drugs and alcohol 2006-2011*,[e] which set out the following overarching long-term aims to:

1. provide accessible and effective treatment and support for people who are consuming alcohol and/or using drugs in a potentially hazardous, harmful or dependent way

2. reduce the level, breadth and depth of alcohol- and drug-related harm to users, their families and/or their carers and the wider community

3. increase awareness on all aspects of alcohol- and drug-related harm in all settings and for all age groups

4. integrate those policies that contribute to the reduction of alcohol- and drug-related harm into all Government department strategies

5. develop a competent skilled workforce across all sectors that can respond to the complexities of alcohol and drug use and misuse

6. promote opportunities for those under the age of 18 years to develop appropriate skills, attitudes and behaviours to enable them to resist societal pressures to drink alcohol and/or use illicit drugs, with a particular emphasis on those identified as potentially vulnerable

7. reduce the availability of illicit drugs in Northern Ireland.

e Department of Health, Social Services and Public Safety (2006) *New strategic direction for drugs and alcohol 2006-2011*. Belfast: Department of Health, Social Services and Public Safety.

Appendix 7: Societal measures to restrict drug influences

A range of measures exist for ensuring inappropriate popular media, including those that make reference to drug use, are less accessible by young people. The efficacy of these measures is currently unknown.

Film

The British Board of Film Classification (BBFC) is responsible for classifying film works in relation to their content, with a particular emphasis on protecting children from harm. In relation to drugs, the 2009 BBFC guidance sets out that no film taken as a whole may promote the use of illicit drug use, and any detailed portrayal of drug use likely to promote or glamorise the drug use may be cut.[a] Any film that shows drug use while emphasising the dangers may receive less restrictive classifications, in comparison to films presenting drug use in a more neutral manner (see table on page 276).[a]

a British Board of Film Classification (2009) *The guidelines.* London: British Board of Film Classification.

Film/video game classification	Description	Guidance in classifying film/video game
U: Universal	Suitable for all	No reference to illegal drugs or drug use unless they are infrequent and innocuous, or there is a clear educational purpose or antidrug message suitable for young children
PG: Parental guidance	General viewing, but some scenes may be unsuitable for young children	Reference to illegal drugs or drug use must be innocuous or carry a suitable antidrug message
12A/12	Suitable for 12 years and over. The 12A category only exists for cinema films, where children under 12 must be accompanied by an adult to enter. Films classified as 12A are not recommended for children under 12	Any use of drugs must be infrequent and should not be glamorised or give instructional detail
15	Suitable only for 15 years and over	Drugs may be shown but the film as a whole must not promote or encourage drug use. The misuse of easily accessible and highly dangerous substances (for example, aerosols and solvents) is unlikely to be acceptable
18	Suitable only for adults	No specific guidance on drugs
R18	To be shown only in specially licensed cinemas, or supplied only in licensed sex shops, and to adults of not less than 18 years	No specific guidance on drugs

Source: British Board of Film Classification (2009) *The guidelines.* London: British Board of Film Classification.

In addition to adhering to film classifications, policy makers may also wish to consider requiring all films portraying drug use to be preceded by a warning message advising on drug-related harms. This is because evidence suggests that warning messages displayed ahead of films portraying pro-smoking imagery may mitigate some of the effects these images have in terms of encouraging uptake of smoking.[b] It is not unreasonable to assume similar beneficial effects may be seen with the portrayal of drug use.

Given that evidence suggests film images can influence drug behaviour, film producers should consider the impact that depicting drug use may have on individuals.[c-e] Any such inclusions should only be used when editorially justified. To aid in this process, policy makers may wish to consider informing those involved in the production of film of the potential damage done by the depiction of drug use in film.

Television

Governance of television is relatively strong. On television, the watershed operates to protect young people from materials that may be unsuitable for them, which may include drug use. The watershed begins at 9pm on standard television and runs until 5.30am. The most recent guidance from Ofcom on the UK television watershed, states that material unsuitable for children should not be shown before or after this time period.[f] As well as these restrictions, Ofcom encourages programme makers to consider the potential harm that displaying the use of illegal drugs to younger viewers may have, and that any inclusion of drug use pre-watershed, or at times when children are particularly likely to be viewing, must be editorially justified.[f]

Music

Similar to classification ratings used by the BBFC in film, the Recording Industry Association of America uses parental advisory warning messages to inform consumers that a recording contains explicit material that is not suitable for children. Many retailers in America limit the sale of such albums to adults only. While similar warnings are commonly used in the retail of UK music, sale restrictions do not apply. Policy makers

b Edwards CA, Harris WC, Cook DR et al (2004) Out of the smokescreen: does an anti-smoking advertisement affect young women's perception of smoking in movies and their intention to smoke? *Tobacco Control* **13**: 277-82.

c Hunt K, Sweeting H, Sargent J et al (2011) Is there an association between seeing incidents of alcohol or drug use in films and young Scottish adults' own alcohol or drug use? A cross sectional study. *BMC Public Health* **11**: 259.

d Stern SR (2005) Messages from teens on the big screen: smoking, drinking, and drug use in teen-centered films. *Journal of Health Communication* **10**: 331-46.

e Gunasekera H, Chapman S & Campbell S (2005) Sex and drugs in popular movies: an analysis of the top 200 films. *Journal of the Royal Society of Medicine* **98**: 464-70

f Ofcom (2009) *Guidance notes section one: protecting the under 18s.* London: Ofcom.

may wish to consider the classification of music, in restricting the influence of drug-promoting references to young people. Given that a large proportion of music sales now take place online, where assessments of age is not easily verifiable, policy makers should also consider the difficulties in enforcing controls in this market. Taking action to inform major artists and musicians of the potential harm of depicting drug use in music should also be considered by policy makers.

Celebrity

Available evidence suggests celebrities can have both a role in reducing drug use, and also a conflicting role in increasing drug use.[g] Informing and educating celebrities, as well as encouraging them to act as spokespeople for drug-related harm, may be an interesting area for policy makers to consider.

Video games

The BBFC is also responsible for classifying video games in relation to their content. As with film, any video game glamorising drug use is likely to receive a more restrictive classification, in comparison to a game emphasing the danger, or presenting drug use in a more neutral manner.[h]

The efficacy of video game classifications may not go far enough. Research has demonstrated that parents are less likely to supervise video games, compared to other forms of media, suggesting there is potential for young people to ignore classifications.[i] It may be necessary to supplant video games that have drug references with advisory messages informing about the harms of drug use.

Internet

Content-control software is a form of software designed for controlling what content is permitted to a user on the internet. The restrictions on which web pages can be accessed can be applied at various levels. While research has not investigated the impact of these forms of software on reducing illicit drug use, they may represent useful tools in restricting exposure of drug influences to young people. Further research in this area is needed.

g Brown WJ & de Matviuk MAC (2010) Sports celebrities and public health: Diego Maradona's influence on drug use prevention. *Journal of Health Communication* **15**: 358-73.

h British Board of Film Classification (2009) *The guidelines*. London: British Board of Film Classification.

i Haninger K & Thompson KM (2004) Content and ratings of teen-rated video games. *The Journal of the American Medical Association* **291**: 856-65.

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Chapter 4

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DRUGS OF DEPENDENCE
THE ROLE OF MEDICAL PROFESSIONALS

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Editorial board

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This report was prepared under the auspices of the Board of Science of the British Medical Association, whose membership for 2012-2013 was as follows:

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Dr Hamish Meldrum	(Chair of Council, 2007-2012)
Dr Kate Bullen	(Deputy Chair of Council, 2007-2012)
Dr Peter Bennie	(Chairman of the Representative Body, 2007-2010)
Dr Richard Jarvis	(Co-Chair, Public Health Medicine Committee, 2009-2012).

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The Board of Science, a standing committee of the BMA, provides an interface between the medical profession, the Government and the public. The Board produces numerous reports containing policies for national action by Government and other organisations, with specific recommendations and areas for action affecting the medical and allied professions.

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Professor Neil McKeganey

Director of the Centre for Drug Misuse Research. In 1994 Professor McKeganey opened the centre at the University of Glasgow. It undertakes research in such diverse areas as the impact of parental drug use on children, recovery from dependent drug use, the impact of drug use on prostitution, the effectiveness of drug-treatment services and the nature of preteen drug use. In 2011, the centre moved from the University of Glasgow to operate as an independent research organisation. The centre is currently undertaking work on the effectiveness of Suboxone® (buprenorphine and naloxone), the impact of drug and alcohol problems on doctors and dentists, and the effectiveness of prison-based drug treatment. Professor McKeganey has written widely on the topic of drugs policy and has contributed to the United-Nations-based International Narcotics Control Board. He is the author of over 150 academic papers and his most recent book *Controversies in drug policy and practice* was published in 2011 by Palgrave Macmillan.

Professor Robin Room

School of Population Health, University of Melbourne, and Director of the Centre for Alcohol Policy Research at Turning Point Alcohol and Drug Centre, Fitzroy, Victoria, Australia. He is also a professor at and was the founding director of the Centre for Social Research on Alcohol and Drugs at Stockholm University. He had previously directed research at the Addiction Research Foundation of Ontario (1991-1998) and the Alcohol Research Group in Berkeley, California (1977-1991). Professor Room has studied the effects of alcohol, drug and gambling policies. He is a co-author of a number of books on alcohol and drug policy, including *Young men and drugs* (National Institute on Drug Abuse, 1975), *Alcohol in developing societies* (Finnish Foundation for Alcohol Studies, 2002), *Drug policy and the public good* (Beckley Foundation Press and Oxford University Press, 2010), *Cannabis policy – moving beyond stalemate* (Oxford University Press, 2010) and *Alcohol – no ordinary commodity* (Oxford University Press, 2e, 2010). His research interests include historical, cultural and social epidemiological studies of alcohol and other drugs, including comparative research across psychoactive substances.

Reference group

A reference group was established to provide expert advice to the BMA Board of Science during the development of this report. The group comprised senior members of affected professions who have demonstrated experience and interest in relation to the issue of drug use. Please see **Appendix 1** for membership of the group.

Declaration of interest

Declarations of interest for outside experts have been provided in Appendix 1. For further information about the editorial secretariat or Board members please contact the BMA Science and Education Department, which holds a record of all declarations of interest: info.science@bma.org.uk

Abbreviations

AA	Alcoholics Anonymous
ACMD	Advisory Council on the Misuse of Drugs
ACPO	Association of Chief Police Officers
ATOS	Australian Treatment Outcome Study
BBFC	British Board of Film Classification
BCS	British Crime Survey
1,4-BD	1,4-butanediol
BSA	British Social Attitudes (survey)
BZP	1-benzylpiperazine
CA	Cocaine Anonymous
CARAT	counselling, assessment, referral, advice and throughcare
CBT	cognitive-behavioural therapy
CM	contingency management
CND	Commission on Narcotic Drugs
CNS	central nervous system
CPS	Crown Prosecution Service
DDC	Dedicated Drug Court
DfE	Department for Education
DfES	Department for Education and Skills
DH	Department of Health
DIP	Drug Interventions Programme
DMT	*N*,*N*-dimethyltryptamine
DORA	Defence of the Realm Act (1916)
DRR	Drug Rehabilitation Requirement
DSM	*Diagnostic and Statistical Manual of Mental Disorders*
DTTO	Drug Treatment and Testing Order
DZ	dizygotic
ECA	Epidemiological Catchment Area (study)
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ESPAD	European School Survey Project on Alcohol and other Drugs
GABA	gamma-amino butyric acid
GBL	gamma-butyrolactone
GHB	gamma-hydroxybutyrate
GMC	General Medical Council
HBSC	Health Behaviour in School-aged Children (study)
HBV	hepatitis B virus
HCV	hepatitis C virus

HRQoL	health-related quality of life
ICD	*International Classification of Diseases*
IDTS	Integrated Drug Treatment System
IEP	injecting equipment provision
IMD	Index of Multiple Deprivation
INCB	International Narcotics Control Board
IQ	intelligence quotient
LEEDS	Leeds Evaluation of Efficacy of Detoxification Study
LGBT	lesbian, gay, bisexual and transgender
LSD	lysergic acid diethylamide
MDA	3,4-methylenedioxyamphetamine
MDEA	3,4-methylenedioxyethylamphetamine
MDDB	methylbenzodioxolylbutanamine
MDMA	3,4-methylenedioxymethamphetamine (ecstasy)
MMDA	3-methoxy-4,5-methylenedioxyamphetamine
MSM	methylsulfonylmethane
4-MTA	4-methylthioamphetamine
MT	methadone treatment
MXE	methoxetamine
MZ	monozygotic
NA	Narcotics Anonymous
NGO	non-governmental organisation
NICE	National Institute for Health and Clinical Excellence
NOMS	National Offender Management Service
NTA	National Treatment Agency
NTORS	National Treatment Outcome Research Study
OST	opioid substitution therapy
OTC	over-the-counter (drug)
PCP	phencyclidine
PHE	Public Health England
PMA	paramethoxyamphetamine
PMMA	paramethoxymethamphetamine
PMSU	Prime Minister's Strategy Unit
PSHE	personal, social and health education
QoL	quality of life
RCP	Royal College of Physicians
RCT	randomised controlled trial
RR	residential rehabilitation
RSA	Royal Society for the encouragement of Arts, Manufactures and Commerce

SCJS	Scottish Crime and Justice Survey
SIDS	sudden infant death syndrome
SSA	Scottish Social Attitudes (survey)
TC	therapeutic community
TCDO	Temporary Class Drug Order
THC	tetrahydrocannabinol
TOPS	Treatment Outcome Prospective Study
UKDPC	UK Drugs Policy Commission
UN	United Nations
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UN ECOSOC	Economic and Social Council of the United Nations
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

Glossary[a]

The use of bold with upper case indicates a term that is also defined in this glossary.

Abuse liability

The propensity of a particular **Psychoactive substance** to be susceptible to abuse. It is defined in terms of the relative probability that use of the substance will lead to social, physical or psychological problems for an individual or society.

See also **Dependence potential**, **Drug abuse** and **Harmful use**.

Addiction

Repeated use of a **Psychoactive substance** or substances, to the extent that the user (referred to as an addict) is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying **Substance use**, and exhibits determination to obtain psychoactive substances by almost any means. Typically, **Tolerance** is prominent and a **Withdrawal syndrome** frequently occurs when substance use is interrupted. The life of the addict may be dominated by substance use to the virtual exclusion of all other activities and responsibilities. The term addiction also conveys the sense that such substance use has a detrimental effect on society, as well as on the individual. Addiction is a term of long-standing and variable usage. It is regarded by many as a discrete disease entity, a debilitating disorder rooted in the pharmacological effects of the **Drug**, which is often progressive. Addiction is not a diagnostic term in the *International Classification of Diseases* 10th revision (ICD-10), but continues to be very widely employed by professionals and the general public.

The term is often used interchangeably with **Dependence**.

Addictive

Causing, or tending to cause, **Addiction**. Different **Psychoactive drugs** have different levels of addictiveness (or **Dependence potential**); these are outlined in **Appendix 2**.

Alcoholics Anonymous, AA

A **Mutual-help movement** for individuals who are dependent on, or are recovering from dependence on, alcohol. Participants support each other in recovering from, or maintaining recovery from, their dependence. It uses a 12-step programme based on a non-denominational spiritual approach, with an emphasis on mutual aid and support.

a Adapted from World Health Organization (2004) *Lexicon of alcohol and drug terms*. Geneva: World Health Organization; the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) *Online glossary* (www.emcdda.europa.eu, accessed 1 October 2012) and the United Nations Office on Drugs and Crime (UNODC) (www.unodc.org, accessed 1 October 2012).

Controlled substances

Psychoactive substances, and their precursors, whose distribution is forbidden by law or limited to medical and pharmaceutical channels. The substances actually subject to this control differ between countries. The term is often used to refer to **Psychoactive drugs** and precursors covered by international drug conventions. At international and national levels, controlled **Drugs** are commonly classified according to a hierarchy of schedules, reflecting different degrees of restriction of availability.

Craving

A psychological urge to self-administer a **Drug**. Craving is often associated with **Dependence** and a desire to obtain repeated doses of a drug in order to feel good or avoid feeling bad. It may also be associated with a physiological dependence or **Tolerance**.

Decriminalisation

A process in which the seriousness of a crime or of the penalties the crime attracts is reduced. More specifically, it refers to the move from a criminal sanction to the use of civil or administrative sanctions. An example in relation to **Illicit drugs** would be where possession of cannabis is downgraded from a crime that warrants arrest, prosecution and a criminal record to an infraction to be punished with a warning or fine. Decriminalisation is often distinguished from **Legalisation**, which involves the complete repeal of any legal definition as a crime, often coupled with a governmental effort to control or influence the market for the affected behaviour or product.

A distinction is also made between *de jure* decriminalisation, which involves specific reforms to the legal framework, and *de facto* decriminalisation, which involves a similar outcome, but is achieved through 'turning a blind eye' to tolerant policing – effectively non-enforcement of criminal laws that technically remain in force.

Depenalisation

Depenalisation refers to reforms of **Illicit drug** control provisions (to either the letter or practice of the law) that reduce the severity of the penalties imposed upon the offender.

Dependence

As a general term, dependence is the state of needing or depending on something or someone for support or to function or survive. As applied to alcohol and other **Drugs**, the term includes psychological and physiological aspects. Psychological dependence involves impaired control over **Drug use** and a need (**Craving**) for repeated doses of the drug, to feel good or avoid feeling bad. Physiological, or physical, dependence is associated with **Tolerance**, where increased doses of the drug are required to produce the effects originally produced by lower doses, and development of **Withdrawal syndrome** when the drug is withdrawn. The *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition revised (DSM-IV) defines it as:

> *'When an individual persists in use of alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed. Compulsive and repetitive use may result in tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped.'*

The DSM-IV definition is roughly equivalent to the **Dependence syndrome** of the ICD-10. In the ICD-10 context, the term dependence could refer generally to any of the elements in the syndrome.

The term can be used generally with reference to the whole range of **Psychoactive drugs** (drug dependence, chemical dependence, substance use dependence), or with specific reference to a particular drug or class of drugs (eg opioid dependence). While the ICD-10 describes dependence in terms that are applicable across drug classes, there are differences in the characteristic dependence symptoms for different drugs.

In biologically oriented discussion, dependence is often used to refer only to physical dependence. Dependence or physical dependence is also used in the **Psychopharmacological** context in a still narrower sense, referring solely to the development of withdrawal symptoms on cessation of drug use.

The term is often used interchangeably with **Addiction**.

See also **Dependence syndrome**.

Dependence potential

The propensity of a substance, as a consequence of its pharmacological effects on physiological or psychological functions, to give rise to **Dependence** on that substance. Dependence potential is determined by those intrinsic pharmacological properties that can be measured in animal and human **Drug**-testing procedures. It is a term used in applying international drug treaties.

Dependence syndrome

A cluster of behavioural, cognitive, and physiological phenomena that may develop after repeated **Substance use**. Typically, these phenomena include a strong desire to take the **Drug**, impaired control over its use, persistent use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased **Tolerance**, and a physical withdrawal reaction when **Drug use** is discontinued (**Withdrawal syndrome**). In ICD-10, the diagnosis of dependence syndrome is made if three or more of six specified criteria have been experienced within a year (see **Section 1.1.2**, **Box 1**). Dependence syndrome may relate to a specific substance (eg heroin), a class of substances (eg opioids), or a wider range of pharmacologically different substances.

See also **Dependence** and **Tolerance**.

Detoxification

A controlled process of providing symptomatic relief to assist patients to complete withdrawal from a **Drug**, while minimising the associated adverse effects. In the context of **Illicit drug** use, the aim of detoxification is to reverse or reduce **Dependence** on and **Tolerance** to a **Psychoactive drug**.

Diversion

From a medical perspective, diversion is the inappropriate use of a **Drug** by those for whom it has been prescribed, or use by a person for whom the medication was not prescribed. The term may be used to describe diversion of a shipment of drugs out of legal channels at wholesale level or, for example, to describe the sale of prescription methadone to, and use by, an individual for whom it was not prescribed.

The term diversion is also used in a criminal justice context to refer to measures that take an arrestee out of the criminal justice system and into education, medical management or another type of intervention.

Drug

A term of varied usage. In medicine, it refers to any substance with the potential to prevent or cure disease or enhance physical or mental welfare, and in pharmacology it refers to any chemical agent that alters the biochemical or physiological processes of tissues or organisms. Hence, a drug is a substance that is, or could be, listed in a pharmacopoeia. In common usage, the term often refers specifically to **Psychoactive drugs**, and often, even more specifically, to **Illicit drugs**, of which there is non-medical use in addition to any medical use. Professional formulations (eg 'alcohol and other drugs') often seek to make the point that caffeine, tobacco, alcohol and other substances in common non-medical use are also drugs in the sense of being taken, at least in part, for their psychoactive effects.

Drug abuse

A term in wide use but of varying meaning. The DSM-IV defines '***Psychoactive substance*** *abuse*' as:

> *'A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period: (1) Recurrent substance use resulting in a failure to fulfil major role obligations at work, school, or home (eg repeated absences or poor work performance related to substance use; substance-related absences, suspensions or expulsions from school; neglect of children or household); (2) Recurrent substance use in situations in which it is physically hazardous (eg driving an automobile or operating a machine when impaired by substance use); (3) Recurrent substance-related legal problems (eg arrests for substance-related disorderly conduct); (4) Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (eg arguments with spouse about consequences of intoxication, physical fights).'*

The term 'abuse' is sometimes used disapprovingly to refer to any use at all, particularly of **Illicit drugs**. The term is not used in ICD-10 because of its ambiguity and to avoid including social consequences in the definition of a diagnosis. **Harmful use** is the closest equivalent in ICD-10. In other contexts, abuse has referred to non-medical or unsanctioned patterns of use, irrespective of consequences. Thus the definition published in 1969 by the WHO Expert Committee on Drug Dependence was '*persistent or sporadic excessive drug use inconsistent with or unrelated to acceptable medical practice*'.

The term **Drug use** is often preferred as it is non-judgemental; it has been used throughout this report. See also **Drug misuse**.

Drug control

The regulation, by a system of laws and agencies, of the production, distribution, sale and use of specific **Psychoactive drugs** (**Controlled substances**) locally, nationally or internationally. This is the legal aspect of **Drug policy**.

Drug misuse

Use of a substance for a purpose that is not consistent with legal or medical guidelines, as in the non-medical use of prescription medications. This term is often preferred to **Drug abuse**, as it is perceived to be less judgemental.

The term **Drug use** is often preferred as it is even more non-judgemental. This is the term used throughout this report.

Drug poisoning

A state of major disturbance of consciousness level, vital functions, and behaviour following the administration in excessive dosage (deliberately or accidentally) of a **Psychoactive substance**. In the field of toxicology, the term poisoning is used more broadly to denote a state resulting from the administration of excessive amounts of any pharmacological agent, psychoactive or not. In the context of **Illicit drug** use, poisoning may occur as a result of adulterants in the drug.

Drug policy

In the context of **Psychoactive drugs**, the aggregate of policies designed to affect the supply and/or demand for **Illicit drugs**, locally or nationally, including education, treatment, control and other programmes and polices to reduce the harms related to illicit drug use. In this context, 'drug policy' often does not include pharmaceutical policy (except with regard to diversion to non-medical use), or tobacco or alcohol policy. In the context of the WHO's *Action Programme on Essential Drugs*, 'national drug policy' refers to a national pharmaceutical policy concerning the marketing, availability and therapeutic use of medicines.

Drug-related problem

Any of the range of adverse accompaniments of **Drug use**, particularly **Illicit drug** use. 'Related' does not necessarily imply causality. The term was coined by analogy with alcohol-related problems but is less used, since it is **Drug use** itself, rather than the consequence, that tends to be defined as the problem. It can be used to refer to problems at an individual or societal level. In international **Drug control**, drug-related problems are taken into account in setting a level of control for a **Controlled substance** through a WHO assessment of the drug's **Dependence potential** and

Abuse liability. 'Drug problems' is a possible cognate term, but can be confused with '*the* drug problem', meaning **Illicit drugs** as a policy issue.

Drug use

Self-administration of a psychoactive substance. This term has been used throughout this book rather than **Drug abuse** or **Drug misuse**, as it is non-judgemental.

Gateway drug

An **Illicit** or **Licit drug**, use of which is regarded as opening the way to the use of another drug, usually one that is viewed as more problematic.

Harmful use

A pattern of **Psychoactive Substance use** that is causing damage to health. The damage may be physical (eg hepatitis following injection of drugs) or mental (eg depressive episodes secondary to heroin use). Harmful use commonly, but not invariably, has adverse social consequences but social consequences are not necessary to justify a diagnosis of harmful use. The term was introduced in ICD-10 and supplanted 'non-dependent use' as a diagnostic term. The closest equivalent in other diagnostic systems (eg DSM-IV) is **Substance abuse**, which usually includes social consequences.

Harm reduction

In the context of alcohol or other drugs, harm reduction describes policies or programmes that focus directly on reducing the harm resulting from the use of alcohol or other drugs. The term is used particularly of policies or programmes that aim to reduce the harm without necessarily affecting the underlying **Drug use**; examples include **Maintenance treatment** in **Opioid Dependence** and needle/syringe exchanges to counteract needle sharing among heroin users. Harm reduction can be used either to refer to goals (focusing on the harm rather than on use per se) or to means (eg needle exchanges, **Opioid Substitution Therapy** etc); in the latter sense, it is often contrasted to the dichotomy of supply reduction and demand reduction.

Hazardous use

A pattern of substance use that increases the risk of harmful consequences for the user. Some would limit the consequences to physical and mental health (as in **Harmful use**); some would also include social consequences. In contrast to **Harmful use**, hazardous use refers to patterns of use that are of public health significance, despite the absence of any current disorder in the individual user. The term is currently used by the WHO but is not a diagnostic term in ICD-10. It is also commonly used for **Licit drugs**, such as alcohol, which allows comparison between the pattern of use of these drugs and the harm related to their use.

High

An intense feeling of pleasure experienced when using some **Psychoactive drugs**. These substances cause dopamine to be released rapidly and in huge quantities when compared to usual brain levels, which leads to the intense feelings of pleasure.

Illicit drug

A **Psychoactive substance**, the possession, production, sale or use of which is prohibited. Strictly speaking, it is not the **Drug** that is illicit, but its possession, production, sale or use in particular circumstances in a given jurisdiction. *Illicit drug market*, a more exact term, refers to the production, distribution, and sale of any drug outside legally sanctioned channels.

Intoxication

Defined in the ICD-10 as '*a transient condition following the administration of alcohol or other **Psychoactive substance**, resulting in disturbances in level of consciousness, cognition, perception, affect or behaviour, or other psychophysiological functions and responses*'. The term 'acute intoxication' is used for intoxication of clinical significance. Complications may include trauma, inhalation of vomitus, delirium, coma, and convulsions, depending on the substance and method of administration.

Keyworking

A system of providing individualised care though a specific keyworker, who provides a consistent means of contact with medical and social care. It is used for **Rehabilitation** of **Dependence** on **Illicit drugs** and enables support to be tailored to individual need by creating a strong partnership between the individual requiring rehabilitation and the keyworker.

Legalisation

Legalisation is a process of repealing a prohibition (in criminal law) on a given behaviour or product – in this context, supply, possession or use of an **Illicit drug**. The process is often coupled with a governmental effort to control or influence the market for the affected behaviour or product. The term should be distinguished from **Decriminalisation**, which refers to a reduction in the seriousness of an offence or of the penalties it attracts, and specifically the move from a criminal sanction to a civil or administrative one.

Licit drug

A drug that is legally available, either to purchase, or by medical prescription. Examples of licit **Psychoactive drugs** that are available to purchase are alcohol and tobacco. See also **Illicit drug**.

Maintenance treatment

A method of medical management that involves prescribing and administration of a pharmaceutical **Drug** as a 'substitute' for an **Illicit drug**, to patients who have become dependent. It is most commonly used for **Opioid Dependence** (eg treatment with methadone or buprenorphine – commonly called **Opioid Substitution treatment**). The aim is to attenuate withdrawal symptoms, diminish opioid **Craving** and arrive at a **Tolerance** threshold, while preventing euphoria and sedation from overmedication.

Multiple drug use

See **Polydrug use**.

Mutual-help movement

Voluntary associations, usually led by former drug users who now use their experiences to help others cease drug use and improve their coping skills.

See also **Alcoholics Anonymous** and **Narcotics Anonymous**.

Narcotics Anonymous, NA

A **Mutual-help movement** for individuals who are dependent on, or are recovering from dependence on, narcotics (chemical agents (such as opiates or opioids) that induce stupor, coma, or insensibility to pain, but also a term used imprecisely to mean illicit drugs, irrespective of their pharmacology). Participants support each other in recovering from, or maintaining recovery from, their dependence. It uses a 12-step programme based on a non-denominational spiritual approach, with an emphasis on mutual aid and support.

Opiate

An opiate is an **Addictive** drug, derived from the opium poppy, which reduces pain, induces sleep and may alter mood or behaviour (see **Opioids**). This term excludes synthetic **Opioids**.

Opioid

A generic term applied to alkaloids from the opium poppy (**Opiates**), their synthetic analogues and compounds synthesised in the body that interact with specific **Receptors** in the brain and reduce pain, induce sleep and may alter mood or behaviour. In high doses they can cause stupor, coma and respiratory depression. Opium alkaloids and their semi-synthetic analogues include morphine, diacetylmorphine (diamorphine, heroin), hydromorphine, codeine and oxycodone. Synthetic opioids include buprenoprhine, methadone, pethidine, pentazocine and tramadol. More information is available in **Appendix 3**.

Overdose

The use of any **Drug** in such an amount that acute adverse physical or mental effects are produced. It usually implies an amount that constitutes a mortal risk. Deliberate overdose is a common means of suicide and attempted suicide. In absolute numbers, overdoses of **Licit drugs** are usually more common than those of **Illicit drugs**. Overdose may produce transient or lasting effects, or death; the lethal dose of a particular drug varies with the individual and with circumstances. Poisoning is a near-synonym in external-cause diagnostic codes.

Polydrug use

The use of more than one **Psychoactive drug** or type of **Drug** by an individual, often at the same time or sequentially, and usually with the intention of enhancing, potentiating, or counteracting the effects of another drug. The term is also used more loosely, to include the unconnected use of two or more drugs by the same person. It carries the connotation of **Illicit drug** use, though alcohol, nicotine, and caffeine are the substances most frequently used in combination with others in industrialised societies (**Polysubstance use**). Multiple drug use disorder is one of the '*Mental and behavioural disorders due to psychoactive substance use*' in the ICD-10, diagnosed only when two or more substances are known to be involved and it is impossible to assess which substance is contributing most to the disorder. The category is also used when the exact identity of some or even all of the substances being used is uncertain or unknown, since many multiple drug users often do not know themselves what they are taking. The term **Multiple drug use** is also commonly used.

Polysubstance use

The concurrent use of an **Illicit drug** or **Drugs** and alcohol, tobacco (nicotine) or caffeine.

Problem drug use

There are varying definitions for problem drug use. In its broadest sense, according to the United Nations Office on Drugs and Crime (UNODC), problem drug use is used to describe individuals who inject **Drugs** and/or are considered dependent, facing serious social and health consequences as a result. For statistical purposes, the definitions and methods of calculation differ from country to country. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) defines problem drug use as '*injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamines*'.

Prohibition

Policy under which the cultivation, manufacture, and/or sale (and sometimes the use) of a **Psychoactive drug** are prohibited under criminal law (although pharmaceutical sales are usually permitted).

Psychoactive drug or substance

A substance that, when ingested, affects mental processes (eg cognition, mood, sensation and behaviour). This term and its equivalent, **Psychotropic drug**, are the most neutral and descriptive terms for the whole class of substances, licit and illicit, of interest to **Drug policy**. 'Psychoactive' does not necessarily imply **Dependence** producing, and in common parlance the term is often left unstated, as in **Drug use/Drug abuse** or **Substance abuse/Substance use**.

Psychoactive substance use disorders

A shortened version of the term used in ICD-10 – mental and behavioural disorders associated with **Psychoactive Substance use**. The term encompasses acute **Intoxication**, **Harmful use**, **Dependence syndrome**, withdrawal state, withdrawal state with delirium, psychotic disorder, and amnesic syndrome. For a particular substance, these conditions may be grouped together as, for example, cannabis use disorders, stimulant use disorders. Psychoactive substance use disorders are defined as being of clinical relevance; the term 'psychoactive substance use problems' is a broader one, which includes conditions and events not necessarily of clinical relevance.

Psychopharmacology

The actions of **Drugs**, and their effects on mood, sensation, cognition and behaviour.

Psychotropic drug

See **Psychoactive drug**.

Receptor

A structure or site on the surface of a cell that can bind a chemical substance that will then induce a change in the cell. In the context of **Psychoactive drugs**, binding of a drug to a specific receptor on nerves in the brain can induce a psychological effect by either mimicking or blocking the action of a specific natural neurotransmitter.

See also **Psychoactive drug or substance**.

Recreational use

Use of a **Drug**, usually an **Illicit drug**, in sociable or relaxing circumstances, by implication without **Dependence** or other problems. The term is not favoured by those seeking to define all **Illicit drug** use as a problem.

Recovery

In the context of **Drug Dependence**, recovery involves achievement of the individual user's goals for making positive changes in their life. This usually includes improved family and social relationships, living in appropriate housing and being gainfully employed. It is likely to be achieved by treatment to reduce or eliminate dependence on **Illicit drugs**.

Recovery capital

The '*breadth and depth of internal and external resources that can be drawn upon to initiate and sustain* ***Recovery***' from **Substance use**.[a]

Regulation/Regulated market

A range of regulatory controls are deployed, covering drug production and trade, products, gatekeepers of supply and users. Some drugs, preparations and activities remain prohibited. Examples of regulated products are over-the-counter drugs, prescription drugs, alcohol and tobacco.

Rehabilitation

In the field of **Substance use**, the process by which an individual with a substance use disorder achieves an optimal state of health, psychological functioning, and social wellbeing. Rehabilitation follows the initial phase of treatment (which may involve **Detoxification** and medical and psychiatric treatment). It encompasses a variety of approaches, including group therapy, specific behaviour therapies to prevent relapse, involvement with a mutual-help group, residence in a therapeutic community or half-way house, vocational training, and work experience. There is an expectation of social reintegration into the wider community.

Relapse

A return to drug use after a period, of abstinence or controlled use, often accompanied by reinstatement of **Dependence** symptoms. Some distinguish between relapse and lapse ('slip'), with the latter denoting an isolated occasion of alcohol or drug use.

Relapse prevention

Techniques to prevent relapse into drug use. This can be pharmacological (eg naltrexone-maintained abstinence from opioid use), or a psychosocial intervention such as cognitive-behavioural therapy, which focuses on helping users to identify situations where they are most vulnerable to drug use and to develop coping skills to deal with these situations.

a Granfield R & Cloud W (1999) *Coming clean: overcoming addiction without treatment*. New York: New York University Press.

Remission

A symptom-free period. In the context of **Illicit drug** use, it can refer to a period of abstinence or controlled use, or to a period of freedom from the **Craving** associated with **Dependence**.

Residential rehabilitation

Prolonged residential treatment in a home, hostel or hospital unit, for **Dependence**, usually on a **Psychoactive drug**. There is a positive and highly structured drug-free environment with strict rules, where residents are expected to participate in a programme of **Rehabilitation**, based on self-help and mutual support.

See also **Therapeutic community**.

Substance abuse/Substance use

See **Drug abuse** and **Drug use**.

Substitution treatment

Treatment of **Dependence** on a **Psychoactive drug** with a substitute drug with cross-dependence and cross-**Tolerance**. The goal is to reduce or eliminate use of the original drug and/or to reduce harm from a particular method of administration. See also **Harm reduction**.

Therapeutic community

A structured environment where individuals with **Substance use** disorders live, to achieve **Rehabilitation**. Such communities are often specifically designed for individuals with **Dependence** on **Psychoactive drugs**, are run according to strict rules, based on self-help and mutual support, and are often geographically isolated. They use a hierarchical model with treatment stages that reflect increased levels of personal and social responsibility. Peer influence, mediated through a variety of group processes, is used to help individuals learn and assimilate social norms and develop more effective social skills.

See also **Residential rehabilitation**.

Tolerance

A decrease in response to a **Drug** dose that occurs with continued use. Increased doses of alcohol or other drugs are required to achieve the effects originally produced by lower doses. Physiological and psychosocial factors may contribute to the development of tolerance, which may be physical, behavioural or psychological. With respect to physiological factors, both metabolic and/or functional tolerance may develop. By increasing the rate of metabolism of the substance, the body may be able to eliminate the substance more readily. *Functional tolerance* is defined as a decrease in sensitivity of the central nervous system to the substance. *Behavioural tolerance* is a change in the effect of a drug as a result of learning or alteration of environmental constraints. *Acute tolerance* is rapid, temporary accommodation to the effect of a substance following a single dose. *Reverse tolerance*, also known as *sensitisation*, refers to a condition in which the response to a substance increases with repeated use. Tolerance is one of the criteria for the **Dependence syndrome**.

Withdrawal syndrome

A group of symptoms of variable clustering and degree of severity that occur on cessation or reduction of use of a **Psychoactive substance** that has been taken repeatedly, usually for a prolonged period and/or in high doses. The syndrome may be accompanied by signs of physiological disturbance. A withdrawal syndrome is one of the indicators of a **Dependence syndrome**. It is also the defining characteristic of the narrower **Psychopharmacological** meaning of **Dependence**. The onset and course of the withdrawal syndrome are time limited and are related to the type of substance and dose being taken immediately before cessation or reduction of use. Typically, the features of a withdrawal syndrome are the opposite of those of acute **Intoxication**.

Foreword

In this report, the BMA, through its Board of Science, seeks to open and refocus the debate on drug treatment and drug policy through the eyes of the medical profession. The first step in such a debate is to ensure that the facts are presented, along with the evidence to support them. For this reason, we have set out to establish the evidence and seek to draw conclusions from it. We do not have a predetermined medical position on the ways in which policy might be changed, rather a desire to start from a secure baseline of knowledge. As with so many other medical conditions, we believe that there is no 'one size fits all' solution to the problem of drug misuse, and the medical profession's familiarity with the need for advocacy for each individual patient should be at the forefront of this debate.

There will inevitably be differences of opinion and of interpretation. Individuals have experiences that affect their views. They have different ethical, moral and religious persuasions; identifying a common, agreed pathway may prove to be difficult. Taking into account the myriad differences in approach across the world, this is no doubt an understatement.

As a surgeon, I have had limited contact with the medical problems associated with drug use but it has become clear to me that the present approach is not satisfactory.

My understanding has been greatly enhanced by the superb team of contributors to this report. Their contributions have been reviewed by all of the main committees of the BMA. We believe that this report is an up-to-date resource that will provide the factual foundation for informed debate.

The medical profession would never condone drug taking. Individuals, who press others into experimenting with the use of drugs, may deserve punishment. But those who fall into drug dependence become a medical problem from which we, as a society, cannot escape and they badly need our help.

In this country, we are beginning to see evidence of a reduction in the use of hard drugs but they remain a major hazard for those who try them and the dependence that may follow is a lifelong problem for many.

So we acknowledge that, while some progress has been made, this should not lull us into the false belief that we can put this problem out of our minds in the hope that it might go away.

The medical profession should look squarely at the issue and debate it as a medical problem. We have vast expertise to call upon and compassionate understanding to offer. Our involvement, indeed our leadership, in this debate will ensure that the medical issues become central to the national debate and the criminal justice aspects are put into a more accurate context.

We have the special opportunity to listen to patients' views and concerns and to guide them, as individuals, through the various treatment options. We owe it to the patients, their families and those around them to get actively involved in the national debate and so to ensure that the medical aspects are at the heart of the discussions.

Professor Averil Mansfield
Chairman, BMA Board of Science

Professor Averil Mansfield, Chairman, BMA Board of Science

Professor Averil Mansfield

Averil Mansfield is a graduate of Liverpool University and was formerly a consultant surgeon in Liverpool until her move to St Mary's Hospital in London in 1982. She became Director of the Academic Surgical Unit and Professor of Vascular Surgery at St Mary's/Imperial College in 1993. Her research centered around venous thromboembolism, carotid surgery and extensive aortic aneurysms.

She was Vice President of The Royal College of Surgeons and President of The Association of Surgeons of Great Britain and Ireland, The Vascular Surgical Society, and the Section of Surgery of the Royal Society of Medicine.

She was President of the BMA from 2009 to 2010 and became Chairman of the Board of Science in 2010.

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Executive summary

Objectives

The objectives of this report are to:

- **encourage debate on the most effective approach to preventing and reducing the harms associated with illicit drug use and illicit drug-control policies, based on an independent and objective review of the evidence**
- **examine the role of the medical profession in preventing and reducing the harms associated with illicit drug use and policies for control of illicit drug use**
- **encourage debate and dialogue between the medical profession and policy makers, legislators, the police, service providers and academics who have knowledge and expertise in this area.**

The report starts by examining the scale of the problem, the harms associated with drug use – for both the individual and society – and influences on illicit drug use. The development of drug policy in Britain is then presented, followed by a chapter discussing the particular harms to the individual and society that are associated with the prohibitionist legal framework controlling drug use. This chapter also presents the options for an alternative legal framework. Interventions to reduce the harms associated with illicit drug use are then discussed, followed by three chapters that examine the doctor's role in the medical management of drug dependence and the ethical challenges of working within the criminal justice system.

Medical practitioners are ideally placed to encourage a refocusing of debate on policies for supporting and treating the physical and mental health needs of illicit drug users. The final chapter examines their role, both as individuals and as a profession, in relation to illicit drug use.

Key points from each chapter are summarised next.

1. Introduction

- Substance use describes a wide range of different patterns of use, from harmless recreational use to life-threatening dependence.
- There is evidence of a neurobiological underpinning to dependence, and an association between biological, psychological and social factors. These factors create a framework within which an individual's predisposing, precipitating, perpetuating and protective elements can be used to plan the most effective treatments.
- Drugs of dependence, such as alcohol and tobacco, are at least as harmful as some illicit drugs, and their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption.
- The Misuse of Drugs Act 1971 in the UK and the three international conventions on international drug policy, to which the UK is a party, classify illicit drugs according to their perceived level of harm, and regulate their control and supply. Possession, purchase or cultivation of illicit drugs is illegal and thus a criminal offence in the UK.
- The priority of the medical profession is to support and treat the physical and mental health needs of drug users and those affected by others' drug use.
- Medical professionals are ideally placed to encourage a refocusing of debate on issues relating to dependent drug use and to influence national and global drug policy.

2. The scale of the problem: illicit drug use in the UK

- There has been a long-term downward trend in illicit drug use in the UK, although use of cocaine has increased slightly. In 2009-2010, 5 per cent of 16 to 59 year olds in the UK population were current drug users (had used drugs in the last month).
- Men are more likely than women to report drug use and current use is highest in the under-25 age group.
- International evidence suggests 10 to 13 per cent of all people who use drugs worldwide are problem drug users. Problem drug use affects approximately 10 per cent of all UK drug users, with the highest levels in the 25 to 34 years age group.
- Cannabis is the most commonly used drug, followed by cocaine powder, ecstasy and amphetamines.
- After North America, Europe is the next largest cocaine market and the UK is the largest market in Europe.
- In Europe, UK teenagers are among the most likely to report recent and current cannabis use, and are above the European average reported level for lifetime use of other illicit drugs.

- There are few reliable data on novel psychoactive substances (gamma-butyrolactone (GBL), 1-benzylpiperazine (BZP), mephedrone, oripavine, anabolic steroids, Spice, etc), which have only been controlled under the Misuse of Drugs Act 1971 since 2009, but they appear to be used more by younger age groups and as an alternative to ecstasy.
- Around half the UK population surveyed considers drug use is a serious problem; and slightly more believe drug users should be treated as individuals needing medical treatment or other support.
- A majority of those interviewed in the British Social Attitudes survey in 2011 believed cannabis should remain illegal and is harmful; this has increased since 2009.
- A majority interviewed for the Scottish Social Attitudes survey thought illegal drug use should not be accepted as a normal part of some people's lives and the proportion has also increased from 2001 to 2009; this is particularly noticeable in the 18 to 24 years age group. Less than 10 per cent of pupils interviewed in England in 2010 thought use of any illicit drugs was acceptable.
- Over half the UK population interviewed in 2011 believed the Government's approach to illicit drug use is totally ineffective.

3. The burden of illicit drug use

- The use of illicit drugs is associated with a range of physical, psychological and social harms. These are affected by the dosage of drug, the pattern of drug use and the mode of administration.
- Most drug-related deaths in the UK are related to the use of opioid drugs, followed by cocaine. The vast majority of these deaths are in men and many are associated with polydrug or polysubstance use. Ecstasy-related deaths are very rare and deaths from cannabis overdose do not occur.
- The risk of death from accidental drug overdose, and from suicide, is associated with poverty, homelessness, polydrug or polysubstance use, impaired physical health and depression.
- While dependence per se is not necessarily significantly harmful, the risk of harm is intrinsically raised as a result of chronic drug use. The following are associated with physical and psychological dependence: cannabis, cocaine, gamma-hydroxybutyrate (GHB), heroin, methamphetamine and other opioid drugs. Amphetamine and ecstasy are associated with psychological dependence only, and there is limited evidence for dependence with ketamine and phencyclidine (PCP). Dependence is rare with hallucinogens.
- Fetal development can be adversely impacted by maternal drug use.
- Adverse health impacts and drug-related deaths may also be associated with adulterants.

- Social harms of drug use include deprivation and family adversity/neglect; criminality associated with drug intoxication or with the need to obtain drugs; and drug-impaired performance at work or when driving. These can result from the illegality of the drugs, or from factors such as the psychopharmacological effects of the drug. They have associated costs for the individual related to loss of earnings, reduced educational attainment and damage to personal relationships. High levels of drug use in a community are linked to unsafe communities because of the associated social problems.
- Studies of the level of harm associated with use of different drugs in the UK scored heroin, crack cocaine and methamphetamine as most harmful to individuals; alcohol, heroin, crack cocaine and cannabis as most harmful to others; and alcohol as most harmful overall, followed by heroin, crack cocaine, methamphetamine and cocaine. The relative levels of harm for the different drugs correlate poorly with the legal classification of drugs.
- Economic and social costs of drug use are related to health and social care costs and criminality; 99 per cent of costs are linked to Class A drug use (cocaine, crack cocaine, ecstasy, heroin, methadone, lysergic acid diethylamide (LSD) and psilocybin (magic mushrooms)) and a large proportion is linked to crime, including crimes of illegality. The economic and social costs of Class A drug use in 2003-2004 in England and Wales were estimated to be £15.4 billion, which equates to £44,231 per year per problematic Class A drug user.

4. Influences on illicit drug use

- Drug use is widely held to be a multifaceted biopsychosocial phenomenon. No single biological, psychological or social factor is exclusively responsible for drug use.
- Family-based, adoption and twin studies have shown a substantial genetic component to drug use. Comorbid psychiatric illness and personality type have also been shown to be strongly linked to drug use.
- The rewarding potential of drugs, such as sensations of pleasure or relief from pain, may play a role in reinforcing the continued use of drugs. The use of drugs activates the mesolimbic dopamine system in the brain, strengthening neural connections, which influences the repetition of drug-related behaviours.
- A drug's potential to lead to tolerance and withdrawal may influence its continued use.
- The environmental or social factors commonly attributed to problematic drug use include family composition, behaviour and relationships, peer influence, social inequalities and being a member of a stigmatised group.

- Positive family relationships and communication may guard against future use of drugs. Living in a single-parent or step-family, substance use among family members, family conflict and poor parental supervision are all indicators for drug use in young people.
- Stigmatised groups are at increased risk of drug use; these include young people in care institutions, sex workers (particularly those who work outdoors), homeless populations and victims of traumatic experiences.
- Evidence shows price has an impact on drug use but the effect is not the same for all types of drugs.
- Evidence of the effect of portrayals of drug use in popular media on drug use are limited and difficult to interpret. There is some evidence that portrayals of drug use in film have an impact on drug use in the UK. Notable celebrities may have a role in either reducing or increasing drug use.

5. Drug policy in the UK: from the 19th century to the present day

- Purchase of psychoactive drugs such as opium and laudanum was unregulated in the UK until 1868, when the Pharmacy Act was passed, restricting opium sales to pharmacists' shops, with a requirement on pharmacists to keep a record of purchasers.
- In 1916, an Army Council order, and the Defence of the Realm Act later the same year, made it an offence for anyone except a physician, pharmacist or vet to possess, sell or give cocaine, and the drug and its preparations could only be supplied on prescription.
- The first Dangerous Drugs Act passed in 1920, and a further Act in 1923, passed to conform to the 1912 International Opium Convention at The Hague to which Britain was a signatory, imposed stricter controls on doctors and pharmacists in relation to dangerous drugs, in a climate with a penal emphasis on policy.
- It was not clear from these Acts or the Convention whether prescribing drugs to addicts constituted legal medical work. The Rolleston Report in 1926 affirmed the right of doctors to prescribe controlled drugs to addicts in defined circumstances and set the scene for a balanced medical approach within a penal framework.
- The second Geneva Convention in 1925 brought cannabis under international control, and restrictions were implemented in the 1928 Dangerous Drugs Act.
- As a result of increasing use of heroin, the 1967 Dangerous Drugs Act restricted prescribing of heroin to doctors licensed by the Home Office, and set up new drug treatment centres within the NHS hospital system. A notification system for addiction was also introduced.

- Introduction of other drugs to the illicit market, such as amphetamines and LSD, led to the Drugs (Prevention of Misuse) Act 1967, and recommendations that penalties for possession of cannabis should be reduced, with no custodial sentencing for casual use, were implemented.
- The 1961 United Nations Single Convention on Narcotic Drugs introduced four schedules of controlled drugs and was followed in the UK by the Misuse of Drugs Act 1971, with drugs categorised in classes according to perceived harm and therapeutic value. This Act also set up the Advisory Council on the Misuse of Drugs, to keep the drug situation under review and advise the Government.
- With increasing illicit drug use, Government strategies in the 1980s began to focus on the social and economic problems of drug users, in addition to their medical problems, and GPs became involved with the more general healthcare needs of drug users, leaving specialists to deal with more difficult drug users.
- The spread of HIV and AIDS generated 'harm-minimisation' policies in relation to drug use, by modification of using behaviours, from injecting to oral use where possible.
- The 1995 Drug Strategy moved away from this approach to one encouraging users to enter treatment, with the aim of moving users towards abstinence and achievement of a drug-free state and of reducing criminal behaviour.
- Later strategies (2002, 2004, 2008) continued to emphasise the need to move drug users into treatment and focused on the links between drugs and crime; they also aimed to move drug treatment away from the NHS into the community and voluntary sector.
- The 2008 strategy maintained a focus on drugs and crime but placed greater emphasis on the impact of problematic drug use on children and families of users.
- With the 2010 strategy, policy continues to move away from drug-crime links and towards a focus on wider social and economic factors that drive problematic drug use. The emphasis is on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.
- The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

6. Controlling illicit drug use

- For the last half century, prohibition and criminalisation has been the dominant policy for drug control, both nationally and internationally.
- It is very difficult to separate the impact of drug policy from the wider effects of social policy and environmental factors on drug-using behaviour.
- Levels of drug consumption do not necessarily follow predictable economic patterns in a linear way, where an increase in price leads to decreased use.

- It is difficult to predict supply and demand of illicit drugs, as all trade is illegal; decreased availability of one drug may result in users turning to other drugs that are more readily available.
- Illegally sourced drugs are of variable quality and purity, with clear adverse health implications for users.
- Criminalisation increases the health risks of illicit drugs by encouraging use in unsafe environments and through dangerous methods of administration. It also deters users from approaching health professionals for treatment.
- A prohibitionist approach creates a lucrative opportunity for criminality and leads to high levels of acquisitive crime among dependent users.
- The stigmatisation of vulnerable populations of drug users also has significant public health implications.
- The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.
- The national budget required for law enforcement, the criminal justice system and dealing with the costs of drug-related crime is several times higher than the amount spent on drug-related health interventions.
- The existing legal framework directly impacts on the ability of medical professionals to gain access to and treat problematic drug users.
- Debate on liberalisation of drug policy is contentious, with strong feelings on both sides of the argument.
- There is widespread confusion about the use of terms such as 'decriminalisation' and an insufficient understanding that criminalisation can operate in tandem with other forms of regulation, supervision and intervention.
- Alternative legal frameworks include decriminalisation (eg sentencing reform), regulation (within a legislative framework), and free market legalisation.
- There is a shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability.
- The evidence suggests that the costs of enforcement are high and that prohibition has created a range of unintended health, social and economic costs.
- While some commentators argue that the benefits of the UK's current system are questionable, and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required, other commentators have been more cautious. Among this latter group of commentators, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

7. Delaying initiation and minimising the use of illicit drugs

- Current prevention strategies aim to reduce drug use by influencing attitudes and behaviour, in order to prevent or delay the initiation of drug use.
- Primary prevention aims to avert or delay initial use, while secondary prevention aims to minimise the harms in those already using drugs. Secondary prevention interventions, such as harm-prevention strategies, are yet to receive much in the way of attention.
- There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK. Drug treatment programmes are more cost effective.
- All schools in the UK are required to have a drug education programme. These programmes improve young people's knowledge about drug use, and have a small impact, notably in delaying the onset of use.
- There is evidence that most pupils recall the content of their drug-education lessons and report that it helps them to make decisions about what to do if offered drugs. Those who had taken drugs said lessons helped them understand why people take drugs and that not as many people as they thought take drugs.
- Programmes that also address classroom behaviour management have been shown to reduce lifetime drug use in boys but not girls in the USA.
- Drug testing in schools does not appear to affect the use of illicit drugs; random testing in schools may have a negative effect.
- There is insufficient research on interventions outside the school setting to prevent drug use to provide evidence on their effectiveness.
- The use of mass media can improve knowledge but is not effective at reducing illicit drug use; social marketing may be a useful way of increasing the efficacy of mass media campaigns.
- Selective prevention strategies target at-risk groups and often address multiple and complex risk factors. There is conflicting evidence about their efficacy in reducing drug use among vulnerable groups, and there is a risk that they further stigmatise already marginalised individuals. The age range 11 to 13 years has been identified as a crucial period for effective intervention.
- Groups that are most susceptible to drug harm should be identified. Taking action on preventing the underlying causes of drug harm rather than preventing drug harm directly may be more effective.

8. Medical management of drug dependence: the doctor's role in managing heroin addiction

- Medical management of drug dependence is more difficult and challenging than for other chronic disorders. Many users who present for treatment are socially marginalised, lead chaotic lifestyles and have little to motivate them towards recovery.
- Stigma and staff attitudes may also complicate management.
- Traditional methods for treating opioid addiction were based on two approaches – encouraging abstinence and a change of attitude on the part of the user.
- Although some individuals do recover spontaneously from opioid dependence, it is usually a chronic relapsing–remitting condition.
- The principle of opioid substitution therapy (OST) is to prescribe and administer a pharmaceutical opioid as a substitute for heroin. This attenuates the symptoms of withdrawal from heroin and allows the user to gain control over other aspects of their life, thereby creating the necessary preconditions to cease drug seeking and use.
- Opioid substitution therapy provides a structured routine through daily attendance for administration in a safe non-punitive and non-judgemental treatment space, which may benefit users in restructuring a chaotic lifestyle.
- The basis of effective OST is suppression of opioid withdrawal.
- High-dose methadone is more effective than a low dose, because it progressively increases the patient's tolerance to opioids, making heroin less reinforcing and cessation of use more likely.
- For some users, the respite from withdrawal offered by methadone is insufficient to allow them to move away from heroin use; treatment with diamorphine is more reinforcing and successful in these individuals.
- Long-term studies suggest OST may reduce use of opioid drugs (in a relapsing–remitting manner), but seldom results in long-term abstinence from all drugs. Continued alcohol misuse and cannabis use are common.
- Opioid substitution has been shown to reduce deaths from opioid overdose and the risk of blood-borne viruses.
- Evidence on the effects of OST on mental health and quality of life is limited and equivocal.
- The National Treatment Outcome Research Study (NTORS) demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed. Economic benefits were largely accounted for by reduced costs of crime.
- Opioid substitution has been shown to reduce rates of acquisitive crime and there is some evidence that it contributes to social reintegration.

- There has been little research on the effectiveness of supervised administration of OST, but limited evidence suggests it is more effective at reducing heroin use than non-supervised treatment.
- Randomised trials have shown no benefit overall of additional psychological interventions in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression. There is substantial evidence that good-quality staff interactions are of benefit for recovery.
- Opioid substitution is associated with a risk of diversion of methadone to other individuals, as well as an increased risk of death during the first two weeks of treatment and in the month after leaving treatment. Overall, the risk of death is reduced by entering OST.
- Subtherapeutic dosing is a serious limitation on the effectiveness of OST.

9. Medical management of drug dependence: reducing secondary health harms

- Consistent evidence shows that doctors in primary and secondary care and in mental health settings frequently do not address alcohol and drug use.
- Caution should be exercised in prescribing drugs with potential for dependence, particularly for patients who are at high risk for dependence or diversion.
- Management of medical emergencies related to acute symptoms of withdrawal should be followed by longer-term medical management and support to reduce dependence.
- It is also important to address strategies for relapse prevention after detoxification.
- The use of naltrexone for relapse prevention after opioid detoxification is of limited value.
- Psychosocial interventions that help users to identify high-risk situations and use coping strategies have been shown to be helpful in managing cannabis dependence.
- In US studies, contingency management in the form of voucher-based reinforcement has been found to significantly improve outcomes for all substance use disorders apart from alcohol. Couples-based therapy and support groups are also of value.
- Brief therapist interventions and motivational interviewing have been shown to reduce drug use among young people. Opportunistic interventions in patients attending for HIV testing has also been shown to increase the likelihood of abstinence and reduce arrest rates.
- Illicit drug use in pregnancy needs particular care with medical management, to avoid harm to both the mother and her baby.

10. Medical management of drug dependence in the context of criminal justice: illicit drug use, courts and prison

- Many illicit drug users first present to medical practitioners via the criminal justice system.
- Treatment of illicit drug users creates particular ethical challenges for medical professionals, especially in relation to coercion and informed consent within the criminal justice system. It is essential to recognise that these individuals have the same rights to accept or refuse treatment as the rest of the population.
- There is a high prevalence of drug use among prisoners in the UK, and high rates of first initiation of drug use.
- The Drug Interventions Programme (DIP), introduced by the Home Office in 2003, aims to develop and integrate measures for directing adult offenders who are illicit drug users into drug treatment and thereby reduce offender behaviour. Most DIP referrals into treatment are achieved via drug testing in police custody suites. This raises ethical issues about coercion to treatment.
- Methadone treatment in prisons has been shown to significantly reduce heroin use among those treated; retention in treatment is associated with reduced mortality, reincarceration and hepatitis C infection. It is hoped that a research study currently in progress in the UK will provide evidence about the most effective treatment for detoxification in prisons. Naltrexone may have a role in this treatment.
- Safety considerations are paramount in opioid detoxification treatment, especially in those soon to be released.
- Opioid substitution therapy has been shown to have an important role in reducing transmission of HIV in the prison setting.
- Needle-exchange programmes are important for harm reduction and are recommended for all illicit drug users in prison in guidance from the World Health Organization (WHO), the United Nations Office on Drugs and Crime (UNODC) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). Nowhere in the UK offers such programmes in the prison setting.
- Vaccination for hepatitis B in the prison setting is important but not yet offered in every prison in England and Wales.
- The National Offender Management Service (NOMS) aims to offer all prisoners who want to commit to leading a drug-free life access to accommodation designated as 'drug free'.
- There is a high risk of drug-related deaths in prison and shortly after release. Medical management must take this into account in planning treatment.
- It is important to ensure patients are linked with community drug services immediately on release from prison.
- The use of naloxone may reduce mortality from drug overdose.

11. The role of healthcare professionals

- Medical training should provide graduates with basic knowledge about the social and personal factors increasing the risks of illicit drug use, the adverse health consequences of the illicit use of drugs, and the role of doctors in identifying drug-related harm and initiating intervention.
- Doctors should maintain an awareness of the non-medical facets of drug use, and exercise caution in prescribing drugs with the potential for non-medical use.
- Doctors should take a drug use history when indicated, undertake brief opportunistic interventions to reduce drug-related harm, and refer to specialist services as appropriate.
- Guidance on clinical management of drug use and dependence is provided by 'The orange guidelines', available to all clinicians.
- Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.
- Doctors with knowledge and experience of helping patients affected by illicit drug use are ideally placed to engage in debate to promote a rational approach to drug policy that is evidence based and health oriented.

Chapter 1 – Introduction

The use[a] of legal or illegal substances that are associated with pleasure, solace or relief from pain, but also have the potential of harm to health, is not a new phenomenon. These behaviours have long been accompanied by concerns about the potential impact on the individual and on society.

As discussed in **Chapter 5**, most of these substances have origins as medicines but have been, or are, used for other purposes. There have, historically, been waves of medical enthusiasm for particular psychoactive substances, which have often been adopted for medical use on the premise that they solved the problems of the previous object of enthusiasm. Many then become new objects of illicit use.

Many different types of psychoactive drugs (see **Glossary**) are commonly used; these include alcohol and nicotine, illicit drugs (see **Glossary**)[b] such as cocaine or heroin, prescription drugs such as tranquillisers and over-the-counter (OTC) medications including codeine. The use of these drugs is not always harmful and, in the case of prescription and OTC drugs, they can dramatically improve health when used correctly. All types of drugs can and do cause harm to the health of some individuals, as well as affecting their family, friends and communities. The extent of harm depends on the type of drug, how it is used, and the social context within which it is used.

As this report notes, there is evidence that alcohol is the most harmful psychoactive drug, in terms of both harm to the individual and harm to others, although there has been much debate about how these harms are measured (see **Section 3.4**).[1,2] The damaging effects of nicotine when used in the form of smoked tobacco are also well known (see **Section 3.2**).[1] Their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption. The BMA has a long history of supporting comprehensive tobacco control measures and policies to reduce alcohol-related harm. While this report makes several references to alcohol and tobacco use, its purpose is to consider illicit drugs and the reader is referred to more detailed information about alcohol and tobacco use that can be accessed from the BMA website.

Alcohol, nicotine and other drugs are available in the UK under various forms of legal regulation (see **Glossary**), and are an accepted part of the social norm. By contrast,

a Given the scientific and legal ambiguity regarding the distinctions between 'use', 'misuse' and 'abuse', only the neutral term 'use' is used in this report (see **Glossary** for further discussion of these different terms).

b An overview of the effects and addictiveness of commonly used illicit drugs is provided in **Appendix 2**.

the use of illicit drugs – those controlled under the Misuse of Drugs Act 1971 (see **Section 1.2**) – is regulated through prohibition (see **Glossary**). Their possession is a criminal offence and users are commonly portrayed as a menacing scourge on society, despite the fact that alcohol has been shown to be at least as harmful as commonly used illicit drugs (see **Section 3.2** and **Figure 3**).[1,2] This demonisation, coupled with the prohibitionist approach to regulation, is argued by many to be counterproductive to reducing the harms caused by illicit drug use (see **Chapter 6**).

The BMA, through its Board of Science, has a long history supporting the development of policies to reduce and prevent the harms associated with drug use and drug control policies.[c] In January 2011, the Board agreed to undertake a review of the role of the medical profession in preventing and reducing these harms, based on an independent and objective review of the evidence. This report aims to encourage debate on this important topic by considering the strengths and weaknesses of current policy and practice for the prevention, control and treatment of illicit drug use. It also considers what the medical profession can do to improve policy and practice. This report is intended for a wide audience, including medical professionals, policy makers, legislators, service providers, the police, the legal profession and academics with a particular interest or expertise in this area.

The initial chapters examine the scale of the problem (**Chapter 2**), the harms associated with drug use, both for the individual user and for society (**Chapter 3**), and the influences on illicit drug use (**Chapter 4**).

Traditionally, the medical profession had a lead role in UK drug policy (see **Glossary**). Over the last few decades, policy has shifted towards a crime-prevention and law-enforcement issue. The development of drug policy in the UK is presented in **Chapter 5**.

It is important to distinguish harms associated with drug use per se from harms to the individual and to society associated with the prohibitionist legal framework surrounding drug use. **Chapter 6** reviews the evidence for the harms associated with the regulatory framework, for both individuals and society. It also presents the options for an alternative legal framework.

c The BMA has published a number of reports on drug use, including: *The misuse of drugs* (1997),[3] which examined the range of policies for improving services for drug users in the UK; *Therapeutic uses of cannabis* (1997),[4] which considered the potential medicinal uses and benefits of cannabis and cannabinoids; *Adolescent health* (2003),[5] which examined the levels of drug use among adolescents in the UK and identified interventions to reduce its prevalence in this age group; *Over-the-counter medication* (2005),[6] which discussed the use of drugs bought over the counter without prescription; *Child and adolescent mental health* (2006),[7] which considered the link between substance use and mental health problems in young people; *Legalising illicit drugs: a signposting resource* (2006),[8] which examined the arguments for and against legalising illicit drugs; and *Driving under the influence of drugs* (2009),[9] which discussed the key issues related to drug-driving and ways to tackle this problem.

Interventions that prevent or delay initiation of drug use will reduce the harms associated with dependent use, and evidence for the effectiveness of such interventions is examined in **Chapter 7**.

The final chapters of this report examine the management of drug dependence as a medical issue. **Chapter 8** looks at the doctor's role in managing heroin addiction, while **Chapter 9** reviews the role of medical practitioners in the prevention and reduction of drug-related harm. Finally, **Chapter 10** looks at the management of illicit drug use in the context of criminal justice. By the time they come for treatment, many dependent drug users are socially marginalised, or in prison, and specific issues arise relating to coercion and consent to treatment in this vulnerable population. There may also be a blurring of the distinction between punishment and treatment. These issues are also considered in **Chapter 10**.

The medical profession has a vested interest in drug policy, because of the direct and indirect health and social harms caused by illicit drug use. It has a key role in supporting and treating the physical and mental health needs of drug users. Medical professionals are ideally placed to encourage a refocusing of debate on these important issues and to influence national and global drug policy. Their role in relation to illicit drug use, both as individuals and as a profession, is examined in the closing chapter of this report (**Chapter 11**).

1.1 Substance use as a medical disorder

The use of psychoactive substances is well recognised across UK society. Such use is associated with a range of harms for some people, while for others there are few negative consequences. As discussed in **Section 3.3.7**, some psychoactive drugs, such as heroin, crack cocaine and methamphetamine, as well as alcohol and tobacco, are highly addictive, while others, such as cannabis and ecstasy are less so. The addictiveness (dependence potential – see **Glossary**) of different psychoactive drugs is presented in **Appendix 2**. Attitudes towards the acceptability of substance use vary widely, with particular debate regarding the concept of pathological substance use and a disease model for addiction. This section examines the evidence for considering harmful/dependent substance use as a medical disorder.

1.1.1 Background

The historical response to harmful/dependent substance use is of interest. Internationally, different countries have either accepted a disease model and treated harmful/dependent users as patients, and/or used the judicial system as a means to define substance use primarily as a criminal activity. Often, particularly nowadays, national systems combine both disease and crime models.

The concept of addiction (see **Glossary**) as a disease was first widely discussed in the 19th century, in the context of alcohol use, and was later applied to the use of other psychoactive substances that have since been classified as illicit drugs. In 1924, against the background of international opiate prohibition developing since 1912 (see **Chapter 5**), the UK made a pioneering decision to support a disease model of addiction. Sir Humphrey Rolleston, then President of the Royal College of Physicians, chaired the Departmental Commission on Morphine and Heroin Addiction (commonly known as the Rolleston Committee), whose recommendations were accepted as Government policy. This committee described addiction as a disease and that those suffering with addiction should receive medical treatment rather than legal sanction.[10] The development of drug policy in the UK is discussed in more detail in **Chapter 5**.

1.1.2 Categories of use

One of the complications in understanding substance use is describing the way in which a particular substance is used. Broadly, use can be considered in terms of recreational use and pathological use.

Recreational use

Many people are able to use psychoactive substances in a recreational manner (see **Glossary**) that causes no problems to the individual or those around them. This pattern of use is usually characterised by moderate levels of consumption and periods when the person stops using the substance without difficulty.

Harmful, dependent and hazardous use

There are clear, internationally agreed frameworks for describing harmful and dependent patterns of substance use. These frameworks define a hierarchy of physical, psychological and social harm to the individual.

The World Health Organization (WHO) *International Classification of Diseases*, currently in its 10th edition (ICD-10),[11] is a diagnostic description of all diseases. Within the chapter on mental and behavioural disorders, a subchapter defines mental and behavioural disorders due to psychoactive substance use. It defines a number of categories including acute intoxication (see **Glossary**), harmful use, dependence and withdrawal. The level of harm caused by a particular pattern of substance use is defined by the categories 'harmful' and 'dependent'.

- **Harmful use**: a pattern of psychoactive substance use that is causing damage to health. The damage may be physical or psychological.

- **Dependent use**: dependence has both psychological and physiological elements. Psychological dependence involves a need (craving **–** see **Glossary**) for repeated doses of the drug to feel good, or avoid feeling bad. Physiological (physical) dependence is associated with tolerance (see **Glossary**), where increased doses of the drug are required to produce the effects originally produced by lower doses, and development of withdrawal syndrome (see **Glossary**) when the drug is withdrawn. Withdrawal syndrome is characterised by physiological and psychological symptoms that are specific to a particular drug. The term 'dependence' is often used interchangeably with 'addiction' (see **Glossary**). The ICD-10 uses the term 'dependence syndrome' (see **Glossary**), to describe a cluster of behavioural, cognitive and physiological phenomena in which the use of the substance or a class of substances takes on a much higher priority for a given individual than other behaviours that once had greater value, and the user may develop tolerance and a physical withdrawal reaction when drug use is discontinued. Specific diagnostic criteria for dependence syndrome are presented in **Box 1**.

Box 1 – ICD-10 diagnostic criteria for dependence syndrome[11]

A definite diagnosis of dependence should usually be made only if three or more of the following have been present together at some time during the previous year:

- a strong desire or sense of compulsion to take the substance
- difficulties in controlling substance-taking behaviour in terms of its onset, termination or levels of use
- a physiological withdrawal state when substance use has ceased or been reduced, as evidenced by the characteristic withdrawal syndrome for the substance, or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms
- evidence of tolerance, such that increased doses of the psychoactive substance(s) are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol- and opioid-dependent individuals who may take daily doses that are sufficient to incapacitate or kill non-tolerant users)
- progressive neglect of alternative pleasures or interests because of psychoactive substance use; increased amount of time necessary to obtain or take the substance or to recover from its effects
- persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

The other major diagnostic framework, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) describes a similar disorder, using the terms 'abuse' and 'dependence'.[12]

WHO also uses the term 'hazardous use' to describe a pattern of substance use that increases the risk of harmful consequences for the user. In contrast to harmful use, hazardous use also refers to patterns of use that are of public health significance, despite the absence of any current disorder in the individual user. It is not used as a diagnostic term in the ICD-10.

These terms, and many others that are used throughout the report, are discussed in more detail in the **Glossary**.

1.1.3 Dependence as a brain disorder

The neurobiology of dependence

While there is compelling evidence to demonstrate a neurobiological underpinning to addictive behaviours,[13] the relationship between the brain elements of addiction and dependence and the characterisation of addiction and dependence at a behavioural level is unclear. Substances have been clearly shown to affect the brain in the short and longer term.[14]

In the short term, substances affect the brain through changing levels of neurotransmitters. Some substances (eg heroin, cannabis) mimic endogenous neurotransmitters, while others (eg cocaine, amphetamine) increase the availability of endogenous neurotransmitter to the brain, by either increasing neurotransmitter release or inhibiting its breakdown.

If a person uses substances over a longer period of time, the brain's structure and function begin to change, prompting behavioural changes in that individual.[14] The psychological effects of classical conditioning, as described in **Section 4.3.2**, are also likely to be involved in reinforcing continued drug use.

The prefrontal cortex area of the brain is particularly vulnerable to the effect of substances. This brain area is crucial for decision making, such as weighing up the pros and cons of a certain activity. Research suggests that the prefrontal cortex is one of the last brain areas to mature.[15] This may make adolescents who use psychoactive substances particularly vulnerable to poor decision making and impulsivity.[16]

The role of dopamine

Dopamine is one of a number of neurotransmitters associated with addictive processes. It is a naturally occurring, 'feel good' neurotransmitter that is important in rewarding positive behaviours (eg eating, drinking). Some psychoactive substances cause dopamine to be released rapidly and in huge quantities when compared to usual brain levels. Raised levels of dopamine in the mesolimbic system lead to intense feelings of pleasure, known to users as a 'high' (see **Glossary**).

If substance use persists, the brain responds to the dopamine overstimulation by decreasing the amount of dopamine produced and reducing the number of dopamine receptors (see **Glossary**) available. This, in turn, can lead to the user feeling emotionally flat and exhausted once the immediate effect of the drug has subsided. The user will often try to stimulate further additional dopamine release by using larger quantities of the substance. This is one of the mechanisms underpinning the clinical features of 'tolerance'.

The role of dopamine in the effect of psychoactive drugs is considered further in **Section 4.2.3** and **Section 4.3**.

Genetics

There is strong evidence for a genetic component to dependence, provided by family, twin and adoption studies (see **Chapter 4**).[17] The evidence is particularly compelling for alcohol dependence. Although research suggests many genes may be involved,[18] there is evidence that a single genetic variant in the aldehyde dehydrogenase 2 gene impacts on patterns of drinking and the risk of dependence.[19] Individuals who are heterozygous for this gene are protected from the effects of heavy drinking, while a mutation in this gene, commonly found in individuals of Far-Eastern descent, causes a reduced ability to metabolise alcohol. The genetics of dependence is a rapidly developing area but, apart from the studies on the aldehyde dehydrogenase 2 gene, there is little immediate prospect of a breakthrough in genetics leading to improved patient care.

1.1.4 The role of other factors

No single factor determines whether a person will harmfully or dependently use a particular substance. As described above, dependence can be considered primarily a brain disorder, but one that interacts with a range of predisposing, precipitating, perpetuating and protective factors.

These factors can best be described in a framework in which the biological, psychological and social components are identified. This is discussed in detail in **Chapter 4.**

Examples of biological factors include chronic pain, which can result in a person seeking pain relief through the use of psychoactive substances (eg alcohol, cannabis); or exposure to dependence-forming medications.

Psychological factors include comorbid mental health problems such as depression, psychosis and personality disorder. Traumatic events, such as childhood sexual abuse, may also increase a person's vulnerability to subsequent use of psychoactive substances. Social factors include the availability of a particular substance; the nature of, and support provided by, a person's social network; peer pressure; and environmental factors such as housing and employment.

A range of evidence-based treatments are available to help people with harmful/dependent substance use, and some of these are discussed in **Chapters 8 to 10**. Each individual is unique, and treatment of harmful/dependent use should be planned with a clear understanding of the predisposing and protective factors.

1.2 The legal framework for illicit drugs

The development of drug policy in the UK is discussed in detail in **Chapter 5**.

The principal legislation regulating the control and supply of illicit drugs in the UK is the Misuse of Drugs Act 1971. This Act classifies drugs into three groups according to the perceived level of harm; the Act itself does not specify how certain drugs should be classified, but created a review board, the Advisory Council on the Misuse of Drugs (ACMD), with this purpose.[d] The current classification of drugs and associated penalties is shown in **Table 1**.[20] It is important to note that some of these controlled drugs will also have clinical uses. **Appendix 2** gives further details about the nature and addictiveness of these drugs, and **Appendix 3** gives details of health-related harms associated with illicit drug use.

d The ACMD makes recommendations to Government on the control of dangerous or otherwise harmful drugs, including classification and scheduling under the Misuse of Drugs Act 1971. These recommendations are non-binding, and have, on occasion, been ignored or rejected.

Table 1 – Classification of drugs and associated penalties for illicit (non-medical) use

Classification	Examples of drug type	Maximum penalty for possession	Maximum penalty for supply
Class A	Cocaine, crack cocaine, ecstasy (MDMA or 3,4-methylene-dioxymethamphetamine), lysergic acid diethylamide (LSD), heroin, methadone, methamphetamine, phencyclidine (PCP), psilocybin (magic mushrooms)	Up to 7 years in prison or an unlimited fine, or both	Up to life in prison or an unlimited fine, or both
Class B	Amphetamines, cannabis, methylphenidate (Ritalin®), codeine, pholcodine	Up to 5 years in prison or an unlimited fine, or both	Up to 14 years in prison or an unlimited, fine or both
Class C	Tranquillisers, some painkillers, gamma-hydroxybutyrate (GHB), ketamine	Up to 2 years in prison or an unlimited fine, or both	Up to 14 years in prison or an unlimited fine, or both

Source: Science and Technology Committee. *Fifth Report of Session 2005-2006. Drug classification: making a hash of it?* HC 1031. London: The Stationery Office, 2006, p8.[20]

The Misuse of Drugs Act states that it is an offence to:
- possess a controlled substance unlawfully
- possess a controlled substance with intent to supply it
- supply or offer to supply a controlled drug (even if it is given away free)
- allow a house, flat or office to be used by people for taking drugs.

In December 2009, the following drugs (commonly known as 'legal highs' or 'novel psychoactive substances') were also brought under control of the Misuse of Drugs Act 1971:
- synthetic cannabinoid receptor (see **Glossary**) agonists (including herbal smoking mixes such as Spice) (Class B)
- gamma-butyrolactone (GBL) (Class C)
- 1-benzylpiperazine (BZP) and related piperazines (Class C)
- oripavine (Class C).

Mephedrone and related cathinone derivatives, as well as naphthylpyrovalerone analogues, were classified as Class B drugs in 2010. The Drugs Act 2005 amended the Misuse of Drugs Act 1971 and the Police and Criminal Evidence Act 1984, to increase the powers of the police and courts in relation to drug control (see **Glossary**). It includes stronger measures to allow police to test drug offenders on arrest rather than at the time of charging, and requires those testing positive to undergo treatment.

In July 2011, the Government announced a ban on the importation of phenazepam – a harmful drug advertised as producing a 'legal high'– as well as its intention to control it as a Class C drug in 2012.[21] In November 2012, following advice from the ACMD, the Home Office announced its intention to classify new synthetic cannabinoids (such as those sold under the name 'Black Mamba'), and methoxetamine (sold as Mexxy/MXE) and its related compounds, under the Misuse of Drugs Act 1971.[22] Methoxetamine has been subject to a Temporay Class Drug Order (TCDO) since March 2012,[23] and will remain under this regulation until its classification under the Misuse of Drugs Act 1971 is approved. It is important to emphasise that that the development of new agents will inevitably run ahead of the Government's ability to amend the legislation.

International drug policy is regulated by three United Nations (UN) conventions: the 1961 Single Convention on Narcotic Drugs, as amended by the 1972 Protocol; the 1971 Convention on Psychotropic Substances; and the 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (see **Box 2**). As of March 2011, 183 states, including the UK, are parties to all three conventions. It is worth noting that many provisions in national legislation are not required by these international drug control treaties.

Box 2 – United Nations international drug control treaties

Single Convention on Narcotic Drugs 1961

The 1961 convention established a single model for international drug control, binding parties to limit the production, manufacture, export, import, distribution of, trade in, use and possession of drugs derived from opium poppies, coca leaves or cannabis exclusively to '*medical and scientific purposes*'. Over 100 illicit substances are placed in four schedules, nominally based on their perceived harmfulness. Limited flexibility is allowed in the interpretation and implementation in many areas of the legislation, which has allowed countries to respond to their specific circumstances. Legalisation (see **Glossary**) of any narcotic drugs listed in the convention is prohibited, and harm-reduction measures to reduce drug-related problems have often been argued against by the International Narcotics Control Board (INCB), which is the independent body established to oversee the UN drug control conventions.

Convention on Psychotropic Substances 1971

This convention was developed in response to increasing concern about emerging drugs and related behaviours during the 1960s, such as the use of amphetamine-like stimulants, barbiturates and other sedative-hypnotics/depressants, and hallucinogens. As with the 1961 convention, these drugs are classified into four schedules according to perceived harm and therapeutic value, with a corresponding hierarchy of controls to license medical, scientific or other uses. Market and trade controls and national requirements are less onerous than those under the Single Convention.

Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988

The 1988 convention strengthened the existing powers for prevention of international drug trafficking (including provisions against money laundering and the diversion (see **Glossary**) of precursor chemicals). It also included provisions to make the intentional possession, purchase or cultivation of narcotic drugs or psychotropic (see **Glossary**) substances for personal consumption a criminal offence under domestic law.

Source: www.unodc.org (accessed 1 October 2012).

Summary

- Substance use describes a wide range of different patterns of use, from harmless recreational use to life-threatening dependence.
- There is evidence of a neurobiological underpinning to dependence, and an association between biological, psychological and social factors. These factors create a framework within which an individual's predisposing, precipitating, perpetuating and protective elements can be used to plan the most effective treatments.
- Drugs of dependence, such as alcohol and tobacco, are at least as harmful as some illicit drugs, and their use in the UK is subject to a regulatory framework that covers various aspects of production, supply and consumption.
- The Misuse of Drugs Act 1971 in the UK and the three international conventions on international drug policy, to which the UK is a party, classify illicit drugs according to their perceived level of harm, and regulate their control and supply. Possession, purchase or cultivation of illicit drugs is illegal and thus a criminal offence in the UK.
- The priority of the medical profession is to support and treat the physical and mental health needs of drug users and those affected by others' drug use.
- Medical professionals are ideally placed to encourage a refocusing of debate on issues relating to dependent drug use and to influence national and global drug policy.

Chapter 2 – The scale of the problem: illicit drug use in the UK

Case study: The financial pressure of illicit drug use

The defendant was a 32-year-old man. As a teenager, he had been in a gang and had previous convictions for possession of dangerous weapons (knives), burglaries, street robberies (mainly mobile phones) and assault. Since the age of 22 he had kept out of trouble with the police. He had been in employment until two years ago, when he had been made redundant through no fault of his own. While in employment, he had frequently used drugs (Class A and B) recreationally but this had escalated to the point where he had become addicted. When he was made redundant he had no financial means to pay for the drugs, so his supplier had persuaded him that if he 'helped' him out by couriering drugs to users for him, he would then be given drugs for his own personal use free of charge. The defendant was very troubled by this offer but felt that he had little option. This arrangement continued until he was arrested in an undercover operation by a plain clothes police officer posing as a purchaser. By this time, the defendant had not only been acting as a courier for his supplier but had started to deal, in a modest way, on his own account. He made about £800 per week, but a part of this was then used to pay for drugs for his own use.

He was charged with possession with the intent to supply Class A and B drugs. He pleaded guilty and came before the Crown Court for sentencing.

The pre-sentence report from the Probation Service explained that he was a self-confessed addict who had taken a deliberate decision to supply drugs in order to raise the funds to satisfy his addiction. He had explained that his only real choice was either to go back to committing burglaries and robberies to raise funds, or to cooperate with his supplier. He did not think he had other realistic options open to him. He was desperate not to return to the cycle of violence that had characterised his life during his youth, so he had agreed to work with this supplier, which he viewed as the lesser of the two evils.

No person further up the supply chain, including the defendant's own supplier, was prosecuted. The defendant was given 18 months' custody.

Case study details provided by Nicholas Green QC, who has a special interest in the impact of drugs policy upon the administration of the justice system.

2.1 Prevalence and patterns of use

According to the UK Focal Point on Drugs,[a] it is estimated that in 2009-2010, 35.9 per cent of 16 to 59 year olds in the UK had used illicit drugs in their lifetime (ever), while 8.7 per cent had used drugs in the last year (recent use), and 5.0 per cent had used drugs in the last month (current use).[b,1] The EMCDDA defines problem drug use as '*injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamines*' (see **Glossary**).[2] In 2011, it was estimated that there were 379,262 people affected by problem drug use in the UK,[c] equivalent to a rate of 9.31 per 1,000 population aged 15 to 64 years, and representing approximately 10 per cent of all UK drug users.[1] In the same year, it was estimated that there were 133,112 people injecting drugs (primarily users of opioid drugs or crack cocaine).[1]

Data from various surveys[d] (see **Appendix 4**) provide a more detailed picture of patterns of illicit drug use in the UK:

- cannabis continues to be the most commonly used across all recall periods, followed by cocaine powder, ecstasy and amphetamines for recent and current use. In England and Wales in 2011-2012, 6.9 per cent of adults had used cannabis in the last year compared to 2.2 per cent who had used powder cocaine
- men are more likely to report drug use than women, across all age groups. In Scotland in 2010-2011, 5.3 per cent of men compared with 1.8 per cent of women reported the use of one or more illicit drug in the last month
- the extent of frequent use varies between drugs, with cannabis users most likely to report frequent use (more than once a month in the past year). Among respondents to the Northern Ireland Crime Survey who had reported taking cannabis in the last year, 34.1 per cent had used it at least once or twice a week in 2008-2009.[3-6]

a The UK Focal Point on Drugs is the national partner of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). It provides comprehensive information to the EMCDDA on the drug situation in England, Northern Ireland, Scotland and Wales.

b It is worth noting that the drug-use categories used in these surveys (ever, recent and current use) are not comparable with the the categories outlined in **Section 1.1.2** that describe the level of harm associated with drug use.

c The UK Focal Point on Drugs estimate of problem drug use in the UK is based on data from England for 2009/2010 for opiate and/or crack cocaine use; data from Scotland from 2006 for opiates and/or benzodiazepine use and drug injecting; data from Wales from 2009/10 for the injecting of opioids, cocaine powder and/or crack cocaine; and data from Northern Ireland from 2004 for problem opiate and/or problem cocaine powder use. For further details see Department of Health (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: Department of Health.[1]

d Data from general population surveys are subject to a number of limitations associated with self-reporting and sampling methodology. Specifically in relation to drug use, these surveys are likely to be under-representative as they commonly miss students and homeless people, who have a higher consumption rate than the general population. Further information on the limitations of general population surveys can be found at www.ons.gov.uk.

The age of first use of illicit drugs varies with drug type. According to the 2011-2012 British Crime Survey (BCS), the most common age of onset for cannabis use was 16 years, compared to 18 years for powder cocaine and ecstasy.[4] The 2010-2011 Scottish Crime and Justice Survey (SCJS) found that just over half of adults who had ever used drugs (51.3%) reported that late adolescence (16 to 19 years) was the age at which they first did so, and 24.7 per cent had first used them before the age of 16 years.[5]

The data suggest that, for a large majority of users, illicit drug use is a life phase during young years. Young adults aged under 35 years are much more likely than older adults to use drugs, with recent and current use highest in the under-25 age group.[3-6] Data from England for 2009-2010 show that the highest prevalence of problem drug use was in the age group 25 to 34 years, at a rate of 17.95 per 1,000 population, compared to a rate of 6.87 per 1,000 in the 15 to 24 years age group, and 6.65 per 1,000 in the 35 to 64 years age group.[7]

Polydrug use (having taken two or more illicit drugs within the same time period – see **Glossary**) is also commonly reported among drug users. In England and Wales in 2009-2010, 19.7 per cent of adults aged 16 to 59 years reported polydrug use in their lifetime, with 3.3 per cent reporting recent polydrug use, and 1.4 per cent reporting current polydrug use.[3] The drugs most commonly used by recent polydrug users were cannabis (83%), cocaine powder (65%), ecstasy (46%) and amphetamines (26%).[3] In Scotland, 34.3 per cent of adults who had used at least one illicit drug in the last month reported some kind of polydrug use in their lifetime.[5]

Concurrent use of illicit drugs and alcohol (polysubstance use – see **Glossary**) has also been found to be common. In England and Wales in 2009-2010, the proportion of recent drug users reporting concurrent harmful alcohol use was at least 90 per cent for all drugs, and as high as 98 per cent for cocaine powder and amyl nitrite.[3]

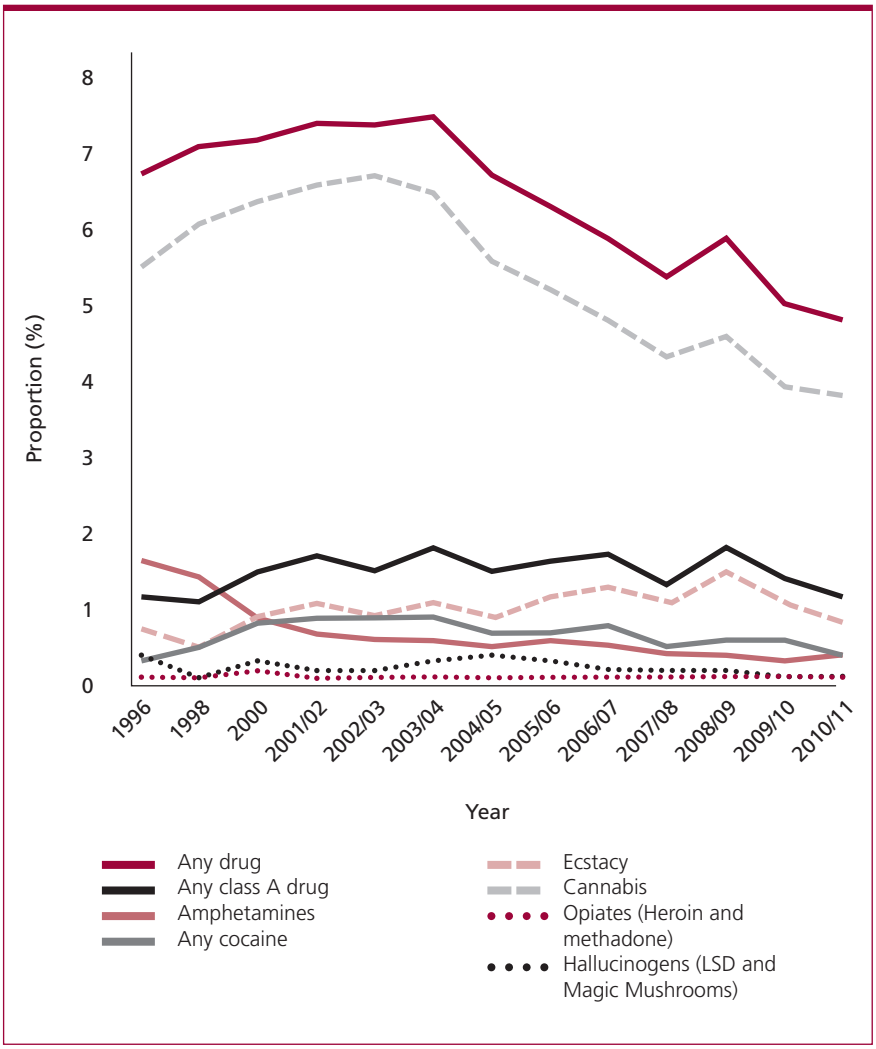
2.2 Trends in illicit drug use

Recent years have seen an overall long-term decline in illicit drug use in the UK. According to the BCS, the proportion of adults aged 16 to 59 years in England and Wales reporting current drug use decreased from 6.7 per cent in 1996 to 5.2 per cent in 2011-2012 (see **Figure 1**).[4] This has been mainly driven by the decrease in cannabis use (9.5% in 1996 compared to 6.5% in 2011-2012). Over this time period, use of opioid drugs has remained relatively stable, while use of ecstasy, amphetamine and hallucinogens (LSD and psilocybin (magic mushrooms)) has declined slowly.[4] Cocaine use has increased slightly over the total period, but has been in decline since 2008-2009.[4]

The BCS also shows that there has been a long-term downward trend in current drug use in the 16 to 24 years age group, largely due to a significant reduction in the use of cannabis and amphetamines (see **Figure 2**).[4] Similar trends have been reported in Northern Ireland and Scotland.[5,6]

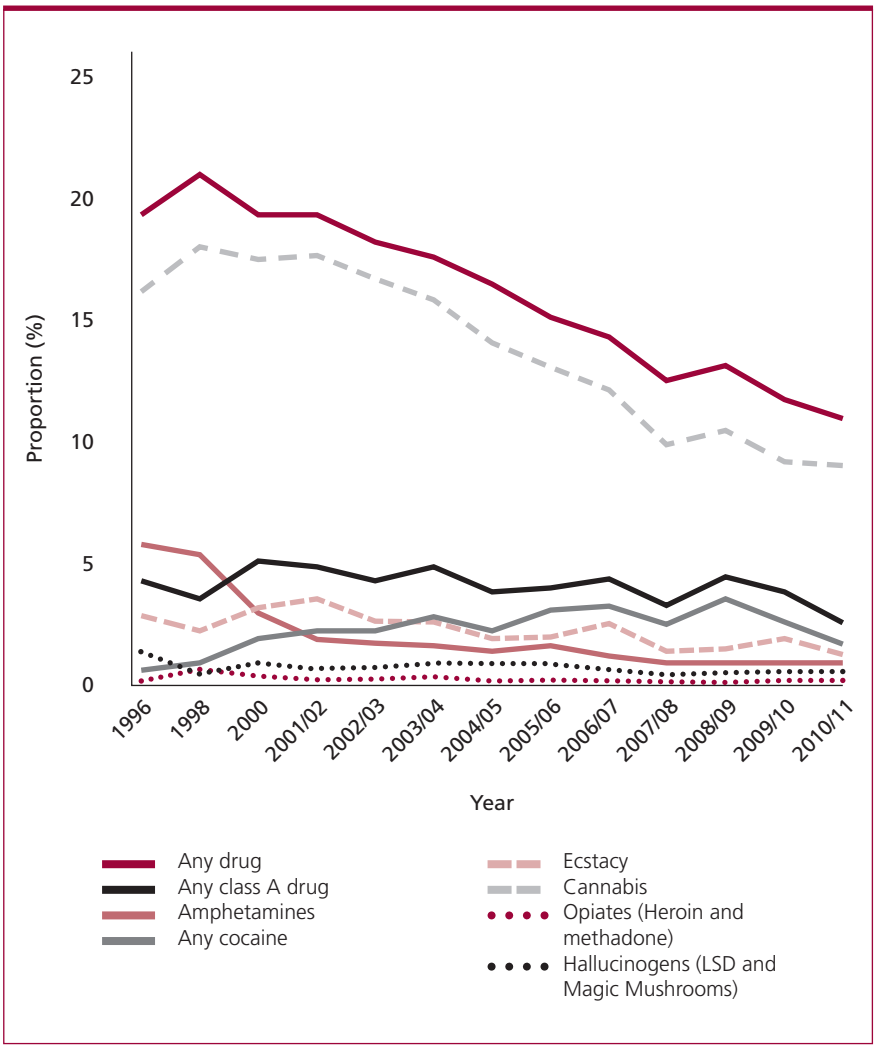
The number of problem drug users aged 15 to 64 years in the UK is approximately 10 per cent of all drug users. It has increased from 357,160 (9.26 per 1,000 population) in 2006 to a peak of 404,884 (10.10 per 1,000 population) in 2009, an increase of 9.07 per cent.[1] This has since declined to 379,262 people (9.31 per 1,000 population).[1] It is worth noting that, while current use of illicit drugs in the UK has been declining since the 1990s, trends (outlined elsewhere in this report, see **Sections 3.3, 3.4** and **5.10**) in problem drug use, drug-related deaths, recorded drug law offences and the number of people in/expenditure on drug treatment, are not showing a long-term decline, and in many cases are increasing. This has important policy implications, which are discussed in more detail in **Chapter 11**.

Figure 1 – Proportion of 16 to 59 year olds reporting having used drugs in the last month, England and Wales, 1996 to 2010-2011



Source: Home Office (2012) *Drug misuse declared: findings from the 2010/11 British Crime Survey. England and Wales* (2e). London: Home Office.[4] Reproduced under the terms of the Open Government Licence for public sector information.

Figure 2 – Proportion of 16 to 24 year olds reporting having used drugs in the last month, England and Wales, 1996 to 2010-2011



Source: Home Office (2012) *Drug misuse declared: findings from the 2010/11 British Crime Survey. England and Wales* (2e). London: Home Office.[4] Reproduced under the terms of the Open Government Licence for public sector information.

2.3 Young people and use of illicit drugs

Use of illicit drugs among young people under the age of 16 years broadly mirrors that of the UK adult population. According to *Smoking, drinking and drug use amongst young people in England 2011*, 12 per cent of 11- to 15-year-old pupils reported taking drugs in the last year, and 6 per cent did so in the last month.[8] Similar proportions of boys and girls had ever taken drugs or used drugs in the last year, while slightly more boys reported taking drugs in the last month compared to girls (7% and 5% respectively).[8] There has been a broad decline in drug use in 11 to 15 year olds since 2001.[8]

The survey also found that:

- 11- to 15-year-old pupils were most likely to have taken cannabis (7.6% in the last year), or to have sniffed glue, gas or other volatile substances (3.5%)
- 2.3 per cent of pupils reported taking a Class A drug in the last year
- most pupils who took drugs did so relatively infrequently: 3 per cent had only ever taken drugs once in the last year, 3 per cent said they had taken them on two to five occasions, and 1 per cent reported having taken drugs on six to ten occasions. Repeated drug use, on more than ten occasions was reported by 3 per cent of pupils
- those pupils reporting Class A drug use were more likely to take drugs at least once a month.[8]

The 2005-2006 cross-national Health Behaviour in School-aged Children (HBSC) study found that of the 41 countries and regions surveyed, use of cannabis among 15 year olds was particularly high in North America, the UK, France, Spain and Italy, especially among boys.[9] The 2007 European School Survey Project on Alcohol and other Drugs (ESPAD) found that in Europe, UK teenagers were among the most likely to report recent and current use of cannabis, and were above the European average reported level for lifetime use of illicit drugs other than cannabis.[10]

2.4 Emerging trends

The use of a range of new substances – commonly referred to as 'legal highs' – is becoming increasingly prevalent in night-life settings and among specific populations such as the lesbian, gay, bisexual and transgender (LGBT) community. These include GBL, BZP, oripavine, mephedrone,[11] a number of anabolic steroids and growth promoters, and herbal smoking mixes such as Spice (see **Appendix 2**). As these were only recently brought under control of the Misuse of Drugs Act 1971, there is only limited information on their use in the general population. As a result of this control, the term 'legal highs' is no longer appropriate and the ACMD favours the term 'novel psychoactive substances'. A significant rise in the use of mephedrone was reported in 2009, which led to its control under the Misuse of Drugs Act 1971 in 2010.[11] The 2011-2012 Crime Survey for England and Wales found that 1.1 per cent of adults aged 16 to 50 years reported using mephedrone in the last year, compared to

0.1 per cent for Spice and other cannabinoids and 0.1 per cent for BZP.[4] The level of reported mephedrone use (1.1%) in this age group was similar to that for ecstasy. Younger adults (aged 16 to 24 years) were more likely to have used recently classified drugs in the last year than adults aged 25 years and over.[3] For adults aged 16 to 24 years, the level of mephedrone use (3.3%) was the same as for ecstasy, the third most taken drug within this age group.[4]

There is emerging evidence that novel psychoactive substances are increasingly being sought as an alternative to ecstasy.[1] In light of the rate at which these new substances are coming onto the market, it is not yet clear whether they will be more or less harmful than the psychoactive substances already commonly used.

2.5 Attitudes to illicit drug use and policy in the UK

Public attitudes to illicit drug use and policy have varied over time. While there has been limited systematic research in this area, a number of surveys and polls provide an indication of public opinion on drug use.

A 2004 review of the international evidence of attitudes to drug policy concluded that support in the UK for relaxing the laws on cannabis had grown considerably over the last decade, among the general population (particularly men) and various professional groups (notably the police, doctors and MPs).[12] It found that more than four in five people supported rescheduling cannabis to allow medical use,[e] and a substantial minority believed in reforming the laws on personal use – including up to one in two who supported decriminalising or legalising possession (see **Glossary** for a detailed description of these terms), and about one in four who endorsed some form of legalised supply.[14] Support for legalisation of any other drug was found to be no higher than 10 per cent in general population surveys, though it has been notably higher among surveys of some sections of the young adult population (eg dance-clubgoers, students, drug users).[14]

Two recent YouGov surveys (in 2006 and 2011) have considered the attitudes of the general public to drugs:[f]

- in 2011, 48 per cent of all respondents agreed that drug use was a serious problem that affects practically the whole country, compared to 51 per cent in 2006
- in 2011, 59 per cent felt that, where individuals use drugs but have not committed any other crime, they should be treated as people who may need medical treatment and other forms of support, compared to 62 per cent in 2006

e The BMA report *Therapeutic uses of cannabis*, published in 1997, concluded that although cannabis is unsuitable for medical use, individual cannabinoids have a therapeutic potential in a number of medical conditions in which present drugs or other treatments are not fully adequate.[13]

f The 2007[14] and 2011[15] surveys on behalf of the Royal Society for the encouragement of Arts, Manufactures & Commerce (RSA) Commission on Illegal Drugs, Communities and Public Policy, were of 2,938 and 2,928 adults in Great Britain, respectively.

- in 2006, 58 per cent of all respondents said that possession of 'soft' drugs, such as cannabis, for personal use should be treated as a lesser offence or not treated as an offence at all
- in 2006, 80 per cent of all respondents considered that people's knowledge of the ABC classification had little or no impact on their choice of which drugs, if any, to use
- in 2006, 10 per cent of drug users said they had held back from seeking treatment, because of the stigma of illegality
- in 2011, 53 per cent of all respondents believed that the Government's approach to illegal drugs was totally ineffective.[14,15]

A number of other surveys have found that the attitudes towards illicit drug use, in particular opioid and cannabis use, have changed since the start of the 21st century.[16,17] There is a trend towards better understanding of the health harms associated with drug use and greater agreement with maintaining the illegal nature of drugs.[16,17]

The 2009 Scottish Social Attitudes (SSA) survey found that 34 per cent of respondents believed that people in possession of small amounts of cannabis should not be prosecuted, while support for the legalisation of cannabis fell from 37 per cent in 2001 to 24 per cent in 2009.[17] Similar views were found in the 2009 British Social Attitudes (BSA) survey, which reported that 58 per cent of participants felt that cannabis should remain illegal, compared to 46 per cent in 2001.[16]

This change in attitudes is also reflected in the views about the harms of illicit drug use and its acceptability. The proportion of respondents to the 2009 BSA survey who supported the statement '*cannabis isn't as damaging as some people think*' decreased from 46 per cent in 2001 to 24 per cent in 2009.[16] The 2009 SSA survey found that the number of respondents who disagreed with the statement '*using illegal drugs should be accepted as a normal part of some people's lives*' increased from 40 per cent in 2001 to 57 per cent in 2009.[17] This was particularly noticeable in the age group 18 to 24 years, where disagreement with the statement increased from 48 per cent in 2001 to 86 per cent in 2009.[17] Other findings from the SSA include:

- individuals who reported ever having used drugs and/or to have had indirect experience of drug use (through family and friends) were more liberal in their attitudes towards drug use
- 54 per cent of respondents agreed with the statement that taking cocaine occasionally is '*very seriously wrong*'
- 45 per cent of respondents thought that persistent heroin users themselves were to blame for their problems with heroin
- 29 per cent of respondents agreed with the statement '*most users come from difficult backgrounds*'.[17]

In relation to young people's attitudes to illicit drug use, this varies depending on drug type. *Smoking, drinking and drug use amongst young people in England 2011* found that relatively small proportions of pupils thought it was acceptable for someone of their age to try cannabis (9%), sniffing glue (7%) or taking cocaine (2%). Even smaller proportions thought it would be acceptable for someone their age to take any of these drugs once a week (cannabis 4%, sniffing glue 2%, cocaine 1%).[8]

2.6 International perspectives

According to the UNODC *World Drug Report 2012*, approximately 230 million people (5% of the population aged 15 to 64 years) worldwide used illicit substances at least once in 2010.[18] By comparison, 10 per cent of 16 to 59 year olds in the UK had used drugs in the last year.[1] Cannabis users comprise the largest number of users of illicit drugs (119 to 224 million people and an annual prevalence between 2.6% and 5% of the global population aged 15 to 64 years), followed by users of amphetamine-group substances (including amphetamine, methamphetamine and ecstasy), cocaine and opioid drugs.[18] It is estimated that there were 27 million problem drug users in the world in 2010, representing between 10 and 13 per cent of all people who used drugs that year.[18] This is similar to the ratio of problem drug users to total drug users in the UK (see **Section 2.1**).

Information on the global drug markets provides an indication of recent global trends. Behind North America, Europe is the second largest cocaine market, with the UK highest within Europe, followed by Spain, Italy, Germany and France.[18] Recent data suggest that the rapid growth of the European cocaine market is beginning to level off in the majority of the larger markets, except in the UK, where consumption is increasing.[18] While western Europe is the second largest heroin market worldwide – consisting predominantly of the markets in the UK, Italy and France – heroin use is declining in most west European countries.[18] There is limited information on the international cannabis market, as much of the drug is produced locally. The most notable global trend is the growth of indoor cultivation, in particular in Europe, Australia and North America.[18]

Summary

- There has been a long-term downward trend in illicit drug use in the UK, although use of cocaine has increased slightly. In 2009-2010, 5 per cent of 16 to 59 year olds in the UK population were current drug users (had used drugs in the last month).
- Men are more likely than women to report drug use and current use is highest in the under-25 age group.
- International evidence suggests 10 to 13 per cent of all people who use drugs worldwide are problem drug users. Problem drug use affects approximately 10 per cent of all UK drug users, with the highest levels in the 25 to 34 years age group.
- Cannabis is the most commonly used drug, followed by cocaine powder, ecstasy and amphetamines.
- After North America, Europe is the next largest cocaine market and the UK is the largest market in Europe.
- In Europe, UK teenagers are among the most likely to report recent and current cannabis use, and are above the European average reported level for lifetime use of other illicit drugs.
- There are few reliable data on novel psychoactive substances, gamma-butyrolactone (GBL), 1-benzylpiperazine (BZP), mephedrone, oripavine, anabolic steroids, Spice, etc), which have only been controlled under the Misuse of Drugs Act 1971 since 2009, but they appear to be used more by younger age groups and as an alternative to ecstasy.
- Around half the UK population surveyed considers drug use is a serious problem; and slightly more believe drug users should be treated as individuals needing medical treatment or other support.
- A majority of those interviewed in the British Social Attitudes survey in 2011 believed cannabis should remain illegal and is harmful; this has increased since 2009.
- A majority interviewed for the Scottish Social Attitudes survey thought illegal drug use should not be accepted as a normal part of some people's lives and the proportion has also increased from 2001 to 2009; this is particularly noticeable in the 18 to 24 years age group. Less than 10 per cent of pupils interviewed in England in 2010 thought use of any illicit drugs was acceptable.
- Over half the UK population interviewed in 2011 believed the Government's approach to illicit drug use is totally ineffective.

Chapter 3 – The burden of illicit drug use

3.1 Introduction

The use of illicit drugs – particularly strongly addictive drugs like heroin, cocaine and methamphetamine – is associated with a range of physical, psychological and social harms. This can include deaths from overdose, long-term adverse effects on health, dependence, and harms to families and communities. This chapter considers the harms associated with drug use per se. The harms associated with the regulatory framework of drug prohibition are considered in **Chapter 6**.[a]

Not all illicit drugs are equally harmful and the extent of harm varies between individuals and depends on the level and pattern of drug use, as well as the pharmacological properties of each drug. Harm is also influenced by the setting in which the substances are used and the combination of substances used.

The level of harm is affected by:

- the **dosage of the drug** – the more of a drug that is taken on a specific occasion, the higher the risk of the user experiencing acute effects, including intoxication and overdose. The greater the amount taken over time, the higher the risk of chronic toxic effects. An additional risk with illicit drugs is that a user may be unaware of the exact dose they are taking; a dose that is higher than expected will increase the risk of harm or fatality
- the **pattern of drug use** – which is determined by the frequency and variability of drug use
- the **mode of administration** – which depends on the way the drug is ingested (eg swallowed, snorted, injected, etc).[1]

The level of harm will also be affected by the purity of the drug. Many illicit drugs are commonly found to contain adulterants that can increase the risk of morbidity and mortality (see **Section 3.3.4**).

a While we discuss the harms from drug use per se and those from prohibition and other social reactions to drug use separately, it is worth noting that in practice there is often a mixture.

3.2 Measuring the level of harm

In the last two decades, there have been a number of attempts to measure and rank the relative level of harm associated with different psychoactive substances.[2-7] These have used various measures of harm, including a drug's safety ratio (usual effective dose for non-medical purposes divided by the usual lethal dose), intoxicating effect, general toxicity, social dangerousness, dependence potential and social and healthcare costs. It is worth noting that, while these evaluations do not directly consider the epidemiology of the respective drugs, some of the criteria (eg the harm that a drug causes to those other than the user) indirectly take account of the number of users.

In 2010, a Dutch addiction medicine expert group conducted a risk assessment of 19 recreational drugs (17 illicit drugs plus alcohol and tobacco), and ranked them on the basis of acute and chronic toxicity, addictive potency and social harm.[8] The study ranked alcohol, tobacco, heroin, crack cocaine and methamphetamine as being most harmful, with benzodiazepines, GHB, cannabis, ecstasy and ketamine scoring in the moderately harmful range.[8] Psilocybin (magic mushrooms), LSD and khat were regarded as the least harmful of the drugs in the study.[8]

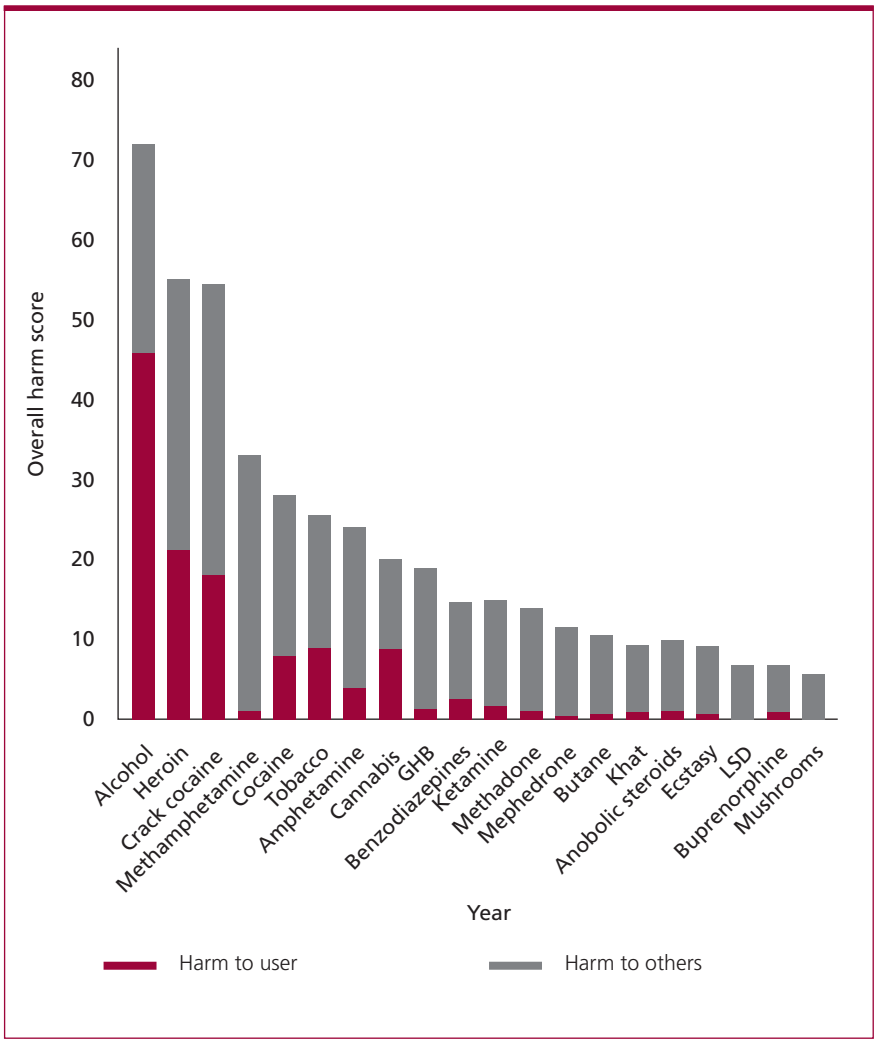
Similar conclusions were made in a 2010 study by Nutt and colleagues.[2] This study involved a multicriteria decision analysis of the level of harm associated with the use of different drugs in the UK. Each drug was scored out of 100 points based on 16 criteria, nine of which related to the individual harms, and seven to the harms caused to others.[2] The study found that heroin, crack cocaine, and methamphetamine were the most harmful drugs to individuals.[2] Alcohol, heroin, crack cocaine and cannabis were scored as the most harmful to others.[2] Overall, the most harmful drug was found to be alcohol, followed by heroin, crack cocaine, methamphetamine and cocaine (see **Figure 3**).[2]

Nutt et al and the authors of the Dutch study concluded that their findings on the relative levels of harm for the different drugs correlated poorly with the legal classification of drugs;[2,8] legal substances such as tobacco and alcohol were found to be at least as harmful as commonly used illicit drugs.

It is important to note that the methodology for these studies evaluating and ranking drug harms has been questioned by Rolles and Measham[9] and Caulkins et al.[10] This primarily concerns the difficulty in quantifying the multiple and non-comparable dimensions of harm in a single measure, and the failure to disaggregate harms related to drug use from those related to drug user behaviours and the policy environment.[9,10] Several rebuttals were published in response to the critique by Caulkins et al (including from the principal author of the 2010 study, Professor David Nutt). These noted that the importance of developing new approaches to ranking

drug harms was to progress the debate among policy makers and the public regarding the validity of the way illicit drugs are classified.[11-15]

Figure 3 – Drugs ordered by their overall harm scores, showing the separate contributions to the overall scores of harms to users and harm to others



Reprinted from Nutt DJ, King LA & Phillips LD (2010) Drug harms in the UK: a multicriteria decision analysis. *The Lancet* **376**: 1558-65,[2] ©2010, with permission from Elsevier.

3.3 Primary and secondary health harms

The primary health harms associated with illicit drug use result from the acute and chronic toxic effects of individual drugs, as well as drug dependence (ie where the risk of harm is intrinsically raised due to the chronic drug use). Acute toxicity can lead to short-term harms, ranging from unpleasant side-effects such as vomiting and fainting, to more serious impacts such as seizures, tissue and neural damage or death. In the longer term, repeated drug use can lead to chronic physical and psychological health effects, as well as dependence.

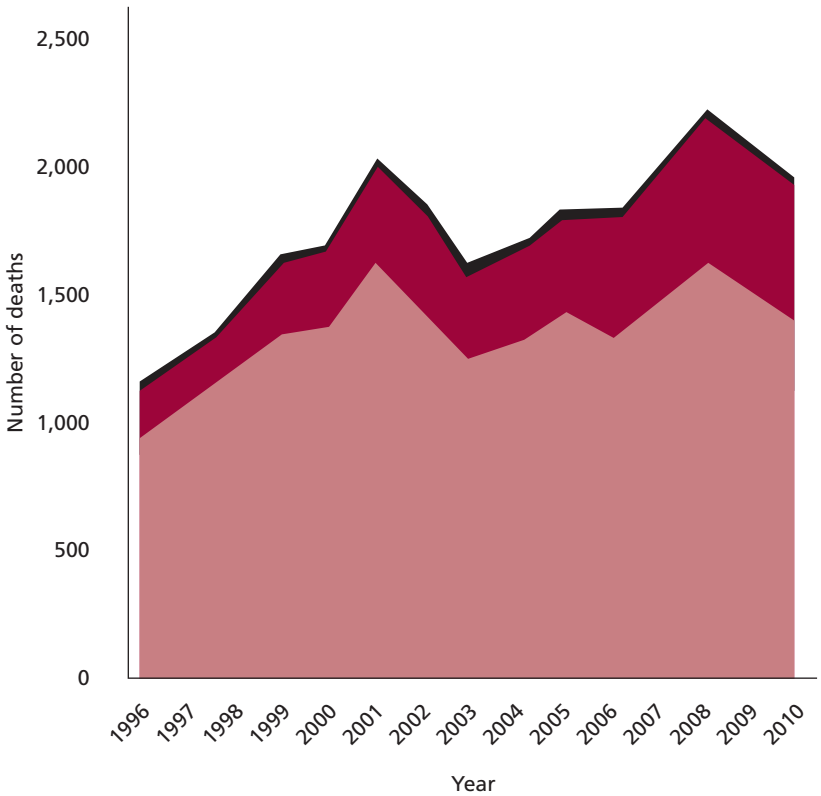
3.3.1 Drug-related deaths: overdoses, poisoning and suicides

While **Section 2.2** notes that current use of illicit drugs in the UK has been declining since the 1990s, the number of recorded drug-related deaths[b] in the UK increased by 67.5 per cent between 1996 and 2010, with year-on-year fluctuations (see **Figure 4**).[17] In 2010, there were 1,930 drug-related deaths, equivalent to a rate of 3.10 per 100,000 population (all ages).[17] The vast majority of these were among men (79.4%) and the rate was highest in the 35 to 39 years age group. Deaths in all age groups decreased from the previous year, with the exception of the oldest age group (60 plus years) (see **Figure 5**). The largest decrease was seen among those aged 20 to 29 years (25.6%). The difference in trends for the 20 to 29 and 40 to 49 years age groups in **Figure 5** (with an ageing trend observed among overdose deaths) suggests there may be an ageing cohort effect.

Most of the drug-related deaths in the UK continue to be linked to the use of opioid drugs, primarily heroin/morphine and methadone, followed by cocaine and ecstasy (see **Table 2**).[17] Overdoses related to opioid use are predominantly caused by respiratory depression, while cocaine-related deaths usually result from myocardial infarction or stroke, and ecstasy-related deaths from hyperthermia or hyponatraemia and reduced resilience to other concurrent threats (see **Appendix 3** for more details).[1] It is worth noting that some categories of illicit drugs, including cannabis, present no risk of death by overdose.

b Defined as deaths caused directly by the consumption of at least one illegal drug. Interpretation of these data should be treated with caution, as death certificates do not always state specific drug types, which could lead to under-reporting, or deaths may be counted in more than one category.

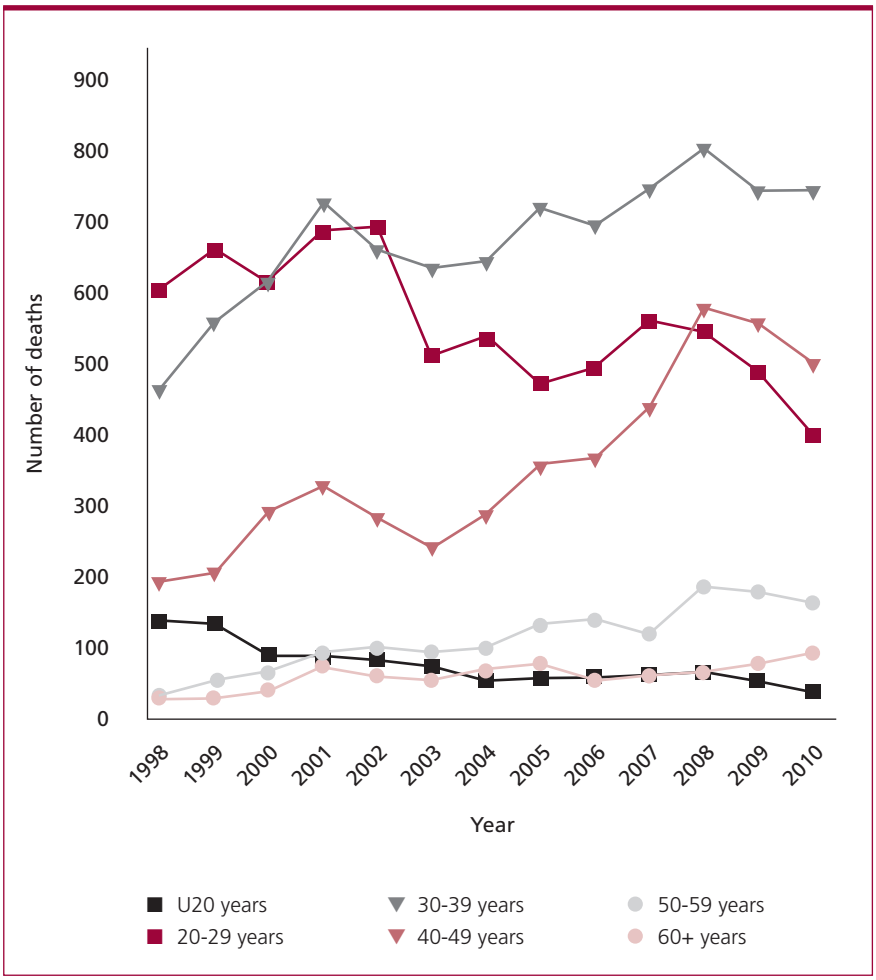
Figure 4 – Drug-related deaths in the UK, 1996 to 2010



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Northern Ireland	9	6	13	19	15	11	29	21	10	31	39	36	38	35	42
Scotland	208	188	230	272	318	376	417	331	387	352	416	450	556	532	479
England & Wales	935	1,064	1,202	1,353	1,374	1,608	1,417	1,243	1,294	1,429	1,345	1,486	1,637	1,525	1,409

Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Figure 5 – Drug-related deaths by age group in the UK, 1998 to 2010



Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Table 2 – Drug mentions on death certificates in the UK, 2002 to 2010

Drug	Year									Percentage change (2002-10)
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Heroin	1,118	883	977	1,043	985	1,130	1,243	1,210	1,061	–5.1
Methadone	300	292	300	292	339	441	565	582	503	+67.6
Cocaine	161	161	192	221	224	246	325	238	180	+11.8
Ecstasy	79	66	61	73	62	64	55	32	9	–88.6

Source: Davies C, English L, Stewart C et al (2011) *United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2011*. London: United Kingdom Focal Point at the Department of Health.[17] Reproduced with the permission of the UK Focal Point on Drugs, Department of Health.

Various studies have estimated that the annual death rate for 'high-risk' drug users, such as those who illegally inject opioid drugs, is between 1.1 per cent and 2.0 per cent.[18-21] Increased risk of death from drug overdose has also been found to be associated with poverty, homelessness, polydrug and polysubstance use (see **Glossary**), impaired physical health, depression and a previous history of drug overdose.[21-23] Illicit drug users are known to have higher rates of completed and attempted suicide compared to the general population, and this is associated with psychopathology, family dysfunction, social isolation and polydrug use.[21]

3.3.2 Short- and long-term health harms

Illicit drug use can lead to a range of short- and long-term adverse health impacts.[24-26] A detailed overview of the latest scientific evidence about the health-related harms of emerging and established licit and illicit psychoactive drugs commonly used in the UK is provided in **Appendix 3**.

Amphetamine and methamphetamine

Acute and chronic amphetamine and methamphetamine use is associated with a wide range of complications, although their incidence is unclear.[27] These complications include:

- cardiovascular disorders
- central nervous system (CNS)/psychiatric complications
- pulmonary disorders
- gastrointestinal complications
- metabolic disorders.[26,28,29]

Deaths from amphetamine and methamphetamine use are reported, but are relatively uncommon.[30,31]

Psychological dependence on amphetamine occurs in 30 to 40 per cent of repeated users,[24] but cessation of use is not associated with any physical symptoms. The use of methamphetamine (injected or smoked) in its crystal form (crystal meth) is also associated with a high potential for psychological as well as physical dependence.[25,32-36]

Cannabis

The effects of cannabis are dependent on the strength and type used. Acute cannabis intoxication (at high doses) can result in anxiety and panic attacks, paranoia, dysphoria, cognitive impairment, perceptual distortions and confusion/delirium.[24,26]
Death caused directly by an overdose of smoked cannabis is not possible. Chronic use is associated with impaired pulmonary function, recurrent bronchitis, worsening of asthma and lung cancer (from carcinogens in cannabis and tobacco smoke).[c] Animal studies suggest that heavy use may cause disruption of ovulation, sperm production and sperm function.[24,26,39,40]

Cannabis use is also associated with psychological harm, although there is considerable scientific disagreement regarding the relationship between the two. There is broad agreement in the medical community that:

- regular heavy users may suffer repeated, short episodes of psychosis and effectively maintain a chronic psychotic state

c The evidence for the association between cannabis and lung cancer is unclear, owing to the difficulty in ruling out tobacco use as a confounder. Some studies report an increased risk,[37] while other studies find no link.[38]

- cannabis use may trigger relapse or exacerbate existing symptoms in patients with schizophrenia, and may precipitate psychotic symptoms in individuals predisposed to developing schizophrenia. At an individual level, cannabis users have a two-fold increase in the relative risk for later developing schizophrenia, while at a population level, the effect size is relatively small, as eliminating its use in those at risk would reduce the incidence of schizophrenia by 8 per cent.[24,41-45]

Emerging evidence also suggests that heavy cannabis use by adolescents increases the risk of depression and schizophrenia in later life, especially in individuals who already have a vulnerability to develop a psychiatric syndrome.[46-48] Regular cannabis use during adolescence has also been found to result in declines in intelligence quotient (IQ). A 2012 study found that persistent regular cannabis use over 20 years was associated with neuropsychological decline broadly across the domains of functioning (ie executive function, memory, processing speed, perceptual reasoning and verbal comprehension).[49] This effect was concentrated among adolescent-onset users, and the cessation of cannabis use did not fully restore neuropsychological functioning in this group.[49]

Approximately 10 per cent of people who have ever used cannabis develop features of dependence, which is associated with chronic regular use and may be physical or psychological.[24]

Cocaine and crack cocaine

Cocaine use is linked to a high incidence of cardiac arrhythmias and sudden death from overdose, mainly owing to cardiovascular and cerebrovascular complications.[50-61] The risk of cocaine toxicity is influenced by concomitant use of other drugs, in particular alcohol and heroin.[61] Many deaths caused by cardiovascular complications occur in individuals with pre-existing risk factors or conditions induced by chronic cocaine use, such as left ventricular hypertrophy, coronary atherosclerosis or vascular malformations in the brain.[62,63]

While cardiovascular and cerebrovascular complications are the most common adverse health consequences,[64] acute and chronic cocaine use can also lead to:

- respiratory disorders, either acute (pulmonary oedema, pulmonary infarction, haemoptysis) or chronic (eg pulmonary hypertension)
- genitourinary and obstetric disorders, either acute (acute renal failure, mediated by rhabdomyolysis or direct toxicity, testicular infarction, placental abruption, spontaneous abortion) or chronic (premature birth, growth retardation)
- gastrointestinal complications (mesenteric ischaemia or infarction)
- psychiatric disorders (euphoria, dysphoria, agitation, anxiety, suicidal thoughts, paranoid psychosis, depression)
- musculoskeletal and dermatological disorders.[62]

Ecstasy

The incidence of serious acute adverse events related to ecstasy use is low and their occurrence is unpredictable.[65,66] Ecstasy-related deaths have received a lot of media attention,[67] but they are rare and usually result from hyperthermia or acute hyponatraemia (where a user drinks too much water to avoid dehydration), which can ultimately lead to cerebral oedema.[66,68]

In the short term, regular use of ecstasy can lead to sleep problems, lack of energy, dietary problems and increased susceptibility to colds and flu. It is also associated with a range of psychological effects, including anxiety, visual hallucinations and paranoia.[24] In the longer term, ecstasy can cause psychological dependence as users seek the feelings of euphoria and calmness associated with its use.[24,68,69] There is little evidence for long-term physical dependence associated with ecstasy.[68]

There is also little evidence of longer-term harm to the brain in terms of either its structure or function.[66] There is some evidence for a small decline in a variety of domains, including verbal memory, even at low cumulative doses.[68,70,71] The magnitude of such deficits appears to be small and their clinical relevance is unclear.

GHB

Use of GHB at high doses can lead to overdose, which is commonly associated with acute complications such as unconsciousness, vomiting, tremors, headache and confusion.[72-74] Severe intoxication can lead to deep coma and breathing difficulties, and GHB-related deaths have been reported in rare cases.[75] As well as developing psychological dependence, users can become physically dependent on GHB.[76,77] Although this is rare, it can be severe, with a rapid onset of severe withdrawal symptoms including delirium, psychosis, tremor, insomnia and severe anxiety.[78] Dependence can develop from severe bingeing over a short period, or may result from regular use over a longer period.

Adverse effects of the related drugs GBL and 1,4-butanediol (1,4-BD) are listed in **Appendix 3**.

Heroin and other opioid drugs

As noted previously, opioid overdose is the most common cause of drug-related death in the UK (predominantly from respiratory depression and drop in blood pressure resulting in respiratory arrest).[17] A number of common correlates of overdose fatality have been identified, which include:

- a long history and high level of opioid dependence
- recent abstinence (eg prison, detoxification release)
- polydrug or polysubstance use (particularly with alcohol, which seems to be a factor in approximately half of overdoses, and benzodiazepines)
- being male
- increasing age (most fatalities occur among those in their 30s)
- social isolation
- neurocognitive deficits.[26]

As discussed in **Sections 3.1** and **3.3.4**, the strength and purity of the drug also affect the risk of overdose.

In the short term, acute intoxication causes a range of common side-effects (eg nausea, vomiting, constipation, drowsiness and mental confusion), and in some cases hallucinations, dysphoria, sweating and itching.[26] Rare features of acute intoxication include complications associated with non-fatal overdose (eg hypoxia causing brain damage), and disease of the white matter of the brain (leukoencephalopathy) resulting from inhalation of heroin vapours.[26]

Chronic use of opioids is associated with an increased risk of mortality (from overdose and route-specific hazards – see **Section 3.3.5**), and a suicide rate that is higher than that of the general population.[26,79,80] A number of chronic complications can also occur, which include:

- constipation, dry mouth, menstrual irregularity, malnutrition, anorexia, tooth decay, decreased sexual desire and performance
- respiratory diseases (asthma, chronic obstructive pulmonary disease)
- modest suppression of hormone levels
- suppression of the immune system, social deprivation and malnutrition.[26]

Opioid dependence is characterised by profound psychological and physical dependence and can develop through use of heroin, opium and other illicit opioids, as well as prescribed medications such as methadone and buprenorphine. When untreated, approximately 30 per cent of heroin-dependent individuals will have died by 10 years from overdoses,[24] or as a result of secondary complications, as described in **Section 3.3.5**. Those on prescribed heroin do not have a lower life expectancy. Individuals who are opioid dependent are five times more likely than the general population to have a depressive disorder, and three times more likely to be affected by

an anxiety disorder.[24] It is unclear whether this is a causal relationship. Withdrawal from opioid dependence is rarely life threatening, but can lead to a range of unpleasant symptoms (eg nasal discharge, sweating, sleep disturbance, anorexia, restlessness, irritability, tremor, weakness, depression, nausea, vomiting, abdominal cramps, muscle spasms and diarrhoea).

Hallucinogens (including LSD and psilocybin)

The hallucinogenic effects of LSD and psilocybin (magic mushrooms) vary, depending on the dose, and the situation the user is in. In the short term, their use leads to an increased risk of accidental death, violence and injuries, owing to perceptual distortions and impaired decision making.[26]

A range of acute psychological/psychiatric effects are associated with the use of these hallucinogens:

- dysphoria
- distortions in shapes and colours
- illusions, delusions
- anxiety, panic, depression
- dizziness, disorientation and impaired concentration
- frequent mood changes
- recall of psychologically troubling memories
- short-lived psychotic episode (hallucinations, paranoia)
- precipitation of relapses in schizophrenia.[26]

Chronic use of LSD and psilocybin (magic mushrooms) can lead to depression and feelings of isolation or delirium, and brief flashbacks or recollection of previous hallucinatory experience may occur days or months after use.[26] In rare cases, it can also cause persistence of low-level hallucinations, known as hallucinogen persisting perception disorder.[26] Only a few users of hallucinogens experience signs or symptoms of dependence.[26]

Adverse effects of the hallucinogens mescaline and *N*,*N*-dimethyltryptamine (DMT) are listed in **Appendix 3**.

Ketamine and phencyclidine

Ketamine and PCP are dissociative anaesthetics that can cause loss of coordination and control.[81] This can lead to an increased risk of death and injury as a result of accidents, as well as respiratory depression, loss of consciousness and coma.[26] There have been rare reports of overdose deaths from heart attack or respiratory problems associated with the use of ketamine, while PCP can cause death as a result of hyperthermia and convulsions.[26] The use of these dissociative anaesthetics can also lead to acute and chronic psychological and psychiatric symptoms such as hallucinations, impaired

attention and cognitive functioning, confusion, panic attacks and paranoia, depression, and extreme loss of motor skills (catatonia).

Chronic heavy use of ketamine can lead to ulcerative cystitis (marked thickening of the bladder wall and severe inflammation)[82-84] and abdominal pain.[26] There is limited evidence that ketamine dependence and tolerance may occur among regular heavy users, but there is no evidence to suggest withdrawal symptoms. There is also some evidence that dependence and withdrawal syndrome can develop with chronic PCP use.[26]

Other psychoactive drugs

Adverse effects of nitrites; novel psychoactive substances such as substituted cathinones, 2C series phenylalanines and tryptamine derivatives; khat; and *Salvia divinorim* are all listed in **Appendix 3**.

Polydrug use

Polydrug use or the combination of illegal drugs with alcohol (polysubstance use) can lead to an increased risk of serious health harm and death. This can result from pharmacokinetic factors (eg reduced metabolism) or drug interactions, or directly from the drugs' toxic effects. The use of one psychoactive substance can also lead to increased risk behaviour with another substance (eg alcohol use may reduce the capacity to judge the amount of opioids consumed).

Many of the drug-related deaths that occur among problem drug users, which most commonly involve opioid overdose, are also linked to polydrug use (including tobacco and alcohol).[85] Chronic polydrug use can also lead to increased mortality from other diseases, as the continued use of several substances leads to longer-term toxicities in various organs or body systems.[86]

A specific example of chronic health damage resulting from polysubstance use is the high prevalence of tobacco smoking among individuals with cocaine-associated myocardial infarction.[87,88] **Table 3** provides an overview of the harms associated with the concurrent use of specific substances.

Table 3 – An overview of the harms associated with the concurrent use of specific substances

Drug	Effects associated with concurrent use of:	
	Alcohol	**Illicit drugs**
Amphetamines	• Increases perceived total intoxication • Increases adverse cardiovascular effects	**Cocaine** • Limited evidence; may have adverse consequences on the CNS
MDMA (ecstasy) and related analogues	• Reduces subjective sedation associated with alcohol, but not alcohol-induced impairments • Increases plasma levels of MDMA • Decreases blood alcohol levels • May enhance the temporary impairment of immune cells associated with MDMA use (transient immune dysfunction)	**Cannabis** • Users may potentially experience cumulative CNS impairment • May increase susceptibility to infection **Cocaine** • Evidence from animal studies suggests an increased risk of neurotoxicity
Cannabis	• Reduces driving performance	

Drug	Effects associated with concurrent use of:	
	Alcohol	**Illicit drugs**
Cocaine	• Increases blood levels of cocaine and the active metabolite cocaethylene; users may perceive a more intense feeling of intoxication • Users may perceive a reduction in the sedating effects of alcohol • Combination potentially increases adverse cardiovascular effects • Patients with coronary artery disease or alcohol dependence may be particularly vulnerable to the combined toxic effects of alcohol and cocaine	**Ketamine** • Potential to exacerbate the cardiovascular risks of cocaine (crack) **Methadone** • Increases adverse cardiovascular effects (eg increased blood pressure and heart rate)
GHB	• Increases the risk of respiratory depression • None documented	
Nitrites	• None documented	**Use of drugs for treating erectile dysfunction (eg viagra)** • Increases the hypotensive effects (abnormally low blood pressure)
Opioids	• Increases the depressant effects of alcohol on the CNS; can be fatal • Acute use of alcohol and methadone appears to result in lower blood-alcohol levels – the clinical significance is unclear	**Benzodiazepines** • Increase the depressant effects of opioids on the CNS

Source: Jones L, Bates G, Bellis M *et al* (2011) *A summary of the health harms of drugs*. London: Department of Health.[26] Reproduced with the permission of the Department of Health.

3.3.3 Effects on the fetus

Fetal development can be adversely impacted by maternal drug use. The BMA has previously considered the effects of prenatal alcohol exposure and smoking on the unborn fetus in its 2007 report *Fetal alcohol spectrum disorders – a guide for healthcare professionals* (2007)[89] and its 2004 report *Smoking and reproductive life – the impact of smoking on sexual, reproductive and child health*.[90]

The risk of harm to the fetus from maternal drug use is generally considered to be greatest during the first trimester (especially the first 8 weeks),[24] although the second and third trimesters remain critical periods of exposure for fetal development. Damage may also be caused before the woman knows that she is pregnant. Evidence is continuing to emerge on the adverse effects of a number of specific drugs:

- babies born to opioid-dependent mothers may suffer neonatal abstinence syndrome. This can be characterised by short-term withdrawal symptoms affecting the CNS, the respiratory system and the gastrointestinal tract[24]
- cocaine causes reduced blood flow to the placenta, thereby increasing the risk of placental abruption.[26,91] Maternal cocaine use is also associated with an increased risk of spontaneous abortion and premature delivery, as well as sudden infant death syndrome (SIDS) [24,92]
- a greater risk of prematurity and intra-uterine growth retardation is associated with multiple drug use.[24]

There is also likely to be an increased risk of fetal harm from pregnant drug users who lead chaotic lifestyles (including as a result of the illegality of the drugs), as this can lead to poor nutrition and maternal health, as well as poor antenatal attendance.

3.3.4 Adulterants

Illicit drugs are commonly found to contain substances in addition to the purported active ingredient.[93,94] These adulterants – any substance or organism found in illicit drugs at the point of purchase other than the active ingredient – can increase the risk of morbidity and mortality. They are commonly added to enhance or mimic the effects of an illicit drug (eg procaine in cocaine), or to facilitate its administration (eg caffeine in heroin).[93] Contaminants such as bacteria or other biological agents may adulterate illicit drugs, as a result of poor or unsterile manufacturing and production techniques, substandard packaging and inappropriate storage.[93]

Evidence from case reports has found that the adverse health impacts and deaths associated with adulterants commonly result from poisoning, poor manufacturing techniques or poor storage or packaging, or occur as a result of the effects of other substances sold as the illicit drug.[93] Key findings from the case reports include:

- heroin adulteration is mostly associated with poisonings (eg by lead, scopolamine and clenbuterol) or bacterial infections

- cocaine/crack cocaine adulteration is mostly associated with poisonings, with a wide range of adulterants responsible, including phenacetin, thallium, benzocaine, scopolamine, strychnine, levamisole and anticholinergic poisoning
- methamphetamine adulterants are mostly associated with poisonings, for example with lead, toxic fumes and talcum powder
- two case reports detail the deaths of ecstasy users as a result of consumption of tablets adulterated with paramethoxymethamphetamine (PMMA) and/or paramethoxyamphetamine (PMA).

A more detailed overview of the evidence of drug adulterants, including information on the potential reasons for their inclusion and the health effects, is provided in **Appendix 5**.

3.3.5 Secondary health harms associated with injecting drug use

In addition to the direct adverse effects of illicit drug use, there can be a number of secondary health impacts associated with the way in which the drug is used. People who inject drugs and share needles are at risk of transmitting and acquiring a range of infections, including HIV, hepatitis B (HBV), hepatitis C (HCV), and, if using in unhygienic environments with unsterilised injecting paraphernalia, bacterial infections at the injection site.

In the UK, HIV prevalence among people who inject drugs was 1.5 per cent in 2009, compared to 0.8 per cent in 2000.[17] This is matched by the increasing total prevalence of HIV infection. In England and Wales, the estimated number of prevalent HIV infections in 15 to 44 year olds increased from 1.5 per 1000 in 2000, to 2.4 per 1000 in 2008.[95] The proportion of these who were injecting drug users was 2.4 per cent.[95]

In 2009, the prevalence of HCV among people who inject drugs was much higher, at 48 per cent for England and Wales, compared to 38 per cent in 2000.[17] Around one in six people who inject drugs have ever had an HBV infection, and in this group the prevalence of infection in England, Wales and Northern Ireland fell from 28 per cent in 2000 to 17 per cent in 2009.[17] In the general population in the UK, HBV infection has been estimated to affect 0.3 per cent and HCV 0.4 per cent.[96]

3.3.6 Other secondary health harms

Other chronic secondary health harms include:

- the long-term adverse consequences of smoking cannabis on pulmonary function (including airways obstruction and hyperinflation)[97]
- smoking crack cocaine can cause chest pain and lung damage[98-101]
- snorting cocaine powder can lead to nasal bleeding and stiffening of the facial muscles, while heavy users may damage the nasal membranes or perforate the nasal septum.[54]

3.3.7 Dependence

The repeated use of illicit drugs can lead to dependence syndrome – a cluster of behavioural, cognitive and physiological phenomena that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state (see **Glossary**). As can be seen from **Section 3.3.2** and **Appendix 2**, repeated use of some psychoactive drugs can lead to dependence.

Dependence per se is not necessarily significantly harmful but the risk of harm is intrinsically raised because of the chronic drug use. In the case of heroin, for example, as noted previously, its chronic use is characterised by profound psychological and physical dependence.[26] This chronic use significantly increases the risk of mortality from overdose and acquisition of a drug-related infectious disease.

Different drugs vary in their propensity to give rise to dependence (dependence potential, see **Glossary**). Illicit drugs such as heroin, crack cocaine and methamphetamine – as well as the licit drugs, tobacco and alcohol – rank highly in their tendency to encourage repeated use.[2]

3.4 Social harms

Illicit drug use is associated with a range of potential social harms, including deprivation and family adversity/neglect, criminality associated with intoxication, acquisitive crime associated with obtaining drugs, drug-impaired driving, and drug-impaired workplace performance. Some of these social harms result from the illegality of the drugs, while others are caused by factors such as the psychopharmacological effects of the drug.

3.4.1 The social effects of illicit drug use on families

Certain patterns of illicit drug use can adversely affect family life, in many of the same ways that problematic levels of drinking can: through domestic violence, loss of family income, poor role models for children, accidents and injuries, malnutrition and eating disorders, unemployment, social exclusion, self-harm and suicide, and problems in relationships with friends and partners.[1] Illicit drug use can significantly impact on family

economic resources through direct expenditure on drugs, increased medical expenses, reduced household income through drug-related morbidity and mortality, lost employment opportunities, legal costs of drug-related offences, and decreased eligibility for loans.[1,16,102,103]

The children of drug users are likely to be adversely affected in a number of ways, including suffering from poverty, abuse and neglect, exposure to violence and crime, risks of harm from drug paraphernalia, going into care, absence of a parent, and disrupted schooling and education.[104-106]

3.4.2 Harm to communities – drug-related violence and crime

Drug-related crime falls into two categories. Drug law offences include possession, dealing or trafficking of drugs covered under the Misuse of Drugs Act 1971. This is dealt with in **Chapter 5**. Illicit drug use is also associated with a number of other criminal behaviours, which in turn are linked to underlying socioeconomic factors. In the UK in 2010-2011, there were 270,045 recorded drug law offences (39,966 (14.8%) of which were for trafficking, 228,425 (84.6%) for possession, and 1,384 (0.5%) for other drug offences), which was an increase (19.7%) from 225,670 in 2005-2006.[17] The vast majority of these offences were for cannabis possession.[17] This increase contrasts sharply with the long-term decline in current drug use outlined in **Section 2.2**).

Dependent use of drugs is associated with increased levels of acquisitive crime – such as theft, street robbery, car break-ins and burglary – as a means to fund habits. The link between illicit drug use and crime is complex and multifaceted, as not all drug types are associated with all forms of crime, and some drugs are not associated with crime at all. In England and Wales, according to the Home Office *Arrestee survey 2003-2006*, 81 per cent of regular (at least weekly) users of heroin or crack reported having committed acquisitive crime in the 12 months prior to arrest, compared to 30 per cent of respondents who did not use heroin or crack regularly (ie did not use them weekly).[107] A report from the UK Government Strategy Unit in 2003 suggested that dependent heroin and crack users '*commit substantial amounts of crime to fund their drug use (costing £16bn a year)*' and that '*Drug use is responsible for the great majority of some types of crime, such as shoplifting and burglary*', including '*85% of shoplifting, 70-80% of burglaries and 54% of robberies*'.[108] For dependent drug users with limited alternative sources of income, particularly women, street sex work often becomes the most viable source of fundraising to buy drugs. The UK Home Office has estimated that more than 85 per cent of street sex work is drug motivated.[109]

In addition to the criminality and violence associated with acquisitive crime, the psychobiological effect of drugs may directly lead to violent behaviour; the drugs most commonly linked to psychopharmacological violence include amphetamines and cocaine.[110] There is little evidence that the psychopharmacological effects of heroin, cannabis, ecstasy or other hallucinogens are associated with violence and crime.[110] It should be noted that the evidence for the psychopharmacological causation of violent behaviour is weak (including for amphetamines and cocaine).[110,111]

Other social harms associated with the law relating to drug use are considered in detail in **Chapter 6**.

A high level of drug use in the community is also linked to unsafe communities, through increases in violent incidents, antisocial behaviour, prostitution, begging, unusable public spaces, and people sleeping rough.[112] This in turn can depress house prices, reduce investment in the neighbourhood and create or maintain areas of deprivation.

3.4.3 Drug-driving

Data on the levels of drug-driving in the UK are limited. While drug use cannot be causally linked[d] to road crashes, a number of small-scale studies provide some information on its prevalence:

- in 1989, random samples from a number of road traffic accident fatalities showed that only 3 per cent of the drivers involved in accidents had been driving with drugs in their systems, compared to 35 per cent for alcohol (25% over the legal limit)[113]
- a 2001 study of fatal road accident casualties found that at least one impairing prescription or illegal drug was detected in 24.1 per cent of the 1,184 casualties, and that alcohol was present in 31.5 per cent of the sample (21.5% over the legal limit).[114] The study identified cannabis as the drug most frequently found among casualties. There was a substantial increase in the incidence of cannabis in fatal road casualties, from 2.6 to 11.9 per cent over the period between the two studies. The authors found that those who had consumed drugs were no more likely to have also consumed alcohol than drivers who had not used drugs – when considering drivers over the legal limit for blood alcohol, there was no significant difference (at the 5% significance level) between those with no drugs, single drug use and multiple drug use: 20.6 per cent, 17.3 per cent and 16.1 per cent respectively
- surveys of drug use among Scottish drivers arrested under Section 4 of the Road Traffic Offenders Act 1988[17] have shown that cannabinoids were consistently present,

d A causal link cannot be stated because of poor data levels and a lack of information on the effect of various drug levels on driving performance.

ranging from 36 per cent in 2003 to 53 per cent in 2008, while cocaine was detected in around 15 to 25 per cent of cases.[115]

Limited data are available internationally. A study by the EMCDDA, published in 2008, concluded that the prevalence of drivers under the influence of drugs on EU roads had increased significantly since the late 1990s.[116] A Dutch study conducted in the mid-1980s found that 8.5 per cent of injured drivers were under the influence of illegal and impairing medicinal drugs.[117] A similar survey conducted in 2000-2001 found the proportion of injured drivers under the influence of illegal or impairing medicinal drugs had increased to 30 per cent.[118]

3.5 The economic and social costs of illicit drug use

Estimates for the cost of illicit drug use to society in economic terms are limited (see **Box 3**). These include costs to the individual, such as the costs related to premature death, drug-related illness and the loss of earnings through criminality/imprisonment, sickness, temporary or permanent unemployment and reduced educational attainment. The costs to society can be divided into four broad categories:

- **healthcare service costs**: including costs to primary care services and hospital services (A&E, medical and surgical inpatient services, paediatric services, psychiatric services, and outpatient departments)
- **costs of drug-related crime, disorder and antisocial behaviour**: including costs to the criminal justice system, costs to services (eg social work services), costs of drug-driving, and the human cost of drug-related harm (eg domestic abuse, assault)
- **loss of productivity and profitability in the workplace**: including costs to the economy from drug-related deaths and drug-related lost working days
- **impact on family and social networks**: including human and emotional costs such as breakdown of marital and family relationships, poverty, loss of employment, domestic and child abuse, and homelessness.

Box 3 – Estimates for the costs of drug-related harm in the UK[e]

The economic and social costs of Class A drug use (cocaine, crack, ecstasy, heroin, methadone, LSD and psilocybin (magic mushrooms)), in 2003-2004 in England and Wales were estimated by a Home Office report to be £15.4 billion, equating to £44,231 per year per problematic drug user:

- problematic Class A drug use (opioid drug and/or crack users) accounted for the majority (99%) of the total costs
- health and social care costs accounted for £557 million
- the measured costs of drug-related deaths were estimated to account for £923 million.[119]

This report says that the cost estimates include two components of the cost of crime: expenditure by the criminal justice system in dealing with crimes committed (with no further details supplied in the report, it is assumed this does not include the costs associated with imprisonment) and cost consequences for the victims of crime.

Hospital admissions arising from diseases or conditions directly and indirectly related to substance use make a large contribution to the costs to the NHS. The most recent data available indicate that there are around 6,400 admissions for drug-related mental health and behavioural disorders each year in England, and over 12,500 admissions for drug poisoning.[120]

In 2003, the Prime Minister's Strategy Unit (PMSU) estimated that the cost in terms of health and social functioning harms of drug use in the UK was £24 billion per year.[121] This report does not specify what constitutes drug-related crime.[109]

The economic and social cost of drug-related harm in Scotland, which includes criminal justice costs (extent unspecified) has been estimated as £2.6 billion per annum.[122]

e It is worth noting that the costs associated with the impact on family and social networks are not included in these estimates because of the difficultly in determining the level of cost associated with these factors.

The total economic and social cost of Class A drug use in Wales has been estimated to be around £780 million per year, and drug-related crime accounts for 90 per cent of this.[123] Similar data are not available for Northern Ireland.

The criminal justice costs associated with illicit drug use, including prison costs, are discussed in more detail in **Section 6.4.5**.

Summary

- The use of illicit drugs is associated with a range of physical, psychological and social harms. These are affected by the dosage of drug, the pattern of drug use and the mode of administration.
- Most drug-related deaths in the UK are related to the use of opioid drugs, followed by cocaine. The vast majority of these deaths are in men and many are associated with polydrug or polysubstance use. Ecstasy-related deaths are very rare and deaths from cannabis overdose do not occur.
- The risk of death from accidental drug overdose, and from suicide, is associated with poverty, homelessness, polydrug or polysubstance use, impaired physical health and depression.
- While dependence per se is not necessarily significantly harmful, the risk of harm is intrinsically raised as a result of chronic drug use. The following are associated with physical and psychological dependence: cannabis, cocaine, gamma-hydroxybutyrate (GHB), heroin, methamphetamine and other opioid drugs. Amphetamine and ecstasy are associated with psychological dependence only, and there is limited evidence for dependence with ketamine and phencyclidine (PCP). Dependence is rare with hallucinogens.
- Fetal development can be adversely impacted by maternal drug use.
- Adverse health impacts and drug-related deaths may also be associated with adulterants.
- Social harms of drug use include deprivation and family adversity/neglect; criminality associated with drug intoxication or with the need to obtain drugs; and drug-impaired performance at work or when driving. These can result from the illegality of the drugs, or from factors such as the psychopharmacological effects of the drug. They have associated costs for the individual related to loss of earnings, reduced educational attainment and damage to personal relationships. High levels of drug use in a community are linked to unsafe communities because of the associated social problems.
- Studies of the level of harm associated with use of different drugs in the UK scored heroin, crack cocaine and methamphetamine as most harmful to individuals; alcohol, heroin, crack cocaine and cannabis as most harmful to others; and alcohol as most harmful overall, followed by heroin, crack cocaine, methamphetamine and cocaine. The relative levels of harm for the different drugs correlate poorly with the legal classification of drugs.

- Economic and social costs of drug use are related to health and social care costs and criminality; 99 per cent of costs are linked to Class A drug use (cocaine, crack, ecstasy, heroin, methadone, lysergic acid diethylamide (LSD) and psilocybin (magic mushrooms)), and a large proportion is linked to crime, including crimes of illegality. The economic and social costs of Class A drug use in 2003-2004 in England and Wales were estimated to be £15.4 billion, which equates to £44,231 per year per problematic Class A drug user.

Chapter 4 – Influences on illicit drug use

4.1 Introduction

Drug experimentation primarily begins in adolescence but only a small proportion of those that experiment with drugs then go on to use drugs harmfully.[1] Understanding the reasons behind this and, in so doing, categorising the various theories to explain this phenomenon, is an extensive task.

There is general consensus that drug use is a multifaceted 'biopsychosocial' phenomenon. This term is used to encapsulate that drug use is influenced by biological, psychological and social factors. Although distinct theories have been developed for each of these factors, which are discussed in this chapter, there is often a degree of overlap between these explanations. Using only one model to explain why people use drugs may not be appropriate to describe all types of behaviour.

In addition to biopsychosocial influences, the extent to which drugs are obtainable and aspirational is thought to influence their use.[1] This includes their price of purchase, the ease of access to specific drugs and their psychological attractiveness and societal acceptance. This chapter also considers these influences.

This chapter will focus only on the influences of illicit drug use. It should be noted that there are similarities between what influences illicit drug use and what influences alcohol and tobacco use. Since the influences on alcohol and tobacco use have been widely published elsewhere by the BMA, these will not be addressed. For further information on these topics please refer to the BMA reports:

- *Under the influence: the damaging effect of alcohol marketing on young people* (2009)
- *Forever cool: the influence of smoking imagery on young people* (2008).

The following case study illustrates the multifactorial aetiology of drug dependence.

Case study: Influences on illicit drug use

Mr X is a 43-year-old man who has been using substances since he was in his teens. He has been in treatment for the last 10 years. He is now taking 40mg of methadone, which is dispensed daily. This has reduced from 80mg over the past two years. He has not used any heroin or other opioid drugs for the past four years and has not injected at all for the past eight years. He is continuing to use crack cocaine about once a month. His main problem is his alcohol use, which has been increasing ever since he came into treatment and became much worse when he stopped using heroin. He is now drinking about two cans of strong lager (10 units) several days a week, although he is sometimes able to stay off alcohol for two or three days per week. He finds it particularly difficult not to drink after work.

Ten years ago Mr X was diagnosed with hepatitis C. He was offered treatment then, but as he did not want to have a liver biopsy did not want to be referred. Two years ago he was admitted to hospital with jaundice and ascites and diagnosed with advanced hepatic cirrhosis. He did well during that admission, and following medical treatment improved substantially and was able to return to work. He was subsequently offered treatment for HCV by his local hepatology service. This was not started though, as he continued to drink alcohol after a short (3-month) period of abstinence.

Mr X had a difficult childhood. His alcoholic father died when he was very small. His mother was depressed and he was taken into care when his behaviour became unmanageable as a teenager. This followed his mother remarrying. As an older adolescent, he was caught by the police a few times for minor acquisitive offending and served one short sentence in a young offenders' unit. He did enjoy school, was popular and was always interested in computing. He left school with GCSEs in maths and computer science. He spent some time in South America in his 20s but returned to England and started working as a computer technician. He still works freelance and is able to get work from a friend who runs his own business. He has a council tenancy.

He has a long-term partner who has used drugs in the past. He has two stepdaughters.

He is seen every two weeks by his local drug treatment service. He has a keyworker (see **Glossary**) but does not use the sessions well and generally just wants to collect a prescription. He has a GP but has never been to see him. He is seen by the hepatologists every six months.

Three months ago Mr X had another episode of ascites. Again he did well and was booked in to see the hepatitis clinical nurse specialist to talk about interferon and ribavarin treatment. He began to understand that he must stop drinking if he is to have successful

treatment for his hepatitis C. The hepatologist explained to him in detail the prognostic implications of his liver damage and the nature of the treatment. He began to use his keywork session to discuss his fears for the future. The addiction psychiatrist assessed his mental state and concluded that he was depressed and that he would benefit from both an antidepressant and some cognitive-behavioural therapy (CBT), which he did attend. He was also advised to stay on methadone (for a discussion of methadone therapy, see **Chapter 8**), as further withdrawal symptoms may have jeopardised his ability to stay free of illicit drugs and alcohol. The psychiatrist also did some joint sessions with him and his partner. He also began to see his GP, who was able to reinforce the message that he had to stop drinking.

He was eventually able to stop drinking for three months and start treatment, while continuing to receive support from his drug service and his GP. His goal is to become completely drug and alcohol free.

Case study details provided by Dr Emily Finch, a consultant addiction psychiatrist.

4.2 Biological factors

4.2.1 The genetic basis for drug use

The use of drugs has a genetic component.[2] This means that those with a genetic predisposition to drug use, such as those with a direct family member with a history of substance use, are at an increased risk of using drugs.[2] The implication of this is that variations exist at an individual neurobiological level, and this affects an individual's susceptibility to drug use. This means that not every person will themselves carry the gene or become drug dependent.

Evidence for the heritability of drug use is derived from a range of research designs. The most robust evidence for the genetic influence of drug use comes from twin studies; research using family- and adoption-based designs has also shown an effect. Given the breadth of high-quality research using twin studies, this section will only briefly examine family- and adoption-based designs, before focusing on twin studies.

As discussed earlier, a considerable part of the genetic effect may be protective against dependence rather than raising risk. An example of this is the aldehyde dehydrogenase 2 gene (*ALDH2*), which is prevalent in Asian populations and thought to be protective against dependence on alcohol.[3,a]

Family-based designs

Research using family-based designs suggests that siblings of cannabis-dependent individuals have an elevated risk of developing cannabis dependence themselves.[4] Similar findings have been reported among siblings of cocaine-dependent individuals.[4] Siblings of individuals with dependence on opioid drugs, cocaine and/or cannabis have also been reported to be at an increased risk of developing drug dependence.[5] These findings were found to be largely independent of factors related to family conditions.[5] The impact of the family on drug use is discussed in greater detail later in this chapter (see **Section 4.4.1**).

While there is evidence that substance use disorders cluster in families, it is not clear from family-based designs whether these can be wholly attributable to heritable factors. This is because the family design cannot distinguish between whether the cause of familial similarity is genetic or environmental in nature.[6]

Adoption-based studies

Adoption-based studies have shown a genetic basis for drug use. Adoption studies are based on a comparison of the concordance[b] between offspring behaviour and the characteristics of both the adoptive and biological parents. Similarity between offspring and biological parents is suggestive of genetic influences, although research studies in this area should correct for in utero exposure to drugs.

Adoption studies have reported a strong link between biological parents' substance use, and their offsprings' risk of addiction. A 1995 analysis of adoptees with substance-dependent biological parents (parents that were alcohol and/or drug dependent) compared with controls (adoptees with non-substance-dependent biological parents) provided an early demonstration of the role of genetic factors in the development of drug use and dependence.[7] After controlling for in utero substance use, substance use in biological parents was found to be significantly associated with adoptee drug use.[7] These findings are suggestive of genetics having a significant influence on the development of drug use.

a In some drinkers, however, the *ALDH2* allele ('flushing gene') contributes to diminished activity of the enzyme and increases drinkers' risk of developing some cancers.[8]

b In genetic terms, concordance refers to the probability that a pair of individuals will both have a certain characteristic, given that one of the pair has the characteristic.

Twin studies

Twin studies utilise data from identical/monozygotic (MZ) and fraternal/dizygotic (DZ) twin pairs that have been reared together. As genotypes and family environments tend to be similar, twin studies provide greater clarity in disentangling the role of genetic and environmental influences on drug use.[6] This is because genetic influences are shared 100 per cent between members of MZ twin pairs, while DZ twin pairs only share 50 per cent of their additive genetic influences. This means the genetic influence between MZ twins is likely to be more apparent than in DZ twins. Thus, differences between these two groups are suggestive of a genetic factor.

Research using twin studies has reported a large degree of heritability[c] in relation to drug use.[6] It has consistently been shown there is a higher MZ than DZ concordance for drug dependence.[2]

The extent to which drug use has a genetic component appears to differ between different types of drug. Cannabis use and dependence appear to have a large genetic component. A 2006 review of the genetic epidemiology of cannabis use, abuse and dependence found evidence that there is a genetic basis to each of these three stages.[9] It was estimated that the heritability of cannabis use ranged from 34 per cent to 78 per cent.[9]

In terms of other drugs, research from the late 1990s among Vietnamese twins reported that 33 per cent of stimulant use/dependence, 27 per cent of sedative use/dependence, 54 per cent of heroin use/dependence and 26 per cent of the use/dependence of psychedelic drugs could be attributed to genetic factors.[10,11] These findings have been replicated among female twins from the USA.[12,13] Significant twin resemblance was found for hallucinogen use, opioid use, sedative use, stimulant use and symptoms of dependence.[12,13]

The convergence of findings from a range of research designs provides compelling evidence that illicit drug use and dependence are influenced by heritable genetic factors. Despite this, genetic factors are not exclusively responsible for the development of drug use and dependence. If they were, the above studies would be expected to report 100 per cent concordance between MZ twins. As is detailed in the following sections, there are a wide range of other factors that may influence drug use.

c Heritability refers to the extent to which genetic individual differences contribute to individual differences in observed behaviour (also known as phenotypic variation). Individual differences in behaviour may be due to genetic or environmental factors, and/or random chance.

4.2.2 Concurrent disorders

Psychiatric illness is thought to strongly influence the use of drugs. In recent years, a considerable amount of research literature has documented associations between drug use and dependence, and a range of psychiatric disorders.[14-17] This comorbidity[d] has been observed for a diverse range of drugs, and is associated with negative outcomes for both the persistence and severity of drug use and psychiatric illness.[2]

It should be noted that a proportion of the overlap between drug use and mental illness may be definitional. This is because of the difficulty in separating out true underlying disorders from behaviours that develop as part of drug use. The effects of drugs on mental health are explored in more detail in **Chapter 3**.

Available clinical, neurobiological and epidemiological evidence is yet to identify a unified explanation as to why there is such a high concordance between drug use and mental illness.[2] A number of different explanations have been suggested to account for this relationship.

It is assumed that the presence of an initial psychiatric illness may, either directly or indirectly, increase the risk of drug use. One of the most widely cited explanations of this causal relationship between psychiatric illness and drug use is that drugs are used to self-medicate the negative pervasive symptoms of psychiatric illness. [2,18]

It may be that the direction of this relationship is reversed, and that drug use acts as a precursor to biological changes that are known to be involved with psychiatric illness.[2] Research from the USA has suggested that high levels of cocaine use are associated with the development of psychotic symptoms.[19,20] A similar pattern has been observed for cannabis,[21-25] opioid drugs and amphetamines.[26]

Alternately, it may be that there is a shared aetiology to drug use and mental illness, in which a specific factor, such as a common genetic predisposition, increases the risk of both mental illness and drug use.[2] Epidemiological data from the USA indicate the lifetime rates of major depression are 32 per cent in cocaine users, and up to 13 per cent among non-users of cocaine, which is suggestive of some common cause.[2] It may also be that shared environmental influences account for this comorbidity.[2,26]

d Comorbidity refers to the co-occurrence in the same individual of more than one psychiatric disorder.

Available longitudinal investigations provide little in terms of disentangling the relationship between mental illness and drug use. This is both because the evidence from these investigations is considered relatively weak in determining causality, and because they are limited in number. From available research, there is supporting evidence for each explanation.[2] It may be the case that each of these explanations is correct, and the extent to which any one is at work is related to a complex range of factors that are specific to the individual.

4.2.3 The psychopharmacology of individual drugs

Aside from an individual's own biological predisposition, which may put them at an increased risk of using drugs, the extent to which a drug can influence an individual's behaviour is related to a drug's psychopharmacology (see **Glossary**).

Drugs alter the normal functioning of brain mechanisms that exist to regulate the functions of mood, thoughts and motivations.[2] There is considerable variation in relation to the particular types of neural receptors (see **Glossary**) and neurotransmitters that drugs affect in the brain, and consequently the extent and nature of their physiological effects on the brain and behaviour.[2] It should be noted that almost all psychoactive substances with reinforcing properties share the common property of activating mesolimbic dopamine, which plays a critical role in models of learning theory.[2] The role of dopamine is considered further in **Section 4.3**.

A component of why individuals may wish to use drugs is to elicit an alteration in normal brain function. This may include the desire to experience pleasure or to avoid pain (the desired effects of commonly used illicit drugs are explored in greater detail in **Appendix 2**). Thus, at a biological level, both the immediate and long-term reasons for why people may use a drug can be rationalised by understanding how that drug affects the brain at the pharmacological level.

The repeated use of drugs may contribute to their continued re-administration through the development of physical symptoms. These include:

- **tolerance**: which can be defined as a given drug producing a decreasing effect with repeated dosing.[2] Tolerance to a drug can be both physical and psychological, with psychological tolerance often having a greater effect on influencing behaviour. Tolerance influences repeated drug use, and as a result larger drug doses must be administered to produce a similar effect
- **withdrawal**: which is the body's reaction to absolute or relative withdrawal of a drug. Withdrawal is associated with a range of significant negative physical and psychological outcomes, and in certain cases can be fatal. Withdrawal can be alleviated by readministering the drug, which contributes to its repeated use.[2]

These two factors may influence the continued use of drugs but, as highlighted in **Appendix 2**, the potential to develop tolerance and withdrawal states varies with individual drugs.

4.3 Psychological factors

4.3.1 Personality type

There is evidence that certain personality characteristics can be considered predisposing vulnerabilities for drug use.[17,27] The use of drugs is also thought to contribute to the development in changes in personality.[17, 27]

Personality traits of impulsiveness, sensation seeking and negative emotionality have been associated with an increased risk of using drugs.[28-31] Sensation seeking has been defined as a need to seek intense sensations, along with the willingness to take risks for the sake of having such experiences. Among those with sensation seeking as a personality trait, under-responsiveness to natural rewards and the need for greater stimulation has been suggested as motivation for drug taking.[28] Individuals with high levels of impulsivity have a tendency to act quickly without forethought and planning.[29] Evidence suggests that a lack of forethought and inhibitory control over behavioural impulses may play a role in perpetuating drug use.[27,30] Longitudinal studies have found that impulsivity in childhood predicts experimentation with drugs in later adolescence and early adulthood.[31] High scores on measures of negative emotionality have also been associated with future drug use.[27]

Continued use of drugs has been associated with behavioural, cognitive or affective changes to personality.[17,27] The social withdrawal, irritability and negative emotionality often observed among drug-dependent groups may be better attributed to drug-induced anxiety and depressive syndromes.[27]

Further perspectives have suggested a different explanation for the association between personality type and drug use. Personality traits have been documented to have a substantial heritable component.[32] Rather than personality influencing drug use, or drug use influencing personality, it may be that there is some common genetic factor that predisposes an individual both to have certain personality traits and to be at an increased risk of using drugs.[32]

4.3.2 Models based on learning theory

Learning-based theories have been developed from classical and operant conditioning paradigms of response reinforcement. These models seek to explain addictive behaviour as pairings between a drug, drug-associated stimuli,[e] and the effect of taking a drug. Enduring changes to behaviour result from, or are influenced by, these interactions. Learning theory may be useful to understand how drug use becomes a facet of identity, and the implications this may have on treatment. In these instances, specific maladaptive traits may become reinforced over time, through the acquisition of drugs or perceived protection against negative experiences (see **Chapter 8** for further information on the 'addict identity').[27]

It is necessary to recognise that drugs are rewarding. The rewarding properties of drugs can include sensations of pleasure or relief of pain, tension or fatigue, as well as the ability to enable the user to escape negative feelings or emotions. Thus, the drug is used, it has rewarding effects, and this reinforces repeating this behaviour (ie it influences the continued use of the drugs).[2]

This relationship can be understood at a biological level. As explored earlier, drugs influence the normal functioning of the brain. The use of psychoactive drugs causes activation to areas of the brain that are normally involved in motivation, such as the mesolimbic dopamine system (see **Section 1.1.3**). This causes the release of dopamine, the neurotransmitter released in response to any positive event or reward.[2] Any release of dopamine leads to a strengthening of the synaptic connections in the neural pathways.[2,33,34] This reinforces the behaviour that resulted in a reward, making it more likely to be repeated.[2] Psychoactive drugs can activate the mesolimbic dopamine system, either directly or indirectly, and, through associative learning processes, stimuli associated with drug use and drugs can themselves begin to influence behaviour.[2]

Classical conditioning

Classical conditioning (sometimes known as Pavlovian conditioning) can be simplified as learning through association. Theories based on classical conditioning are often used to explain complex behaviours, such as drug craving.[f,2,35] Under a classical conditioning model, drug craving arises because of the repeated pairing of environmental stimuli with the rewarding properties of drugs.[30]

e Drug-associated stimuli could include environments where drugs are taken, the presence of drug dealers or drug users, or the sight of drug paraphernalia.

f Craving is to have a strong or incontrollable want for something (*Cambridge Dictionary*).

To the individual using drugs, neutral stimuli associated with drug use, such as drug use paraphernalia, or environments where drugs have previously been consumed, can begin to exert influences on behaviour. Research has demonstrated that after repeated drug administration, cues that precede drug ingestion, such as the sight of a needle and syringe, elicit craving for drugs.[36] A formulation of how this process takes place is as follows:

- a stimulus, such as a syringe, elicits no particular drug-related response, ie it is a **neutral stimulus**
- when an individual uses a drug such as heroin intravenously via a syringe, it reliably elicits a response: a drug-related high. The drug is the **unconditioned stimulus**, and the drug-related high is the **unconditioned response**. The unconditioned response occurs in response to the unconditioned stimulus
- the **unconditioned response** (heroin) is repeatedly paired with the **neutral stimulus** (syringe)
- eventually, the **neutral stimulus** (syringe) alone is able to elicit a **conditioned response**, which is to crave using heroin.

Operant conditioning

The theory of operant conditioning (also known as instrumental learning/conditioning) has also been used to describe why people use drugs. If classical conditioning can be seen as learning through association, then operant conditioning can be seen as learning through reinforcement.[2,35]

In contrast to classical conditioning models, where the individual has no control over the presentation of a stimulus, with operant conditioning it is the individual's own behaviour that produces the stimulus.[2,35]

Operant conditioning explains that behaviour is repeated because of the emotional consequences attached to that behaviour.[2,35] If use of a drug produces a reward, such as a state of euphoria, or alleviates withdrawal symptoms, it is more likely to be repeated.[2,34] If use of a drug leads to an non-rewarding, aversive state, such as acute intoxication, then a behaviour is less likely to be repeated.[2,35]

Social learning

Social learning theory has also been used to explain influences on drug use. Social learning theory extends the concept of operant conditioning as a basis for addiction, to learning through observation and communication. Social learning theory posits that individuals may be influenced in their decision to use drugs through observing role models in their environment and perceiving social norms in relation to drug use.[35] Social learning theory explains that individuals will repeat behaviours they observe to have a positive outcome, and avoid behaviours they observe having a negative outcome.[35] According to social learning theory, the more frequent and intense the

observed positive element of drug taking, the more likely it is that it will become habitual.[35] The more frequent or intense the observed negative drug-associated experience, the greater the likelihood that it will be avoided. Social learning theory is often used to describe the influence of peers and family on drug use.[35]

4.4 Social factors

4.4.1 Family

Family conditions during childhood are associated with illicit drug use.[7,37,38] Beyond the genetic characteristics shared within a family, there are a range of familial factors thought to influence drug use. As described in **Section 4.3.2**, social learning theory suggests that one of the mechanisms by which behaviour is acquired is through imitation and modelling of others. The role of the family's attitudes towards drug use may play a role in this regard. As well as this, atypical family relationships may also influence drug use. Research has indicated that the family factors that contribute to individual differences in drug use include:

- single-parent, or step families[39-42]
- substance use among family members[43]
- poor parent-child relationships[44,45]
- family conflict[46]
- poor parental supervision.[43]

It should be noted that there may be other environmental factors that influence drug use, and it can be difficult to disentangle these factors from the influence of family conditions. This is because families share the same environments. These confounding variables may include social inequalities and the role of peer influence.

Family structure

A number of studies have suggested that family structure may play a role in individual development and functionality, including drug use. Research among 14 to 15 year olds in five European countries, including England, found that living with both biological parents was generally associated with reduced levels of drug use.[39] Similar research reported a significant association between illegal drug use and broken family structure among 10 to 12 year olds in Glasgow and Newcastle.[47] In comparison, those living with both biological parents had the lowest past illegal drug use.[47] The highest levels of drug use were found among those living with reconstituted families (step families).[47] Similar findings were reported in research among Scottish adolescents, with a greater level of lifetime illegal drug use reported among those from single-parent families.[48]

Family substance use

The use of drugs within the family environment may influence subsequent drug use. Research among Scottish pupils reported that almost half of those who had used drugs had a family member that also used drugs.[49] This compares with around 10 per cent of non-using pupils having a family member that used drugs.[49] In the majority of cases, the drug-using family member identified was a sibling or cousin.[49]

Family relationships

As well as family composition and behaviour, the quality of family relationships may influence drug use. Research among British adolescents reported that those who thought their parents' opinions were most important were less likely to regularly use drugs.[50] In comparison, those who valued their friends' opinions highest reported greater drug use.[50]

Parenting style may also influence levels of drug use. Research has reported that families that lack parental monitoring, that have high levels of parent–child conflict, or where children are unwilling to disclose information to their parents, have higher levels of drug use.[48] The association between lack of parental monitoring and drug use at the age of 15 years has been shown to be particularly strong.[48] Stattin and Kerr have posited that a lack of parental monitoring may result from children disclosing too much information about norm-breaking behaviour to their parents.[51] This knowledge causes parents to abandon monitoring their children's behaviour, which has consequent impacts on drug use.[51]

Protective factors

The family environment may also exert effects that protect against the use of drugs. Positive family relationships and communication may guard against future use of drugs.[39,40] Any benefit in living with both parents is thought to be undermined in instances where drug use among peers is high.[39]

4.4.2 Peer influence

Peers may influence whether an individual engages in or refrains from drug use.[52,53] Peers may influence individuals directly, such as by offering drugs, or indirectly through social modelling and perceived norms.

Drug use appears to occur often within a peer-group context. Research has reported that adolescents who spend more time with their friends are at an increased risk of drug use.[54] American research has found that youth spending five or more evenings each week out with friends are at greater risk of drug use than those spending fewer nights out.[54] From a British perspective, research has indicated that lifetime cannabis users are less likely to spend time regularly with their parents, and more likely to spend free time with drug-using friends.[45] Research conducted among Swiss school

students reported a close association between pupils witnessing students coming to school cannabis intoxicated, or taking cannabis onto school premises, and their own cannabis use.[52] It should be noted that this research does not identify the direction of this relationship, in terms of whether cannabis-using peers influence students to use cannabis, or whether cannabis users choose to associate more with other cannabis users.

The relationship between peer groups and drug use is complex, and may function in different ways. Individuals often identify themselves as a member of a group on the basis of shared behaviours or beliefs. They may adopt behaviours to increase their sense of belonging to a group, or to become accepted as a group member. Alternatively, the high concordance between peer group and drug use may be a result of individuals seeking out peers with similar interests and behaviours to their own. Consequently, peer-group homogeneity may result from processes of selection into groups, or conformity to existing members of a group.[55] Social learning theory may explain peer drug use, as drug use is encouraged by observing drug using among role models. Decisions to use drugs are made on assessments of the consequences of drug use, and the perceived punishments or rewards reinforce the decision to engage in or refrain from the behaviour.

McIntosh et al reported that the impact of peer pressure declines with age.[53] Research involving 11 to 14 year olds in Scotland and England reported a decrease with age in the influence of peer pressure when experimenting with drugs.[53] It is suggested that the declining role of peer pressure results from drug-using peers moving away from viewing drug use as a form of risk taking, and instead to drug use as an enjoyable activity.[53] The decision to experiment with drugs becomes increasingly a matter of personal choice rather than one of external influence.[53]

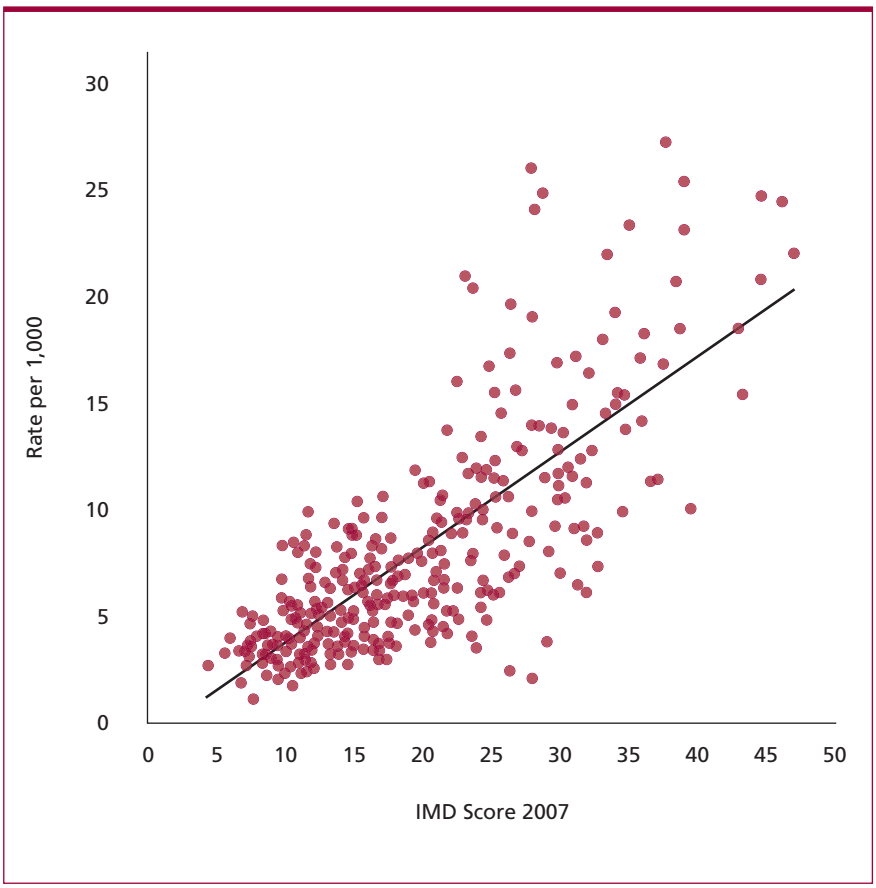
4.4.3 Social inequalities

Social inequalities refer to people in different socioeconomic groups experiencing a different quality of life. These differences include avoidable differences in health, wellbeing and length of life.

Cannabis use has been found to be greater among those living in areas of lower deprivation.[56] It has been suggested that this is because cannabis users more frequently come from less-deprived backgrounds.[57] Teenagers and young adults from poorer backgrounds have less discretionary cash to purchase drugs. This suggests there is an effect of affluence on drug use, at both the individual and neighbourhood level.[58] Social deprivation does appear to influence the harmful use of drugs. The Marmot Review suggested that, in the UK, the likelihood of problematic drug use is related to socioeconomic status, noting a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation (see **Figure 6**).[59] Similarly,

hospital admission rates for drug-specific conditions for both male and female individuals have shown a strong positive association with deprivation.[59]

Figure 6 – Prevalence of problematic drug users aged 15 to 64 years, by local authority of residence and Index of Multiple Deprivation (IMD),[g] 2006-2007



Source: North West Public Health Observatory (2010) *Indications of public health in the English regions. 10. Drug use*, p51, scatter plot 1. Liverpool: North West Public Health Observatory.[57] Reproduced with the permission of the North West Public Health Observatory.

g The Index of Multiple Deprivation (IMD) is a measure used in UK Government statistical study of deprived areas in UK local authorities. A low IMD score indicates an area of low deprivation.

4.4.4 Stigmatised groups

Stigmatised groups are prone to earlier, more frequent, or more problematic drug use.[60] For the less affluent in particular, drug use can cause stigma, and can be how people end up in these groups. It is thought they might also experience faster progression to problem drug use.[60] Among certain stigmatised groups, socioeconomic inequalities appear to play a substantial role in their stigmatisation.[60] Problematic drug use is just one of a number of behaviours, such as poor diet and lack of exercise, associated with negative health outcomes.[60]

Groups that are considered vulnerable include, but are not limited to:

- young people within care institutions
- sex workers
- homeless populations
- victims of traumatic experiences.

Young people within care institutions

Young people in care institutions, such as residential or foster care, face distinct developmental challenges. In comparison to the normal population, these include accelerated social independence, not completing formal education, and high unemployment upon leaving care.[61]

Research has identified that those in care are at an increased risk of earlier initiation into, higher levels of, and more frequent use of drugs, including heroin and crack cocaine.[61-64] Research using twin studies has shown that those using cannabis in care institutions before the age of 17 have an increased risk of other drug use and dependence, when compared to their non-drug-using co-twin.[65] The risk of other drug use and dependence is estimated to be 2.1 to 5.2 times higher than that of their co-twin.[65]

A range of factors are thought to explain the high proportion of drug use among this population. These factors include carer use and challenging life events, such as bereavement, rejection, early independence and responsibility, sex work and the transition from care.[64] In addition, some young people within care institutions may have grown up in homes where parental problematic drug use was evident. As has been highlighted previously, parental use of drugs may influence their children's drug use.[66] Parental drug use may also be a compounding factor in preventing children from returning to the care of their parents. This separation from their parents may further increase the risk of young people using drugs.[61]

Sex workers

Sex workers are thought to be at an increased risk of using drugs. Explanations for this increased risk include sharing environmental space on streets and in the dealing houses, which serve as sex markets, drug markets and areas where homeless people congregate.[67] In one study, 84 per cent of those sex workers who work outdoors reported having a current drug problem.[67] This compares with just 13 per cent of sex workers who work indoors.[67]

There are few reliable data on the prevalence and patterns of drug use among this population. Evidence on whether drug use is a cause or effect of sex work indicates that both are possible. Research suggests that drug use is often a motive for prostitution, but could also be a consequence and maintaining factor.[67] Sex work and drug use may be mutually reinforcing, such that 'exiting' either becomes more difficult. Their mutually reinforcing potential is strengthened where individuals are exposed to 'trapping factors'.

These include:

- involvement in prostitution and/or 'hard drug' use before the age of 18 years
- sex working 'outdoors' or as an 'independent drifter'
- experience of at least one additional vulnerability indicator, such as being 'looked after' in local authority care or being homeless.[66]

Homeless populations

Homelessness occurs on a continuum ranging from 'rooflessness' or sleeping rough, to living in bed and breakfast accommodation and hostels, to an inability to leave unsatisfactory housing conditions. Homelessness has been associated with increased use of drugs.[68] In addition to drug use, homelessness is also associated with social exclusion, which includes poor and unhealthy living conditions, unemployment, low education, socially disadvantaged background and poor physical health. There may also be a high level of psychiatric illness among homeless populations.[61]

The association between homelessness and drug use is largely recognised in the literature. Research among homeless people in London found that 60 per cent reported that their substance use was one of the reasons they first became homeless.[69] Having become homeless, 80 per cent reported subsequently using drugs.[69] Overall, drug use, injecting, daily use and dependence have been found to increase, the longer that individuals remain homeless.[69]

A 2003 Home Office piece of research into young homeless populations found young homeless people reported high lifetime, last-year and last-month prevalence rates for drug use. This included illegal drugs and illicit use of prescribed medication.[70] Ninety-five per cent of young homeless individuals had used drugs.[70] Often they had begun experimenting with illegal drugs at a young age, typically aged 14 years.[70] Levels of use of cannabis, amphetamine and ecstasy were also high among this population, and a substantial minority reporting use of heroin and crack cocaine.[70]

Victims of traumatic experiences

Adverse experiences are thought to play a role in influencing drug use. Early adverse experience, such as childhood sexual or physical abuse, have been associated with an increased vulnerability to drug use.[71]

There is evidence that individuals who have experienced some form of trauma at a young age are at an increased risk of developing problems with drug use.[72] Research among US childhood victims of physical abuse, sexual abuse or neglect estimated that these individuals are up to 1.5 times more likely to use illicit drugs.[73] Similar research among American students demonstrated that the highest levels of drug use were found among students who reported both physical and sexual abuse.[74] In addition, victims of any form of abuse reported initiating drug use earlier and greater multiple drug use, when compared to their non-abused peers.[74] Research has also demonstrated that emotional abuse is associated with higher levels of drug use.[75] Trauma in later life is thought to be associated with drug use, but the evidence base for this association is not well established.

Although clinical data confirm a relationship between adverse experiences and drug use, it is not known whether this relationship is direct or indirect. It is thought that the high concordance between drug use and victims of trauma may, in part, be explained by individuals using illicit drugs to cope with negative emotions, feelings and experiences. Among drug-using school children who have been sexually and physically abused, explanations for use include coping with painful emotions and escaping from their problems.[74] It may also be that traumatic experiences indirectly impact on drug use. It has been well established that childhood maltreatment may result in a number of emotional and psychological consequences, such as depression, anxiety, suicidality, low self-esteem and personality disorders.[76] The association between mental health and drug use has already been highlighted in **Section 4.2.2**.

4.5 Access to drugs

4.5.1 Price

Price appears to influence the use of drugs. It was previously believed that the addictive nature of drugs meant drug users were not sensitive to changes in price, but research has demonstrated that drug users are responsive to price.[1,77] This estimated responsiveness to price (elasticity of demand[h]) varies by drug and user type;[i] in almost all cases, the number of users and the quantity of drugs consumed declines when prices are increased – in some cases substantially.[1,77] Further evidence for how price affects different types of drugs, and users, is presented next. It should be noted that, given the illegal nature of drug use, the price data reported are often of low quality (see **Section 6.3.2**).

Cannabis

American research has estimated that, among high school students, responsiveness to the price of cannabis is about –0.30.[78] Research in Australia, which investigated cannabis use among adult populations, demonstrated a much larger responsiveness of –0.88.[j,79]

Cocaine

Responsiveness to price has been shown for cocaine. Research conducted in 1999, using data from the US National Household Survey on Drug Abuse between the years 1988 and 1991, estimated a price responsiveness of between –0.30 and –0.55.[80] Among youth populations, the responsiveness to the price of cocaine was –0.89 and –1.28.[k,80] More recent research, conducted in 2006, estimated that among US college students, the responsiveness to the price of cocaine is as high as –0.57, depending on age and sex.[81] It is interesting in this context to note that the price of cocaine in the USA has fallen by around 70 per cent since its peak in the late 1970s, but use has fallen by almost the same amount.[82]

h Price elasticity of demand is a measure used in economics to show the responsiveness, or elasticity, of the quantity (proportion) demanded of a good or service, in relation to a change in its price. More precisely, it depicts the change in quantity demanded, in response to a 1 per cent change in price. Price elasticity, or responsiveness to price, is almost always depicted as negative – a rise in price reduces demand. Demand is described as 'inelastic' if it is numerically less than –1.0, but this does not mean that there is no responsiveness to price.

i In the context of drug use, elasticity of demand comprises two components: the 'participation response' – the decision to use the substance – and the 'intensity response' – the amount a continuing user consumes.[1]

j The figures –0.30 and –0.88 both refer to the participation elasticity, ie the decision to use the drug.

k The participation elasticity was –0.89 and the overall elasticity was –1.28.

Heroin

It is unclear whether the responsiveness to changes in the price of heroin is similar to that seen with cocaine and cannabis.[1] This is because the evidence base for heroin use is poor. Responsiveness to the price of cannabis and cocaine is generally extrapolated from general population surveys that provide information on the prevalence of cocaine and cannabis use. General population surveys do not report on the prevalence of heroin use. This is, in part, because heroin users generally live too chaotic a lifestyle to allow their inclusion in such samples.

Research between 1993 and 2006 among clients in needle exchanges in Oslo, estimated a price responsiveness of –0.77 for heroin users.[83] It should be noted that these findings are conditional on the user injecting heroin. Research among US arrestees testing positive for heroin estimated that the responsiveness to heroin prices was between –0.10 and –0.18.[84] Research that examined the impact of US heroin prices on admissions to emergency rooms for heroin use found that responsiveness to price among this population was only –0.10.[85] These trends underline that, at least in the medium term, the demand for drugs is responsive to other factors besides price.

4.5.2 Physical availability of drugs

The physical availability of drugs refers to the proximity and accessibility of a drug. Logic dictates that if a drug is not physically available, then it cannot be used. As explored previously, a range of factors influence drug use, and while the physical availability of drugs plays a role in their use, it cannot be considered the sole influence on whether they are used.

Available evidence suggests that the physical availability of drugs does not impact on levels of drug use. Research from the USA has suggested that the physical availability of drugs is often concentrated in neighbourhoods with high levels of economic disadvantage, greater population density and high concentrations of minority residents.[86,87] Levels of use were reported to be similar to those seen in affluent neighbourhoods.[86,87] Socioeconomic status appears to influence problematic drug use, so the physical availability of drugs may impact use among those who are already using drugs problematically.

4.6 Psychological attractiveness and societal acceptance

4.6.1 Popular media

The popular media, which include film, television, music, video games and the internet, together with increasing exposure to celebrity lifestyles, form a dimension of people's social environment. Available evidence suggests that popular media may influence health behaviours. Research has demonstrated that popular media portrayals of pro-alcohol and smoking imagery can influence the uptake of these substances.[23,88-90] While research into the influence of popular media on drug use has received much less attention, a similar effect appears to be present.[92-96] There is little evidence demonstrating that popular media has a protective impact on drug use.[97,98] The efficacy of mass media approaches in delaying initiation into and minimising the use of illicit drugs is explored in **Chapter 7**.

4.6.2 Films

Films often address and depict health-related behaviours. With the cinematic film industry grossing billion of pounds in profits, and with the globalisation and proliferation of home-based media technologies, there is the potential for film to influence the behaviour of large numbers of people.

The use of illicit drugs is often portrayed in films. A content analysis of the top grossing US films from 1999 to 2001, found nearly two out of five teen characters in films used illicit drugs, and were unlikely to be shown suffering any consequences of their drug use (either positive or negative, or short or long term).[99] Australian research from 2005 analysed the portrayal of drug use among the most popular 200 films globally, from 1985 to 2005. It was found that cannabis was portrayed in 8 per cent of films, with each film depicting the use of cannabis up to a maximum of 10 times.[100] Cannabis use was only shown in a positive or neutral light, with no negative depictions or consequences.[79] This is similar to the findings related to the effects of marketing and imagery on tobacco and alcohol use.[88,101]

The available evidence suggests that films have the potential to model behaviour, and communicate normative propositions about health-related matters, such as illicit drug use.[102] Research has suggested that portrayals of drugs have an impact on drug use in the UK. A 2011 cross-sectional study of over 1,000 13 and 15 year olds from the west of Scotland explored incidents of witnessing drug use in films, and subsequent drug use, and found an association between film exposure to illicit drugs and using cannabis.[92] This association persisted after adjusting for sex, social class, family structure and levels of parental control.[92] The association did not exist when controlling for other variables, including personal characteristics, such as risk taking, rule breaking, achievement of school qualifications and friends' substance use.[92] It is difficult to interpret these findings, given the cross-sectional nature of this analysis, which makes

conclusions about the direction of any relationship problematic. One explanation is that young people who take drugs not only are more inclined to do this in the company of like-minded friends, but may also share, or develop, similar tastes in cultural representations of drug use, which may in turn determine the kinds of films they choose to watch.[92] Conversely, portrayals of drug use could directly influence an individual's uptake of drug use, which could itself influence the friendship groups that an individual may choose to maintain.[92]

4.6.3 Television

Television watching is widespread throughout the UK. There is the potential for images on television to reach a broad range of UK society, although the evidence that portrayals of drug use on television influence behaviour is less well established than for other media. Given the evidence that film influences drug use, and the obvious similarities between these two media, it is not unreasonable to assume similar effects occur with television.

Portrayals of drug use on UK television appear to be relatively sparse and predominantly negative (see **Box 4**). A 2005 review by Ofcom, which assessed a snapshot of television for content, including drug references, found that overt or implied drug users comprised 0.4 per cent of the television characters included in the sample.[102] Drug scenes were most likely to provide an antidrugs message, with 57 per cent of scenes reviewed assessed as carrying a negative message, 40 per cent a neutral message and 3 per cent a mixed message.[102] There were no drug scenes assessed as portraying a positive message about drugs.[102]

Box 4 – Example of drug reference in television

Holby City

Gabby is in hospital after taking too many drugs and consequently gave birth 3 months early. The baby is on life support and unlikely to survive. Her boyfriend Leo blames her for taking the drugs, and himself for supplying them. Gabby says she can't think straight and wants Leo to ask the doctors for some drugs so she can say yes to turning off the life support machine. Leo says that he cannot believe she is more bothered about her next fix than her dying baby.

Source: Ofcom (2005) *Smoking, alcohol and drugs on television: a content analysis*. London: Ofcom.[102] Reproduced with the permission of Ofcom.

4.6.4 Music

As with other forms of media, exposure to music and the impact on drug use has received little attention. There are a range of reasons why music may influence health behaviours. Music is related to personal identity, and people often model themselves after musical figures, in terms of dress, behaviour and identity.[103-105] Exposure to modern music is ubiquitous.

Reference to drug use in certain types of music is common, and appears to influence drug use. American research from 2008 found that explicit substance use is represented in around one-third of the most popular songs in the USA, with alcohol and cannabis referenced most frequently.[106] Overall explicit substance use is portrayed most frequently in rap music, and least frequently in pop music.[106] References within music to substance use are most commonly motivated by social pressure and sex, and are associated with partying and sex.[106] The social, sexual, emotional and financial consequences of drug use are most commonly depicted as positive.[106] The legal and physical consequences of drug use are more commonly depicted as negative.[106]

Robust research on exposure to drug references in UK music has not taken place, so it is not possible to make a reliable assessment of drug exposure in UK music. Due to the increasingly globalised trends in music in developed countries, there is a large degree of international crossover in styles of music. It is not unreasonable to take figures reported in the USA as a crude estimate of what is taking place in the UK.

Research has suggested that exposure to drug references in music influences cannabis use. American research from 2010 looked specifically at cannabis exposure in popular music and current cannabis use among students aged 14 to 15 years.[92] It was reported that high exposure to references to cannabis in popular music was independently associated with higher levels of current cannabis use.[93]

4.6.5 Celebrity

The reach of entertainment media provides unprecedented public access to the lives of celebrities. Public knowledge of the personal lives of media personalities is greater today than it has ever been. This is particularly true among young people.[107] Research from 2001 reported that of those surveyed, 59 per cent of young people stated that their celebrity idol had influenced some aspect of their attitudes or beliefs.[108]

Research has suggested that celebrities may have both a positive and negative impact on drug use, although this is not conclusive. Research from 2010, which examined Diego Maradona's influence on drug use (an Argentinean footballer with a history of involvement with drugs), found that those who had a greater degree of

parasocial interaction[l] with Diego Maradonna were more likely to have an increased awareness of drug abuse, a greater personal concern about drug use, abstain from drug use, and strongly support drug-use-prevention programmes.[94] In contrast, identification with Maradonna had a mitigating effect on prevention of drug use.[94] These findings suggest that notable celebrities may have a role in reducing drug use, and a conflicting role in increasing drug use.

4.6.6 Video games

Leisure activities have changed over the last 10 to 15 years, with the use of new technologies such as video game consoles taking up a large proportion of free time.[95] This increase in video game use is set within a context of leisure time that is increasingly being occupied by the use of electronic devices.[95]

The number and types of depictions of drug use in video games is less clear than for other forms of media. The most recent content analyses, from 2004 and 2005, of US teen- and mature-rated video games found that only a handful of video games depicted drug use in any format.[109,110] It should be noted that the video games industry is a continually expanding market, and it is likely that the number and complexity of video games on offer since these analyses were conducted has increased dramatically.[96] The number of depictions and types of drug use portrayed in video games are potentially much higher than the available figures suggest.

Given the relative paucity of evidence examining the frequency of video game use, and how this impacts on behaviour, it is not clear whether video games affect drug use. One American research study has suggested that video game use is positively related to drug use.[95] The direction of this relationship, in terms of games influencing drug use, or drug users being more drawn to games, is unknown. It is not possible to determine whether use of video games plays a direct role in use of drugs, or if it impacts drug use indirectly, by taking time away from activities that have been shown to have a protective influence on drug use.[95]

l Parasocial interaction is a term used in social science to describe one-sided, interpersonal relationships in which one party knows a great deal about the other, but the other does not.

4.6.7 The internet

Given the rapid advancement in the internet as a means of finding and disseminating vast amounts of information, it represents a developing area in terms of drug exposure and use. A 2009 piece of exploratory analysis on drug website viewing among 12 to 18 year olds in America, found that 5.4 per cent of youths had visited antidrug websites, 1.7 per cent had visited websites that discussed drug use in a positive light and 3.2 per cent had visited a mixture of both.[96] Viewing of websites encouraging drug use was associated strongly with drug-use behaviours.[96]

The extent to which internet use may influence drug use is unknown. From the limited available evidence, it appears that internet use may influence drug use in a more complex manner than is seen with other forms of popular media.[95] This complexity appears to arise from the type of internet use engaged in by an individual, with some use encouraging drug use, and other forms of internet use protecting against it. When the internet is mainly used for chat rooms, shopping, entertainment and pornography, an increase in the use of drugs has been found.[95] Conversely, when the internet is used for activities such as school work, it is associated with less drug use.[95] The content or purpose of internet use may be significant, in terms of use of illicit drugs.

Summary

- Drug use is widely held to be a multifaceted biopsychosocial phenomenon. No single biological, psychological or social factor is exclusively responsible for drug use.
- Family-based, adoption and twin studies have shown a substantial genetic component to drug use. Comorbid psychiatric illness and personality type have also been shown to be strongly linked to drug use.
- The rewarding potential of drugs, such as sensations of pleasure or relief from pain, may play a role in reinforcing the continued use of drugs. The use of drugs activates the mesolimbic dopamine system in the brain, strengthening neural connections, which influences the repetition of drug-related behaviours.
- A drug's potential to lead to tolerance and withdrawal may influence its continued use.
- The environmental or social factors commonly attributed to problematic drug use include family composition, behaviour and relationships, peer influence, social inequalities and being a member of a stigmatised group.
- Positive family relationships and communication may guard against future use of drugs. Living in a single-parent or step family, substance use among family members, family conflict and poor parental supervision are all indicators for drug use in young people.

- Stigmatised groups are at increased risk of drug use; these include young people in care institutions, sex workers (particularly those who work outdoors) homeless populations and victims of traumatic experiences.
- Evidence shows price has an impact on drug use but the effect is not the same for all types of drugs.
- Evidence of the effect of portrayals of drug use in popular media on drug use are limited and difficult to interpret. There is some evidence that portrayals of drug use in film have an impact on drug use in the UK. Notable celebrities may have a role in either reducing or increasing drug use.

Chapter 5 – Drug policy in the UK: from the 19th century to the present day

5.1 Introduction

The need to address problems associated with drug use is not a new phenomenon. As discussed in **Chapter 6**, a key question is what the primary aim of drug policy and legislation should be. At one end of the spectrum, it could simply be to reduce or eliminate illegal drug use, while at the other end it would focus entirely on the health and social problems of the individual drug user, by considering drug dependence as a chronic medical disorder. These are two examples of possible foci: the question is discussed in detail in **Chapter 6**.

Current policy in Britain takes account of both viewpoints, as well as the wider social and economic factors associated with illicit drug use (see **Chapters 3** and **6**). This chapter examines the development of drug policy in Britain since the mid-19th century and the rationale behind current policy.

5.2 The beginnings of drug control in Britain

Opium eating and laudanum (an alcoholic solution of opiates) consumption were widespread in mid-19th century Britain. Opium, and its derivative morphine, were available as patent medicines, in tinctures and other commercial products that were readily accessible through chemists and herbalists. The use of these products declined after the 1868 Pharmacy Act restricted opium sales to the pharmacist's shop, with the Act requiring pharmacists to keep records of the purchasers. The later 1908 Pharmacy Act moved morphine, cocaine, opium and derivatives containing more than 1 per cent morphine into part one of the poisons schedule. At this point, control was on availability and sale and was largely based on self-regulation by pharmacists, with little Government intervention. There was a small population of morphine-using addicts and some opium and cannabis smoking among artistic, mystic and bohemian circles but the population of drug users at the beginning of the 20th century was relatively small. At the same time, British pharmacists and physicians had nearly 40 years' experience of dispensing opiates and attempting to control their use.[1,2]

5.3 Domestic policy developments and international drug control

Meeting Britain's international treaty obligations set the context for the development of British drug policy. Britain became committed to a drug control policy as a result of the international narcotics control system established in the early 20th century. A series of international meetings, largely prompted by American concern about Far Eastern opiate use, laid the bases of the system. Britain's involvement in the Indian opium trade with China through the 19th century was brought to an end by the Anglo-Chinese opium agreement. There was some domestic pressure for drug control, with public and press concern about cocaine smuggling to India and opium and morphine smuggling to the Far East, some of which involved British ships. This was of particular concern in the wartime emergency situation of 1915-1916 and was compounded by reports of cocaine use among soldiers, especially those on leave in London, which was seen as compromising army efficiency. In 1916, the Army Council issued an order prohibiting the gift or sale of cocaine and other drugs to soldiers, except on prescription. This was the first time that a doctor's prescription was required by law for the purchase of specified drugs. When cocaine dealers found ways of circumventing the order, pressure from the press, anti-opium interests, the police and the army resulted in the introduction of the Defence of the Realm Act regulation 40B (DORA 40B) in the same year. The regulation made it an offence for anyone except physicians, pharmacists and vets to be in possession of, to sell or give cocaine. The drug and its preparations could only be supplied on prescription. The Home Office had responsibility for policing DORA 40B and now took on the central role of initiating and shaping the restrictions of drug control policy.[2]

Before the First World War, Britain had been a signatory of the International Opium Convention at The Hague in 1912. This Convention was the first global attempt at drug control and aimed to reduce the use of morphine and cocaine by restricting the manufacture of, trade in, distribution and use of, these drugs to 'legitimate' scientific and medical purposes only. Although it did not specify limiting the use of opium to scientific and medical purposes (and this was, essentially, not covered until 1961 – see **Section 5.7**), signatories agreed to suppress the use of opium and distribution was expected to fall as a result of the Convention. In 1920, Britain was obliged to introduce the first Dangerous Drugs Act to meet the Hague Convention's requirements, while also incorporating the DORA 40B restrictions. The Dangerous Drugs Act laid the foundation of further legislation and control policy in Britain and consolidated the precedence of the Home Office over the Ministry of Health in the area of drug policy. The Act generated little debate at large, with recent sensational accounts of recreational drug use among bohemian circles prompting a political and press demand for a penal approach to drug control.[2] A penal emphasis in policy continued with the 1923 Dangerous Drugs and Poisons (Amendment) Act, which imposed stricter controls on doctors and pharmacists with respect to dangerous

drugs, introduced more severe penalties and higher fines and sentences, and expanded the search powers of the police.[2]

5.4 The Rolleston Committee

The 1920 Dangerous Drugs Act established that medical practitioners were allowed to prescribe morphine, cocaine and heroin but it was not clear from either the Hague Convention or the Act whether prescribing these drugs to addicts constituted legitimate medical work. The population of opiate users at this time was small, largely middle class, addicted to morphine and in the medical and allied professions, or had become dependent in the course of medical treatment. At the suggestion of the Home Office, the Ministry of Health convened an expert committee (Departmental Committee on Morphine and Heroin Addiction) chaired by Sir Humphrey Rolleston, then President of the Royal College of Physicians, to consider and advise on the circumstances in which it was medically advisable to prescribe heroin or morphine to addicts. The report produced by the committee (usually known as the Rolleston Report),[3] reaffirmed the doctor's freedom to prescribe regular supplies of opioid drugs to certain addicted patients in defined circumstances that the committee regarded as 'treatment' rather than the 'gratification of addiction'. While the possession of dangerous drugs without a prescription was still the subject of the criminal law, addiction to opioid drugs was recognised as the legitimate domain of medical practice (and hence prescribing). This balance of a medical approach within a penal framework became a hallmark of British drug control and has been called the 'British System' by commentators.

5.5 Increasing international drug control

The Hague Convention had laid down domestic control obligations for its signatories and not addressed the question of transnational controls. The League of Nations was established after the First World War and provided a centralised body for administration of international drug control. The second Geneva Convention of 1925 was signed under the auspices of the League of Nations and required parties to the treaty to provide annual statistics on drug stocks and consumption, the production of raw opium and coca, and the manufacture and distribution of heroin, morphine and cocaine. The Geneva Convention was also notable in bringing cannabis under international control, and restrictions on cannabis were implemented in Britain with the 1928 Dangerous Drugs Act.

5.6 Growth of drug use in Britain and the 1960s heroin crisis

Until the 1960s, prescribed heroin was the main medication used for treatment of those addicted to morphine and heroin; this population was predominantly aged over 30 years and middle class. This was a settled approach, as a major addiction problem was not apparent in the British drug scene. In the early 1960s, the first reports about the activities of young heroin users began to appear in British newspapers – a phenomenon that was new to Britain. The Home Office convened an interdepartmental committee under the chairmanship of Sir Russell Brain, largely prompted by concern about whether long-term prescribing was still appropriate more than 30 years after the Rolleston Report. The Brain Committee published its first report early in 1961,[4] and concluded that the drug problem remained small and no changes in approach were needed. Increasing media and professional evidence of a heroin epidemic in Britain involving younger heroin users led to a Second Interdepartmental Committee on Drug Addiction, again chaired by Brain. Drug addiction was formulated as a '*socially infectious condition*', for which it was appropriate to provide treatment. The committee concluded that the increase in heroin use had been fuelled by a small number of doctors who were overprescribing heroin and that individual doctors were unable to meet the demands of the new situation. As a result, the committee recommended that restrictions should apply to the prescribing of heroin and cocaine and that new drug treatment centres should be set up within the NHS hospital system.[5] These recommendations were enacted in the Dangerous Drugs Act 1967, which restricted the prescribing of heroin for treatment of addiction to doctors licensed by the Home Office. The doctors who obtained licences were mostly consultant psychiatrists in charge of drug treatment centres. This limitation of doctors' clinical autonomy received some criticism from the medical profession. As this restriction of clinical freedom did not extend to prescribing heroin for medical treatment other than addiction, and GPs were generally reluctant to treat addicts, the change was accepted by the medical profession.[6] The committee's recommendations also led to the introduction of a notification system for addiction (as with infectious diseases). The drug clinics took over the prescribing of heroin to patients who were previously prescribed by private doctors and NHS GPs. Prescription of heroin to addicts declined in the early 1970s, as doctors at the drug clinics were uncomfortable prescribing it. Methadone had recently been developed in the USA as a new treatment specifically for dependence on opioid drugs, and the clinic doctors considered oral methadone was a more suitable medication.

The 1960s also saw widespread use of other illicit drugs by young people, notably cannabis but also LSD and amphetamines. Concern over the use of amphetamines, or 'purple hearts' or 'pep pills' as they were commonly called, led to their control under the Drugs (Prevention of Misuse) Act 1964.[7] While amphetamine use among young people was the first to draw political reaction, cannabis-related convictions increased steeply as use of this drug became more popular in the mid-1960s, and the issue was

hard to ignore. A Home Office Advisory Committee (the 'Wootton Report') in 1968 recommended that the legal penalties for simple possession of cannabis should be reduced and casual users of cannabis should not receive custodial sentences.[8] Despite initial hostile Government reaction, the committee's proposals were implemented in subsequent legislation.

5.7 The UN Single Convention on Narcotic Drugs 1961 and the Misuse of Drugs Act 1971

Further international drug control protocols followed the Geneva Conventions of the 1920s and eventually all the existing international drug control treaties were consolidated in the UN 1961 Single Convention on Narcotic Drugs (see **Box 2**, **Section 1.2**).[9] The Single Convention has four schedules of controlled drugs, ranging from most restrictive to least restrictive. The Misuse of Drugs Act 1971 was introduced to meet the treaty obligations and has an analogous scheme of drug scheduling, with drugs considered the most harmful such as heroin and cocaine classified as Class A drugs (see **Table 1**, **Section 1.2**). The Act also established the Advisory Council on the Misuse of Drugs (ACMD) to keep the drug situation under review and give advice to the Government on measures '*which, in the opinion of the Council ought to be taken for preventing the misuse of such drugs or dealing with social problems connected with their misuse*'.[10] Among its important functions is to recommend classification of new or existing drugs that may be misused. Further details of drugs covered by the Misuse of Drugs Act are given in **Section 1.2**.

5.8 Heroin use grows in the 1980s

The 1980s brought new pressures on the treatment system and Britain's drug control policy, with a new epidemic of heroin use. The numbers of addicts notified to the Home Office and the amount of heroin seized rose dramatically. There was widespread media coverage of this new wave of heroin use, and drug use became an important and sustained policy issue for the first time since the 1960s. The then Conservative Government sought to encourage a coordinated response from across the range of Government departments, by setting up an interdepartmental working group of ministers and officials, which resulted in the first Government strategy document *Tackling drug misuse*, issued in 1985.[11] During the same period, new ways of tackling drug treatment were developed following the recommendations of the *Treatment and rehabilitation* report from the ACMD in 1982.[12] The focus became the broader population of 'problem drug users', seen as a heterogeneous group with a range of problems beyond the use of a drug itself, encompassing social and economic as well as medical problems. The generalist doctor was seen as key to dealing with drug-related problems, and drug use was no longer seen as the sole province of the specialist clinic psychiatrist. The ACMD saw an increasing role for doctors outside the specialist treatment services, with the proviso that there were '*strict safeguards*'.[12] In response to the ACMD recommendations for safeguards, in 1984 the Department of Health and

Social Security issued all doctors with their publication *Guidelines of good clinical practice in the treatment of drug misuse*.[13] Revisions of these guidelines have been published subsequently, most recently in 2007.[14]

5.9 The AIDS epidemic and treatment policy

The late 1980s saw HIV and AIDS become the dominant public health concern. People who injected drugs were seen as a potential route for the HIV virus to rapidly diffuse into the wider community, through the sharing of contaminated injecting equipment. In response to the widespread concern about AIDS, HIV and those who inject drugs, the ACMD set up an AIDS and Drug Misuse Working Group. The resulting report, *AIDS and drug misuse. Part I* provided the template and rationale for a reorientation of drug treatment practice to meet the new challenge of drug use and HIV.[15] The report stated that '*The spread of HIV is a greater threat to individual and public health than drug misuse*'. The ACMD saw that the key aims of drug treatment were to attract seropositive injecting drug users into treatment, where they could be encouraged to stop using injecting equipment and move away from injecting toward oral use. Harm minimisation was the core principle of this policy and received support from the Government. Harm minimisation was characterised by adopting measures that sought to reduce the harm caused by continued drug use, through modification of using behaviours.[15] *AIDS and drug misuse. Part I* and the complementary report *AIDS and drug misuse. Part 2*,[16] continued the policy aim of involving GPs and general psychiatrists more actively in the direct provision of services to address the more general healthcare needs of drug users, while the specialist clinics maintained responsibility for the more complicated needs of the more difficult drug users. Needle exchange services rapidly became mainstream. Their early introduction, together with a range of other harm-reduction interventions, has been seen as critical in preventing the major spread of HIV among individuals who inject drugs that has been seen in other countries where such approaches were not adopted.[17]

Around this time, maintenance prescribing re-emerged in the form of oral methadone maintenance and became increasingly provided by GPs, either independently or in a 'shared care' scheme, as well as by specialist services.[18]

5.10 Crime and a redesign of British drug policy

Through the 1980s, there was a notable increase in use of recreational drugs among the young, not only cannabis but also the new 'dance drugs' such as ecstasy, and there was increasing public and political concern about the link between drug use and crime. The number of drugs offenders rose from 24,000 in 1986 to 95,000 in 1996, with the majority of these offences related to cannabis possession.[19] In 1995, the Government published *Tackling drugs together: a strategy for England 1995-1998*,[20] in which it sought to combine '*accessible treatment* [with] *vigorous law enforcement … and a new emphasis on education and prevention*' (see **Chapter 7**). The aim of the strategy was to

increase community safety from crime and to reduce the health risks and other damage related to drug use. This and subsequent Government drug strategies reconceptualised drug treatment as an intervention that might lead to a reduction of criminal behaviour. Criminals who use drugs were to be encouraged to enter treatment as a means of altering their behaviour. The strategy also indicated a move away from the harm-minimisation approach of the preceding years. The strategy stated that the principal objective of treatment was to assist drug users toward abstinence and maintenance of a drug-free state, while recognising that other approaches would continue to be taken to reduce the spread, by drug users, of HIV and other communicable diseases. There was to be an integrated approach coordinated by the Government but with the details of policy determined at a local level by new drug action teams. Statutory and voluntary sectors would work together and health and social care would be linked to the criminal justice system.

In 1996, the Department of Health (DH) set up a review of drug treatment services and their effectiveness, which concluded that '*treatment works*'.[21] This conclusion underlay the 10-year New Labour strategy *Tackling drugs to build a better Britain*,[22] which stressed the use of diversion into drug treatment from the criminal justice system. An example of this new approach was the introduction of community sentences for offenders, involving drug testing and treatment components called Drug Treatment and Testing Orders (DTTOs). Treatment services within prisons expanded. The main focus of the strategy was problematic drug users, which included those who injected drugs and those using opioid drugs and crack cocaine. Spending on drug treatment rose substantially. In 1994, around 67,000 people were counted as being in treatment, rising by 26.9 per cent to 85,000 in 1998-1999 and a further 129.9 per cent to 195,400 by 2006-2007, giving an overall rise from 1994 to 2006-2007 of 191.6 per cent.[23] The treatment and rehabilitation (see **Glossary**) budget for 1994 was £61 million, while the total spend on treatment in 2005-2006 was estimated to be £508 million.[23]

In criminality surveys conducted in England and Wales in 2000 and 2002, over one-third of male prisoners and over a quarter of men serving community sentences reported experiencing problematic drug use.[24] Men were more likely than women to say that they had problems staying off drugs in the last 12 months (43% versus 39%).[24] The budget for drug treatment interventions in the criminal justice system in England and Wales was over £330 million in 2006-2007 and spending on drug treatment in prisons increased from £7 million in 1997-1998 to £80 million in 2007-2008.[25]

The 2002 *Updated drug strategy* concentrated on the '*most dangerous drugs*', defined as Class A drugs, and again emphasised the objective of getting more of the estimated 250,000 problem drug users into treatment.[26] The Home Office was given overall responsibility for implementation of the drug strategy, although the DH and Department for Education and Skills (DfES) had key roles. The 2004 *Tackling drugs:*

changing lives strategy document again stressed Government policy to get as many offenders who were drug users into treatment as possible.[27] Another aim was to enhance the quality of treatment by providing support with housing, finance, skills training and job opportunities for drug users. The 2008 drugs strategy *Drugs: protecting families and communities*[28] maintained the focus on problematic drug users and the links between drugs and crime but laid a greater emphasis on the impact of problematic drug use on others in the user's circle, especially children and families.[29]

5.10.1 Recovery and policy

As part of the NHS, the National Treatment Agency (NTA) was set up in 2001 as a specialist health authority to monitor expenditure of the drug treatment budget and to expand the availability and quality of treatment. As described in the previous section, the number of people in drug treatment increased by 129.9 per cent from 85,000 to 195,400 between 1998-1999 and 2006-2007.[23] Then in 2009 the NTA shifted its focus from getting people into treatment to helping service users achieve and sustain long-term recovery (see **Glossary**), with services aiming to support recovery that is shaped by the individual drug users themselves. This focus on outcomes and an emphasis on recovery is mirrored in the most recent Government strategy, *Drug strategy 2010. Reducing demand, restricting supply, building recovery: supporting people to lead a drug free life*.[30] Policy continues to move beyond an individualistic focus, with less emphasis on drug–crime links and a greater consideration of the wider social and economic factors that drive problematic drug and alcohol use and that can help or hinder recovery.

A subsequent Government document, *Putting full recovery first*, provides more detail of the Government's aim of establishing a treatment system approach that puts more emphasis on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.[31] An Inter Ministerial Group on Drugs has been established to direct and monitor implementation of the drug strategy. The functions of the NTA will be transferred to a new body, Public Health England (PHE), from April 2013. PHE is being set up to provide leadership within a recovery sector that covers both drug and alcohol dependence. A payment by results model is to be developed to incentivise reaching outcomes that include being free of dependence and not involved in crime and being in employment. Local areas will be supported to move local commissioning structures toward recovery- and abstinence-based support.

It is worth noting that there are risks associated with moving to a payment by results system where the agencies, and presumably thus the professionals, are to be paid not for their services, but by whether the patient behaves, and lives his/her life, in the way that Government policy prescribes. Given the poor success rates for treatment of drug problems, particularly if the definition of success includes abstinence, this may make a bad situation worse. Apart from that, within a medical framework, this would be a

change in the aims of doctors: not to minimise sickness but to help the patient lead a good life, and to be paid not for services provided but by how the patient behaves. Under such circumstances, healthcare professionals may be reluctant to take on patients who have failed before, as they may be at higher risk of failing again.

The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

An overview of current Government strategies in the UK is provided in **Appendix 6**.

Summary

- Purchase of psychoactive drugs such as opium and laudanum was unregulated in the UK until 1868, when the Pharmacy Act was passed, restricting opium sales to pharmacists' shops, with a requirement on pharmacists to keep a record of purchasers.
- In 1916, an Army Council order, and the Defence of the Realm Act later the same year, made it an offence for anyone except a physician, pharmacist or vet to possess, sell or give cocaine, and the drug and its preparations could only be supplied on prescription.
- The first Dangerous Drugs Act passed in 1920, and a further Act in 1923, passed to conform to the 1912 International Opium Convention at The Hague to which Britain was a signatory, imposed stricter controls on doctors and pharmacists in relation to dangerous drugs, in a climate with a penal emphasis on policy.
- It was not clear from these Acts or the Convention whether prescribing drugs to addicts constituted legal medical work. The Rolleston Report in 1926 affirmed the right of doctors to prescribe controlled drugs to addicts in defined circumstances and set the scene for a balanced medical approach within a penal framework.
- The second Geneva Convention in 1925 brought cannabis under international control, and restrictions were implemented in the 1928 Dangerous Drugs Act.
- As a result of increasing use of heroin, the 1967 Dangerous Drugs Act restricted prescribing of heroin to doctors licensed by the Home Office, and set up new drug treatment centres within the NHS hospital system. A notification system for addiction was also introduced.
- Introduction of other drugs to the illicit market, such as amphetamines and LSD, led to the Drugs (Prevention of Misuse) Act 1967, and recommendations that penalties for possession of cannabis should be reduced, with no custodial sentencing for casual use, were implemented.
- The 1961 United Nations Single Convention on Narcotic Drugs introduced four schedules of controlled drugs and was followed in the UK by the Misuse of Drugs Act 1971, with drugs categorised in classes according to perceived harm and therapeutic value. This Act also set up the Advisory Council on the Misuse of Drugs, to keep the drug situation under review and advise the Government.

- With increasing illicit drug use, Government strategies in the 1980s began to focus on the social and economic problems of drug users, in addition to their medical problems, and GPs became involved with the more general healthcare needs of drug users, leaving specialists to deal with more difficult drug users.
- The spread of HIV and AIDS generated 'harm-minimisation' policies in relation to drug use, by modification of using behaviours, from injecting to oral use where possible.
- The 1995 Drug Strategy moved away from this approach to one encouraging users to enter treatment, with the aim of moving users towards abstinence and achievement of a drug-free state and of reducing criminal behaviour.
- Later strategies (2002, 2004, 2008) continued to emphasise the need to move drug users into treatment and focused on the links between drugs and crime; they also aimed to move drug treatment away from the NHS into the community and voluntary sector.
- The 2008 strategy maintained a focus on drugs and crime but placed greater emphasis on the impact of problematic drug use on children and families of users.
- With the 2010 strategy, policy continues to move away from drug-crime links and towards a focus on wider social and economic factors that drive problematic drug use. The emphasis is on people in drug treatment achieving recovery, rather than aiming to simply engage and retain them in treatment.
- The international policy framework means that all possession or marketing of illicit drugs remains a criminal activity.

Chapter 6 – Controlling illicit drug use

6.1 Introduction

This chapter reviews the current legal framework related to illicit drug use and examines the implications for society and for health professionals.

In considering the impacts of current drug policy and law, it is important to distinguish between harm associated with drug use per se and harm associated with, or created or exacerbated by, the legal/policy environment. The former are discussed in detail in **Chapter 3**. **Sections 6.2** and **6.3** of this chapter specifically explore the legal/policy aspects. This type of distinction may not always be clear in practice; while the health harms associated with drug use are relatively well understood,[a] the relationship between drug use, and the cultural/political response to the drug use, is complex. It is important to consider whether the same drug may cause different types of harm depending upon the sociocultural context and legal framework within which the drug use takes place.

The debate surrounding enforcement of drug policy is controversial, with strong feelings both for and against liberalisation. These arguments are discussed in **Section 6.5** and alternative approaches to drug control are presented in **Sections 6.6** and **6.7**.

6.2 Evaluating prohibition

Reviewing both the impact and effectiveness of the legal and policy environment relating to drug use is not straightforward and study conclusions must be interpreted with care. A wide variety of interest groups come to the drug policy debate, with different priorities and analytical perspectives, which can be shaped by personal, ideological, political or professional interests. Drug policy and law influence a broad range of social policy arenas, encompassing a range of different enforcement interventions that may deliver success on certain indicators, but prove counterproductive elsewhere. The choice and prioritisation of particular effectiveness indicators can lead to very different conclusions.

a Novel psychoactive substances are an important exception.

Separating out the impact of drug policy from the effects of wider social policy and non-policy exogenous variables that can also affect drug-using behaviours and drug markets[b] presents an additional challenge.

A key question is what the primary aim of drug policy and legislation should be. Specifically, should it be the reduction of illegal drug use through the use of prohibitive and criminal legislation? Or should it be, from the medical perspective, focused upon reducing public health and social harms? This dichotomy requires consideration of a complex array of social, health and human rights factors. The doctor's role is discussed in more detail in **Chapter 11**.

6.2.1 A global approach

Current drug policy is underpinned by the UN drug conventions (see **Box 2**, **Section 1.2**). Their founding principle is the need to address problems associated with drug use and is primarily concerned with protecting and improving public health. The consensus based on these conventions is to create a framework where supply and possession of listed drugs for non-medical/scientific use is made a criminal offence.

6.3 The benefits of a prohibitionist approach

6.3.1 Deterring use

While there is a voluminous literature on the deterrent effects of punitive enforcement on crime generally, there is comparatively little about how the threat of sanctions and law enforcement affects illicit drug use.[1] Existing research has tended to focus on the impacts of decriminalising, rather than criminalising, the possession and use of illicit drugs. The 2001 US National Academy of Sciences report, *Informing America's policy on illegal drugs: what we don't know keeps hurting us* recognised this evidential gap,[2] and called for more research into the deterrent effect, noting that '*a rational drug control policy must take appropriate account of the benefits and costs of enforcing sanctions against drug users*'. The gap was also identified in the 2006 Science and Technology Select Committee's report *Drug classification: making a hash of it?*[3] The report notes that while legal enforcement underpins the Government's policy on drug classification, the committee could find '*no solid evidence to support the existence of a deterrent effect*'. The UK Government responded by acknowledging the lack of evidence but stating that it '*fundamentally believes that illegality is an important factor when people are considering engaging in risk-taking behaviour*'.[4] The response also stated that '[T]*he Government will consider ways in which the evidence base in the context of the deterrent effect can be strengthened*',[4] but it has, to date, not published any such evidence.

b For example, demographic changes, cultural shifts, migration, medical advances, emergence of new drugs, recessions, wars, etc.

For crime more broadly, the literature indicates that generalisations about punishment and deterrence are not useful and a differentiated approach is necessary for different types of crimes.[5] Research that specifically studies deterrence and illicit drug use is urgently needed.

Studies that have focused on the deterrent effects of sanctions on users have produced mixed results. Some polling evidence, for example by The Police Foundation inquiry report *Drugs and the law* (1999),[6] suggests that, for some, illegality is a factor in their decision not to use drugs. The inquiry concluded that the evidence of a deterrent effect was '*very limited*' and found that health concerns and general disinterest played a much greater role. There is also some evidence showing that sanctions can reduce use of hard drugs among individuals already in the criminal justice system,[7] though Babor and colleagues caution against extrapolating these findings to more open systems.[8]

Comparative analysis between countries or jurisdictions with different levels or intensity of punitive user-level enforcement provides no conclusive support for a significant deterrent effect. A 2008 review, drawing on mental health surveys conducted in 17 countries across the world in conjunction with the WHO, concluded that global drug use is not simply related to drug policy, since '*countries with stringent user-level illegal drug policies did not have lower levels of use than countries with liberal ones*'.[9] As discussed in **Chapter 3**, the relative levels of harm for different drugs correlate poorly with their legal classification, and legal substances, such as alcohol and tobacco, have been found to be at least as harmful as commonly used illicit drugs (see **Figure 3**, **Chapter 3**).[10,11] Studies comparing levels of cannabis use in different states in both Australia and the USA have similarly failed to demonstrate any significant correlation between punitiveness of enforcement and prevalence of use.[12] Some of the groups that are most vulnerable to drug-related health harms are likely to be among those least deterred by punitive laws. These groups include young people with an inclination to take risks, dependent and problematic users, those from socially deprived backgrounds, those with existing criminal records, and those with mental health vulnerabilities (see **Chapter 4**). The impact of enforcement on overall harms for these groups is likely to be limited.[13]

There may even be perverse effects associated with criminalisation. The Home Office noted in its submission to the Home Affairs Select Committee in 2001: '*some people would seem to be attracted to experiment with controlled drugs because of their illegality (eg "forbidden fruits")*'.[14] Any such effects are hard to quantify.

Following their review of the existing evidence, Babor and colleagues report that the majority of interventions aimed at deterring drug use in the criminal justice system show '*modest effectiveness*'.[8] They go on to stress that the amount of research on this issue has been minimal, of varying quality, and concentrated in only a few countries.[8] A review published by the EMCDDA in 2010 also highlighted that the impact of legal changes on drug use has not been consistently evaluated.[15] At present, the evidence justifying the conclusion that criminal prohibition deters use is not strong (see **Chapter 7**).[16] While it would be wrong to discount the effect altogether, there is little evidence that punitive enforcement is significantly effective in 'sending a message' that will help reduce or eliminate drug use. It is argued that illegality can help young people in particular to 'say no to drugs': this is a credible proposition but it is hard to measure its efficacy with any accuracy. It is unclear whether comparable prevention efforts are more effective with illegal drugs than legal ones, ie whether the illegality itself is a key aspect of prevention effectiveness (see **Chapter 7**). In addition to legal sanctions, it is also important to consider the extent to which social, cultural and religious norms may condition and deter use. Writing in the journal *Science*, Jarvik suggests that religious convictions may account for the lower use of legal substances such as alcohol and tobacco in Amish and Mormon communities.[17] He goes on to hypothesise that such convictions, combined with the conspicuous stigmatisation of deviant behaviour, may deter illicit drug use more effectively than the threat of prison.[17]

6.3.2 Reducing use by reducing availability and increasing price

As discussed in **Section 4.5.1**, price appears to influence the use of drugs.

Availability

As discussed in **Section 4.5.2**, the physical availability of drugs refers to their proximity and accessibility. In an illegal market, it is difficult to establish reliable methods to measure availability. A series of proxy measures have been used by the UK Government, such as drug seizures, dismantling of criminal groups, and recovery of criminal assets. While these measures can indicate enforcement successes, they are not measures of availability.

The reduction of availability was a priority target in the 1998 and 2002 UK drug strategies,[18,19] and the 2010 strategy takes what it describes as an '*uncompromising approach to crack down on those involved in the drug supply both at home and abroad*'.[20] The strategies are not based upon an agreed definition of availability, and although the 2010 strategy focuses on process measures such as breaking up criminal gangs and seizing assets, it has not identified any targets or established measures of impacts on availability.[20]

Price

The role of supply-side enforcement in raising prices is unquestioned. Products like heroin and cocaine, which cost only pennies per gram to produce, frequently sell for £40 or more per gram by the time they reach consumers in the UK.[21] This process, which has been described as '*the alchemy of prohibition*',[22] turns low-value processed agricultural products into commodities that are literally worth more than their weight in gold.[23]

The impact of price on levels of drug consumption is discussed in detail in **Section 4.5.1**. Drugs of dependence have more complex economics than other products: drug use does not necessarily follow predictable economic patterns in a simple linear way, which makes generalised conclusions problematic. Levels of use can rise and fall independently of price[24] and there is some disagreement between commentators on the impact of price rises. Drawing on the work of Grossman[25], Babor and colleagues maintain that even users who are drug dependent cut back on their consumption when prices rise.[8] Other commentators argue that for those who are dependent, increases in price are unlikely to have a dramatic impact on use, particularly when compared to those whose use is more intermittent.

Enforcement can certainly create obstacles in terms of additional expense and inconvenience, and drug markets can be locally displaced and temporarily disrupted. There is no evidence from the experience of past decades to suggest they can be eliminated or significantly reduced in the long term while demand remains high. It is evident that criminal supply has been able to keep pace with rising demand. Inference from prevalence data (see **Chapter 2**), and survey data on '*drug offers*', indicate that drugs remain widely available to those who seek them.[26]

Supply and demand within a criminal market that is not regulated by the state still has a series of checks and balances. In a market that is primarily demand driven and supplied by profit-seeking entrepreneurs, prices are unlikely to rise to a level where demand dries up. Even if supply-side enforcement can successfully achieve a '*drought*' or push prices for a particular drug beyond the reach of most consumers, the effect is likely to be displacement to other more affordable drugs, or a drop in drug purity as a way of maintaining more consistent street prices.[21] Both these impacts have unpredictable health implications. For dependent users on lower incomes, demand may also be less price elastic (for an explanation of price elasticity, see **Section 4.5.1**), so that increasing prices lead to increased levels of criminal activities (see **Section 6.4.2**) to raise the necessary funds, rather than reduced use.[27]

All of these effects were observed during the 2000 Australian '*heroin drought*',[c,27] although it is not clear how much this was related to enforcement, and how much to external factors in global opiate production.[28]

6.4 The costs of a prohibitionist approach

In 2008, the executive director of the UNODC acknowledged the major negative '*unintended consequences*' of prohibition.[29] These included the creation of '*a huge criminal black market*'; '*policy displacement*', where '*public health, which is clearly the first principle of drug control …* [is] *displaced into the background*'; and '*the balloon-effect*', where enforcement activity in one area does not eliminate production, transit or use, but simply displaces it to another area.[29] Other bodies, such as the coalition of non-governmental organisations (NGOs) supporting the 2011 Count the Costs initiative,[30] have produced more detailed analyses. The key costs, or unintended consequences, of the prohibition approach are outlined next.

6.4.1 Increasing health risks associated with drug use

Prohibition has an impact on the type and quality of the specific products consumed and on consumption behaviours. This increases health risks in a number of ways.

- Illegally sourced drugs are of unknown quality, strength and purity, lacking the certainty of legal drugs or legally regulated equivalents for medical use. This point was emphasised by a recent NTA guide.[31] In addition to the health risks associated with illicit drug use, the uncertainty surrounding the quality and purity of illicit drugs creates or exacerbates risks. These include the risks of overdose, poisoning (from adulterants, bulking agents and other contaminants), and infection from biological contaminants among drug users who inject.[32]
- A fall in purity and/or rise in the cost of heroin (and some other powder-form drugs) can encourage injecting in preference to safer methods of use such as smoking/snorting, as a way of getting a greater effect for less money.[33]
- The economics of the illegal trade have tended to push markets towards increasingly potent or concentrated (but profitable) drugs and drug preparations associated with increased risks.[34]
- Criminalisation can increase risk by pushing use into marginal, unhygienic and unsupervised environments. This is particularly true for needle sharing among drug users who inject, in relation to transmission of HIV and hepatitis.[35,36] These infections are not a feature of injecting use in Swiss-style clinics, where injection of prescribed heroin is supervised (see **Section 6.6.4**).[37]

c The Australian 'heroin drought' was an unpredicted and abrupt reduction in heroin supply. The shortage was most marked in New South Wales, which witnessed increases in price, decreases in purity at street level, and reductions in the ease of obtaining the drug.

- Criminalisation of users can discourage them from approaching drug services, contacting paramedic services in emergency situations, or volunteering accurate or complete information to health professionals (see **Section 8.2**).

6.4.2 Fuelling crime

The causal links between drug use and crime are complex and contentious among criminologists.[d,13] There is a clear and demonstrable connection or nexus between supply-side criminalisation and actual acts of criminal behaviour.[30] Conflict between high demand for drugs and the laws that prohibit their production, supply and use puts pressure on supply in a market that is demand led. This inflates prices, which has two effects.

- The first is the creation of a lucrative opportunity for criminal entrepreneurs. To give an indication of scale, the Home Office has estimated the value of the UK illicit drug market at £4.6 billion a year,[38] while the 2005 UN *World Drug Report* estimated the global market at $332 billion (around £200 billion) at retail level.[39] There is cogent evidence that organised crime has exploited the opportunities created by drug prohibition. A growing illegal trade is associated with high levels of violence,[40] corruption and money laundering.[41,42]
- The second effect is that inflated prices encourage acquisitive crime among low-income dependent drug users fundraising to support their habits (see **Section 3.4.2**). While estimates are hard to formulate,[43] volumes of such offending are substantial (see **Section 3.4.2**).[44] The high cost of drug use also exacerbates the social harms discussed in **Section 3.4**. The specific role of illegality is underlined by an absence of evidence for acquisitive crime associated with dependent use of alcohol,[45,46] tobacco[47] or prescription drugs, which are all available legally.

6.4.3 Marginalisation of human rights

In many countries, drug enforcement has resulted in serious human rights abuses,[48,49] including torture and ill treatment by police, judicial corporal punishment for drug offenders, executions and extrajudicial killings, arbitrary detention, and denial of basic health services. Poorly scrutinised drug-enforcement practices can additionally exacerbate systematic discrimination against people who use drugs, impede access to essential medicines,[50,51] and prevent access to harm-reduction and HIV-treatment services for marginalised high-risk populations.

Many of these particular issues are of marginal or no relevance to the situation in the UK, where concerns centre essentially around access to HCV treatment for some people who inject drugs (see **Section 10.6**).[52,53] There is some evidence to suggest that UK drug users feel that they are negatively profiled by the police. Research examining drug

d Issues to consider include the influence of intoxication, and links to common exogenous variables such as social deprivation.

users' experiences of street policing in the UK found that the vast majority of the sample (*n*=62) were known to the police and were targeted for attention. Very few relayed stories about receiving help from the police: for most of the sample, contact was a negative experience involving routine '*stopping, checking, questioning, and moving persons on*'.[54] Those who were subjected to this practice tended to perceive it as an unwarranted imposition of authority and control. When conducted in a busy, public place, some of the sample also felt that police actions were intended to shame the user by exposing their drug use to others.[54] Stigmatisation of problematic/dependent drug users, particularly those who inject drugs, remains a serious issue (see **Section 8.2**), with a series of identified negative public health implications; this is made worse by the burden of criminalisation, in addition to the stigma relating to addiction to legal or prescription drugs.[35,55]

An additional human rights issue is the discriminatory use of police powers. White young people in an affluent neighbourhood in New York are many times less likely to be stopped, checked and arrested by police than Black young people in a poor neighbourhood in New York;[56] the same has been documented for California[57] and elsewhere in the USA.[58] Discriminatory stop-and-search patterns have also been well documented for the UK, particularly in London and the Midlands.[59]

6.4.4 Negative impacts on international development, security and conflict

Drug consumption in the developed west cannot be divorced from the regions in which many of the drugs are produced, or through which they are transported. The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.[60,61] Illicit drug production and transit is naturally drawn to the most marginal and underdeveloped regions that already have poor infrastructure and weak governance. This ensures that the threat from enforcement can be kept to a minimum, public officials are relatively easily corrupted, and a ready supply of labour is available from impoverished populations.

The endemic violence and corruption that accompany large-scale illicit drug operations massively increases the challenges involved in bringing development to regions involved in drug production, such as Latin and Central America and Afghanistan,[62] or those involved in transit, such as the Caribbean and West Africa.[62] The resulting destabilisation has disastrous knock-on impacts on a range of public health, human rights and wider development goals, deterring investment, restricting activities of development agencies and NGOs, and diverting limited domestic or foreign aid resources into enforcement rather than public health and development initiatives.[62]

6.4.5 Financial costs

Expenditure on the UK's drug strategy is around £1.2 billion per annum, of which £300-400 million is on enforcement, with most of the rest spent on treatment.[63] This figure is understated, as it includes only direct, proactive, spending on supply-side enforcement, and does not include reactive spending dealing with drug-related crime across the criminal justice system, including police, courts, probation and prisons. When these costs are included, the total criminal justice expenditure is estimated at between £2 billion[64] and £4 billion[65] per annum. These criminal justice costs are in addition to the wider social and economic costs of drug-related crime itself (see **Section 6.4.2**), which have been estimated at around £16 billion a year in England and Wales.[24]

The overall spend (proactive and reactive) on drug law enforcement and dealing with the costs of drug-related crime is significantly greater than the amount spent on drug-related health interventions (see **Section 3.5**).

6.4.6 Consequences for health professionals

The existing legal framework can impact on the ability of health professionals to provide treatment for individuals who need medical intervention. It can, for example, make access to vulnerable populations more difficult and make problematic drug users reluctant either to come forward or to disclose information about their drug use (see **Section 8.2**). It can also create political or practical obstacles to providing certain treatments (eg for hepatitis or HIV) or harm-reduction interventions (eg needle exchange or methadone treatment), especially for individuals who are in prison (see **Section 10.6**).[51-53]

6.5 Debate on the need for reform

Calls for any form of liberalisation of policy, and especially moves towards legalisation and regulation of any currently illegal drug, remain controversial, with debate frequently being polarised. Proposals have increasingly moved into the mainstream political arena. The case in favour of maintaining the overarching prohibitionist status quo has also been put by a range of individuals and agencies.

6.5.1 Maintaining the status quo

The core of the arguments against law reform is that it threatens to reduce or remove existing barriers to availability and will thus lead to increased availability, use, dependence and related harms. It is additionally argued that the potential for increased use would be made worse by the removal of the deterrent effect of criminality and the 'wrong message' that any such reforms would send out, particularly to young people.[66-71] The experience with some legal drugs, specifically alcohol and tobacco, is often suggested as a potential indicator of where levels of use of currently illegal drugs could end up, without the restraining influence of prohibition.[66-71]

While the UK Government has generally refrained from engaging in the detail of this debate, the Home Secretary, writing in the foreword to the 2010 drug strategy, stated unequivocally that the '*Government does not believe that liberalisation and decriminalisation are the answer*', as they '*fail to recognise the complexity of the problem*'.[20]

Similar rejections of any liberalisation of UK drug laws are regularly issued by the Home Office in response to such calls. In 2010, for example, in response to the Government's drug strategy consultation paper, the ACMD recommended that:

> '[F]*or people found to be in possession of drugs (any) for personal use (and involved in no other criminal offences), they should not be processed through the criminal justice system but instead be diverted into drug education/awareness courses* […] *or possibly other, more creative civil punishments.*'[72]

While recognising the harms associated with drug use and the need to support '*those caught in the cycle of dependence*' to live drug-free lives, the Home Office rejected the ACMD's recommendation, stating that '*giving people a green light to possess drugs through decriminalisation is clearly not the answer*'.[73] A very similar response was given to the Global Commission on Drug Policy's report *War on drugs*.[74,75]

More detailed critiques of reform proposals have been made by academics [66,77] and NGO coalitions.[67,68] The UN drug agencies have also produced clear statements. For example, in the preface to the *World Drug Report* 2009, the UNODC Executive Director concludes that '*transnational organized crime will never be stopped by drug legalization*' and calls for '*more control on crime, without fewer controls on drugs*'.[69] The 1997 *World Drug Report* also presents a more nuanced discussion in a chapter dedicated to '*the regulation–legalization debate*'.[70] The US Drug Enforcement Agency has gone further, producing a detailed debating guide titled *Speaking out against drug legalization*.[71]

6.5.2 Changing the status quo

Those who argue that the status quo is not working believe that reform is needed and that the current punitive criminal justice approach to drug use has failed in its key aim of eliminating or substantially reducing the trade and use of illegal drugs and related health harms. They argue that the blanket prohibition of non-medical use of drugs encompassed by the three UN conventions (see **Section 1.2** and **Chapter 5**) has an effect on users' access to healthcare (see **Section 8.2**) and leads to additional social and health harms associated with the illegal drug trade (see **Section 3.4** for a discussion of part of this issue). These arguments are made

while accepting that criminalisation might have had some, positive, deterrent effect. The point is made that a modified and reformed system could be substantially more effective than the status quo. The point is also made that the options for reform are not binary: criminalisation or non-criminalisation. There is a spectrum of alternatives and permutations of alternatives that could be used to potentially improve upon the present system. There may well be some elements of criminalisation that should remain but that should be coupled to other non-criminal approaches.

These broad conclusions have been repeated in a series of UK reports produced in recent years, including those from the Police Foundation,[6] the Home Affairs Select Committee,[77] The Prime Minister's Strategy Unit,[24] the Royal Society for the encouragement of Arts, Manufacture and Commerce,[78] and the UK Drug Policy Commission (UKDPC).[79] They are also endorsed by the Vienna Declaration of 2010, which calls for evidence-based drug polices.[80]

A 2011 report from the Global Commission on Drug Policy, whose members included the former Secretary-General of the UN, Kofi Annan,[e] and a further five former heads of state, summarises the current situation.[74] It states that the vast expenditure and effort involved in enforcing prohibition has failed to curtail supply or consumption of illicit drugs. It cites the health and social harms that are linked to drug use and those that occur as a direct consequence of prohibition and suggests that Government expenditure on '*supply reduction strategies and incarceration displace more cost-effective and evidence-based investments in demand and harm reduction*'.[74]

Most recently, a 2012 report from the UKDPC, *A fresh approach to drugs*, identifies the need for a new approach to policy that changes the ways in which Government and society respond to drug problems, informed by a thorough analysis of the evidence for improvements to polices and interventions.[81]

It calls for *'a clear distinction between the overall goals of drug policy and the tools to deliver it'*, looking at ways to support responsible behaviour, while also focusing on ways in which *'society can enable and promote recovery from entrenched drug problems'*. The report advocates a 'wholesale review' of the Misuse of Drugs Act 1971 and the classification of drugs (see **Section 1.2**), with a commitment to ensuring a strong evidence base to inform all changes to policy.

e Following his appointment as Joint Special Envoy for Syria in April 2012, Mr Annan recused himself as a Commissioner of the Global Commission on Drug Policy, with immediate effect.

6.6 What are the options for an alternative legal framework?

There is a spectrum of alternative legal frameworks available, and a useful, if incomplete, body of evidence to draw on. This includes experience with other drugs, in other countries, and with approaches to regulation and control of other risky products or behaviours.[82]

The options for alternatives range from harshly enforced absolutist prohibition, through a series of regulatory market models, through to (effectively unregulated) free market models (see **Box 5**).[83] Between these extremes, there is a range of options for less punitive approaches, decriminalising drug users, and potentially regulating drug markets.

Box 5 – The range of regulatory market models

Prohibition/criminalisation

Prohibiting/criminalising non-medical production, supply, possession and use, with punitive sanctions. The intensity of enforcement and severity of penalties can vary. Decriminalisation (see **Glossary** and **Section 6.6.2**) of personal possession and use can operate within a prohibitionist framework.

- *Examples*: heroin, cocaine, cannabis, ecstasy
- *Market controller*: criminal entrepreneurs, corrupt officials

Regulated markets

A range of regulatory controls are deployed, covering drug production and trade, products, gatekeepers of supply and users. Some drugs, preparations and activities remain prohibited.

- *Examples*: prescription drugs, OTC drugs, alcohol, tobacco
- *Market controller*: moderate to intense regulation by Government agencies

Free market legislation or 'supermarket model'

Drugs are legal and available for essentially unrestricted sale in the 'free market', like other consumer goods.

- *Example*: caffeinated drinks
- *Market controller*: corporate/private enterprise, with minimal regulation by Government agencies and voluntary codes for retailers

Adapted from Rolles S (2009) *After the war on drugs: blueprint for regulation*. Bristol: Transform Drug Policy Foundation,[83] with the permission of Transform Drug Policy Foundation.

Within each of these of these broad categorisations, there exists a range of sub-options. As highlighted in **Box 5**, different drugs in the UK sit within all three categorisations. While illegal drugs obviously come under 'prohibition/criminalisation', the UK's approach could be described as intermediate between the most punitive and most tolerant of the prohibition models observed around the world.

As discussed in **Section 6.2.1**, the international consensus set out in the three UN conventions (see **Box 2**, **Section 1.2**) means that supply and possession of classified drugs is made a criminal offence. There are a number of legal and policy reforms that can take place within an overarching prohibitionist framework. These are explored below (see **Sections 6.6.1 and 6.6.2**) and can involve moves towards either more or less punitive approaches. Any options that involve legally regulated production, supply and availability of drugs that are currently illegal for non-medical use (see **Sections 6.6.3 and 6.6.4**) face more substantive legal, practical and political obstacles (both domestically and internationally), as they necessarily involve crossing the line established by the UN drug conventions that prohibits any such moves.[f,g,83]

6.6.1 Increasing the intensity or severity of enforcement

Relatively few policy makers, even those such as the UK and US Governments and UN drug agencies who argue against less punitive enforcement, call for increases in the intensity of enforcement against drug users, even if tough talking around drug trafficking remains a key element of the political narrative. In the USA, there has recently been a conscious effort to move away from the 'war on drugs' rhetoric of past decades.[84] Some UK commentators have argued that the evident failures of UK drug policy are not due to failure of the prohibition paradigm per se, but rather the failure to enforce the laws with sufficient vigour and resources. These include members of the police and academia and some media commentators and think tanks.[h,85]

f See *After the war on drugs*[83] Appendix 1 page 165.

g There is the option of denouncing the treaty, withdrawing from the convention, and requesting reaccession with a reservation.[12] Bolivia is part way through this process and has asked to be re-admitted if the UN removes the statute that classifies the coca leaf as illegal.

h Including the Social Justice Policy Group,[85] and the Centre for Policy Studies.

6.6.2 Sentencing reform, including options for non-criminal sanctions for certain drug offences

Various options exist for reforming sentencing for drug offences. The UK has recently concluded a consultation process and review of sentencing guidelines for drug offences under the auspices of the Sentencing Council. Its primary aim has been to improve guidelines to ensure consistency of sentencing, while leaving the average severity of sentencing unchanged.[86] Potential sentencing reforms beyond the remit of this review could consider the severity of sentencing more broadly and examine options for raising or lowering average penalties, or alternative non-criminal disposals for some offences.

This concept of maintaining certain drug offences but reforming sentencing to empower judges to impose more non-custodial sentences, or enabling law enforcement agencies to use administrative (non-criminal) sanctions, is usually explored in reference to possession of small quantities of drugs for personal use. Small-scale production, usually of cannabis, or not-for-profit supply among peer networks, is also occasionally included in such discussions. This is often referred to as **decriminalisation**, although the term is inaccurately and confusingly used in some of the literature.

'Decriminalisation' only describes a process, rather than an actual policy or legal framework, and it is often mistakenly either confused with **legalisation** (which usually includes **regulation**, see **Section 6.6.4**), or assumed to mean the removal of any sanctions, or removal of an offence from law entirely. These terms are defined in more detail in the **Glossary**.

Decriminalisation of use[i] is widespread across the world (see **Glossary** and below), and there is a clear trend of growing support and adoption for such approaches.[87,88] It is difficult to generalise about these experiences, as there are many variations between countries (and often between local Government jurisdictions within countries), as well as different legal structures and definitions of civil and criminal offences and sanctions.[89] There are also significant variations in the threshold quantities used to determine the user/supplier distinction,[90] as well as the non-criminal sanctions adopted. Variations include fines, warnings, treatment referrals (sometimes mandatory) and confiscation of passports or driving licences. The key point is that decriminalisation does not mean deregulation; it means adopting a different (and it is hoped), more effective response than the use of the criminal courts and process.

i Dutch coffee shops go beyond decriminalisation of use. They operate within a regime where a drug (cannabis) can be **purchased** within a highly regulated retail system, as well as used and possessed.[8] New legislation has been introduced prohibiting sales to non-Dutch residents; however, local authorities have been given the power to determine how the laws will be implemented/enforced. A number of cities have enforced the law (eg Maastricht and Tilburg), while others (including Amsterdam) have not.

A distinction is also made between *de jure* decriminalisation, which involves specific reforms to the legal framework, and *de facto* decriminalisation, which involves a similar outcome, but is achieved through 'turning a blind eye' tolerant policing – effectively non-enforcement of criminal laws that technically remain in force. Confiscation of drugs also characterises most decriminalisation policies, with the exception of discretionary approaches adopted by police under some of the more tolerant cannabis policy models (in the Netherlands, Belgium and Spain for example).[89]

There is considerable variation in the approaches operating within the regulatory framework in different countries. **Box 6** presents a list of countries that have adopted some form of non-criminal disposals for possession of small quantities of some or all drugs, and an example case study is set out below.

Box 6 – Countries that have adopted non-criminal disposals for possession of small quantities of drugs

Europe

Austria, Portugal, Spain and the Czech Republic have decriminalised all drugs (*de jure* decriminalisation), while the Netherlands and Switzerland effectively have similar but *de facto* decriminalisation policies. Luxembourg, Belgium and Germany have adopted similar approaches for cannabis (in some German Lander this is applied to all drugs).[91]

Latin America

Argentina, Mexico, Paraguay, Peru and Uruguay have decriminalised all drugs, Ecuador and Brazil have decriminalisation laws pending, Chile and Ecuador have partial decriminalisation, and in Colombia the Government and Supreme Court are involved in an ongoing legal and constitutional dispute over a 1994 decriminalisation law. [j,92,93]

Elsewhere in the world

Four Australian states and 14 US states have decriminalised cannabis possession. Russia has made possession of small amounts of any drugs for personal use an administrative offence, and Kyrgyzstan has administrative responses to small-scale possession offences.[94]

j A 1994 Supreme Court ruling effectively made criminalisation of possession unconstitutional. The constitution was amended in 2009 to recriminalise possession.[92] This has recently been challenged again in the Supreme Court.[93]

Case study: The Portugal experience

The publication in 2009 of a report by the US-based CATO Institute[95] on Portugal's 2001 decriminalisation policy has made the country a focus of global drug debate. The Portuguese policy decriminalised the possession of small quantities of any drug for personal use, alongside expanding drug-treatment and harm-reduction interventions.

The volume of data collected on numerous indicators over 10 years provides many useful lessons but has also provided scope for cherry-picking and filtering through different political and ideological perspectives.[96] Some of Portugal's prohibitionist 'antidrug' organisations, for example, present the data as indicating an unmitigated disaster,[97] in contrast to the arguably rose-tinted perspective of the libertarian-leaning CATO Institute report.[95]

A comprehensive academic study of the Portugal experience has now been published in a peer-reviewed journal. *What can we learn from the Portuguese decriminalization of illicit drugs?*[98] summarises that since decriminalisation, the following changes have been observed:

- small increases in reported illicit drug use amongst adults
- reduced illicit drug use among problematic drug users and adolescents, at least since 2003
- reduced burden of drug offenders on the criminal justice system
- increased uptake of drug treatment
- reduction in opiate-related deaths and infectious diseases
- increases in the amounts of drugs seized by the authorities
- reductions in the retail prices of drugs.

In conclusion, this publication notes:

> '[The Portugal experience] *disconfirms the hypothesis that decriminalization necessarily leads to increases in the most harmful forms of drug use. While small increases in drug use were reported by Portuguese adults, the regional context of this trend suggests that they were not produced solely by the 2001 decriminalization. We would argue that they are less important than the major reductions seen in opiate-related deaths and infections, as well as reductions in young people's drug use. The Portuguese evidence suggests that combining the removal of criminal penalties with the use of alternative therapeutic responses to dependent drug users offers several advantages. It can reduce the burden of drug law enforcement on the criminal justice system, while also reducing problematic drug use.'*

A more recent *Drug Policy Profile of Portugal* produced by the EU's European Monitoring Centre on Drugs and Drug Addiction has supported these conclusions.[99] It observed that the model might be best described as a public health harm-reduction policy rather than a first step towards legalisation of drug use.

6.6.3 Unregulated 'free market' model

While only advocated by a small group of free market libertarians, the free market model has remained a feature of the debate, although more as a thought experiment than a serious proposition. Under this model, a clear description of which can be found in Nadelmann,[100] all aspects of drug production and supply are legalised. Regulation is essentially left to market forces and self-regulation among vendors, with a minimal level of Government intervention (trading standards, contract enforcement and so on) that might be associated with standard consumer products available in a supermarket.[100] There is an argument that tax revenue from sales of drugs could be used to fund the public health costs associated with dependent drug use.[100]

Given the negative health outcomes that under-regulated markets for alcohol and tobacco have produced historically,[46,101] this is a model that is unlikely to be supported by health professionals working to proven public health principles.

6.6.4 Options for legal regulation of drug production and availability

While the UN conventions clearly mandate that the supply of drugs must remain an offence, this section examines models that cannot currently operate for use of drugs classified within this framework. In theory, the conventions can be revisited and changed; Room and colleagues identify four ways in which the 1961 Convention could be altered:

1. by amendment under Article 47. This Article states that *'[A]ny Party may propose an amendment to this Convention'* and requires either unanimous consent or the convening of a Conference of the Parties by action of the Economic and Social Council of the United Nations (UN ECOSOC)
2. by termination of the convention, resulting from a sufficient number of denunciations (withdrawals) from the convention to reduce the number of parties below 40
3. by removing particular drugs from any of the convention's schedules. This would have to be based on the recommendation of a WHO expert committee, and would require a majority vote in the Commission on Narcotic Drugs (CND), and in the UN ECOSOC if any party appealed the CND decision
4. the convention could theoretically fall out of use as conditions change, without any formal termination or denunciation.[12]

These methods highlight that there is scope – in theory at least – to change the drug conventions. Proposals for how post-prohibition models of drug market regulation (legalisation) could function have been published relatively recently.[102-104] In the UK, the Transform Drug Policy Foundation's 2009 *Blueprint for regulation*[83,105] presents a range of potential regulatory models for different drugs that are currently illegal. Options are explored for controls over:

- products (dose, preparation, price, and packaging)
- vendors (licensing, vetting and training requirements, marketing and promotions) and outlets (location, outlet density, appearance)
- who has access (age controls, licensed buyers, club membership schemes)
- where and when drugs can be consumed.[83]

Five basic models for regulating drug availability are proposed:

1. **a medical prescription model**: or supervised venues for the highest-risk drugs (injected drugs including heroin and more potent stimulants such as methamphetamine) and problematic users[k]
2. **a 'specialist pharmacist' retail model**: for moderate-risk drugs such as amphetamine, powder cocaine and ecstasy. A trained and licensed pharmacist would act as both gatekeeper and provider of health/risk information. Systems for named/licensed user access and rationing of volume of sales could be added
3. **licensed retailing**: including tiers of regulation appropriate to product risk and local needs. This could be used for lower-risk drugs and preparations such as lower-strength stimulant-based drinks
4. **licensed premises for retail and consumption**: similar to licensed alcohol venues and Dutch cannabis 'coffee shops', potentially also for smoking opium or drinking poppy tea
5. **unlicensed retail**: minimal regulation for the least risky products, such as caffeine drinks and coca tea.

In making the case for such an approach, Transform has additionally noted that:[83]

- rather than a universal model, a flexible range of regulatory tools would be available with the more restrictive controls used for more risky products and less restrictive controls for lower-risk products
- differential application of regulatory controls could additionally encourage use of safer products, behaviours and environments
- commercialisation of markets would be strictly controlled, with default bans on most or all forms of promotion, branding and marketing
- the oversight and enforcement of new regulations would largely fall within the remit of existing public health, regulatory and enforcement agencies. Activities that take place outside the regulatory framework would naturally remain prohibited and subject to civil or criminal sanctions
- such models would also need to be phased in cautiously over several years, under close evaluation

k Existing examples include Swiss-style heroin 'clinics' where prescribed heroin can be injected in a supervised quasi-clinical setting. UK law already allows for maintenance prescription of cocaine, (injectable) heroin, and amphetamines to dependent users, although only heroin and amphetamines are prescribed in practice (in a similar fashion to methadone) and numbers are small, around 400 and 2,000 individuals respectively.[37]

- the costs of developing and implementing a new regulatory infrastructure would represent a fraction of the resources currently directed towards supply. There would also be potential for translating a proportion of existing criminal profits into tax revenue. It is important to note that there is no clear assessment as to what level of revenue this could generate.[83]

6.7 Call to consider alternative options for drug policy

In 2010, Anand Grover, the UN's Special Rapporteur on the Right of Everyone to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health, presented a thematic report on drug policy to the UN Secretary-General.[106] As well as calling for the decriminalisation of possession and use of drugs, the report's concluding recommendation was to: '*Consider creation of an alternative drug regulatory framework in the long term, based on a model such as the Framework Convention on Tobacco Control*'.[107] This was attempted in 2010 by Room and colleagues who adapted the tobacco model and used it as the basis for a '*draft Framework Convention on Cannabis Control*'.[12]

The Framework Convention on Tobacco Control contains a series of UN-mandated recommendations specifically for the public-health-based regulation of a non-medical drug.[107] Transform has noted that this convention encompasses the same types of regulation proposed in its own blueprint,[83] and has a similar number of signatories (168) to the three UN drug treaties, '*which define parallel contrasting systems for the absolute prohibition of almost all other non-medical drug markets*'.[83]

As noted in **Section 6.5.1** the Government's ACMD has expressed interest in exploring non-criminal sanctions for drug possession[72] and many of the UK's leading drug service providers have expressed support for exploration and debate around the legal framework relating to drug use.[108-113] Internationally, support for such moves is far wider – as demonstrated by initiatives such as the Vienna Declaration in 2010[80] and the Beirut Declaration in 2011.[114] The UKDPC report in 2012, *A fresh approach to drugs*, proposes a new approach to the ways in which Government and society respond to drug problems.[81] It provides an analysis of the evidence for how policies and interventions could be improved, with recommendations for policy makers and practitioners to address the new and established challenges associated with drug use.

While support for moves in this direction has gathered increasingly mainstream intellectual, political and public support, the current legal framework presents an impassable obstacle. The law is absolutist in nature; it does not allow for experimentation with any forms of legally regulated non-medical drug production and supply.

6.8 Conclusions

This chapter highlights the shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability and presents some evidence that the effects are, at best, modest (see **Sections 6.2** and **6.3**). The evidence suggests that the costs of enforcement are high (see **Section 6.4.5**) and prohibition has created a range of unintended health, social and economic costs (see **Section 6.4**).

Some commentators have gone on to argue that the benefits of the UK's current system are questionable and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required. The assumption is that a different policy framework holds the potential to be more effective than the status quo. Other commentators have been more cautious: for this group, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

Doctors have a key role to play in taking this debate forward and this is discussed in **Chapter 11**.

Summary

- For the last half century, prohibition and criminalisation has been the dominant policy for drug control, both nationally and internationally.
- It is very difficult to separate the impact of drug policy from the wider effects of social policy and environmental factors on drug-using behaviour.
- Levels of drug consumption do not necessarily follow predictable economic patterns in a linear way, where an increase in price leads to decreased use.
- It is difficult to predict supply and demand of illicit drugs, as all trade is illegal; decreased availability of one drug may result in users turning to other drugs that are more readily available.
- Illegally sourced drugs are of variable quality and purity, with clear adverse health implications for users.
- Criminalisation increases the health risks of illicit drugs by encouraging use in unsafe environments and through dangerous methods of administration. It also deters users from approaching health professionals for treatment.
- A prohibitionist approach creates a lucrative opportunity for criminality and leads to high levels of acquisitive crime among dependent users.
- The stigmatisation of vulnerable populations of drug users also has significant public health implications.
- The illicit drug trade has deleterious effects on development and security in many of the world's most fragile regions and states.

- The national budget required for law enforcement, the criminal justice system and dealing with the costs of drug-related crime is several times higher than the amount spent on drug-related health interventions.
- The existing legal framework directly impacts on the ability of medical professionals to gain access to and treat problematic drug users.
- Debate on liberalisation of drug policy is contentious, with strong feelings on both sides of the argument.
- There is widespread confusion about the use of terms such as 'decriminalisation' and an insufficient understanding that criminalisation can operate in tandem with other forms of regulation, supervision and intervention.
- Alternative legal frameworks include decriminalisation (eg sentencing reform), regulation (within a legislative framework), and free market legalisation.
- There is a shortage of robust evidence relating to the benefits of the present prohibitionist framework in terms of deterring use or reducing availability.
- The evidence suggests that the costs of enforcement are high and that prohibition has created a range of unintended health, social and economic costs.
- While some commentators argue that the benefits of the UK's current system are questionable, and that there is a pressing need to explore whether a new and/or modified legal and policy framework is required, other commentators have been more cautious. Among this latter group of commentators, the lack of research into the effects of criminalising illicit drug use and possession does not, in itself, lead to the position that new or amended regulations are required.

Chapter 7 – Delaying initiation and minimising the use of illicit drugs

7.1 Introduction

Drug dependence, even after successful treatment, can impact on the lives of individuals and their families. Reducing the number of people using drugs by delaying their initiation into drug use and preventing the transition from experimental or recreational drug use to problematic or dependent use has a role to play in drug prevention.

At present, strategies that aim to reduce the use of drugs fall broadly under two categories:

- reducing the number of people who are dependent on drugs, mainly by means of treatment and other forms of support
- undertaking activities to improve people's knowledge about the risks of using drugs, to influence their attitudes and behaviour and to encourage the development of skills to resist.

Treatment and other forms of support are discussed in **Chapters 8-10**. **Section 9.2** specifically examines evidence on strategies that aim to reduce use in those who are already using drugs. This chapter will explore the efficacy of interventions that aim to delay the onset of drug use. A focus on young people has been chosen because the volume of research among this population is much larger than for prevention in adults.[1] Adolescence is recognised as the period in life when drug use is most likely to begin.[1] While the majority of drug initiates do not progress to harmful use or dependence, for a minority this timeframe represents a crucial period when harmful drug-taking habits can be formed.[1] A large number of interventions are targeted at this population.

7.2 Interventions for preventing drug use

Prevention strategies are recognised as the main policy area aiming to reduce drug initiation and continued use. Traditionally, two main aims of prevention initiatives are recognised. These are:

- **primary prevention**: where the aim is to avert or delay the initial use of a drug
- **secondary prevention**: where the aim is to minimise hazards, or actual harms, among those who have already begun using drugs.

Secondary prevention measures, such as interventions based on harm-reduction strategies, are yet to receive much in the way of attention, in terms of interventions that aim to influence people's knowledge attitudes and behaviour. In relation to alcohol use, available evidence suggests that harm-reduction approaches show considerable promise in reducing alcohol-related harm.[2] Similar research for drug use is not available.

Most preventative drug interventions, known as universal interventions, are directed at unselected populations. A small minority of target groups are known, or believed, to be at a heightened risk of involvement with drug use; targeted interventions are known as:

- **selective interventions**: these strategies target subsets of the total population who are thought to be at an increased risk of using drugs. These approaches are intended for entire groups of people considered at risk, regardless of the degree of risk for any one individual in the group
- **indicated interventions**: rather than affecting groups, indicated interventions focus on identifying individuals who are exhibiting early signs of drug use. The emphasis is placed on identification, intervention, support and, in some cases, referral.

When considering the evidence base for prevention programmes, there are two limitations. Firstly, researchers have studied a fairly narrow band of strategies.[1] Commonly used strategies, such as supporting grassroots coalitions that organise against drug use, have rarely been evaluated.[1] Few conclusions can be drawn by policy makers on the efficacy of the vast majority of interventions for preventing drug use. Interventions that take place in school-based settings have received the greatest amount of attention, usually because of the ease of conducting research in these settings, compared to community-based or mass media interventions.[1] Secondly, while drug prevention strategies are used widely internationally, research into their efficacy has mainly taken place in the USA.

There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK.[3,4] Even for programmes that are delivered effectively, these seem to have little impact on preventing future drug use.[3,4] Drug prevention programmes may have some benefit in terms of delaying the initial onset of drug use. Drug use at an early age is associated with future drug use, particularly for harmful drugs such as heroin or cocaine, and is correlated with a range of other negative behaviours.[1,5-7]

Midford reported in 2000 that the cost-effectiveness of drug education compares favourably with the cost-effectiveness of most law-enforcement approaches.[8] In 1999, Caulkins et al used modelling to indicate that the US drug education programmes led to an average drop in cocaine use of 3.8g per person.[9] The modelling went on to show that for every million dollars spent on drug education, consumption of cocaine would reduce by 26kg, which compared favourably with US law enforcement, but was not as

cost effective as drug treatment programmes.[8,9] Available research indicates that soundly conceptualised and rigorously implemented programmes that are comprehensively provided are likely to produce a net social cost saving to society.[8]

7.2.1 Universal prevention strategies

Universal prevention strategies aim to prevent, delay or reduce drug use and drug-related harms at a general population level. These types of interventions can include programmes that address an entire school population through drug education lessons, parents through parenting programmes, or communities through community-wide prevention efforts.

The vast majority of universal prevention initiatives take place in an educational setting. This is because schools represent the most systematic and efficient way of reaching a substantial number of young people.

Types of school-based interventions

The history of drugs education in UK schools, outside the factual content taught in science lessons, has taken place under a number of conceptual models. Despite the widespread international use of drug prevention programmes in schools, there is limited high-quality evidence about the effect of school-based interventions on drug use.

In the 1970s, drug education and prevention interventions in schools were primarily aimed at reducing drug use through giving young people information about the risks associated with drugs.[10] These interventions operated under the rationale that increased knowledge about the effects of drug use would impact on young people's attitudes to illicit drugs, with a consequent influence on behaviour, and therefore drug use.[10] These programmes generally sought to instil fear of the consequences of experimentation with drugs. Evaluation of this intervention shows that this approach did not reduce young people's drug-taking behaviour.[10] It is posited that the introduction of these interventions at a time when drug use, or at least cannabis use, was becoming more prevalent, led to difficulties for campaigns aiming to convince a population with extensive first-hand knowledge of drug use that it invariably led to serious harm.[1] A 2005 Cochrane review of school-based interventions to reduce illicit drug use found that approaches that simply convey didactic information about drugs and their effects have no impact on drug use.[11]

The early 1980s saw the development of what are termed 'affective programmes'. The theory behind these interventions is that drug use is caused by lack of self-esteem, as opposed to a lack of knowledge about the adverse effects of drug use. Affective programmes aimed to prevent or reduce the scale of drug use, through enhanced personal and social development.[10] While there is some evidence that these interventions improve drug knowledge, attitudes and self-efficacy, there is no evidence

that this type of programme impacts on drug use or behaviour.[10] The 2005 Cochrane review of school-based interventions, noted that programmes that teach social and coping skills were shown to reduce drug use marginally.[4,11] There was no evidence of a long-term impact from these interventions, and it was unclear what elements of skills-based approaches contribute to their effectiveness.[4,11]

The late 1980s saw the growing use of social influence programmes. These were based on the hypothesis that drug use stems from direct or indirect social influences from peers and the media.[10] These programmes aim to strengthen young people's resistance skills. There is little evidence of reduction in the use of illicit drugs as a result of these programmes.[10]

Most recent programmes have attempted to marry elements of all previous approaches into programmes designed to ensure that young people have the knowledge, skills and attitudes to make safe and sensible decisions about drug use. Research, including the 2005 Cochrane review,[11] has found that these high-quality school-based multifaceted programmes show a marked improvement in young people's knowledge and skills, which can have a small impact on illicit drug use, and drug behaviour, most notably in delaying the onset of use.[7-9,12]

Whole-school approaches, involve addressing a school's values and ethos, as well as considering staff training and the involvement of pupils, staff, parents, carers, governors and the wider community. Programmes that change the environment of a classroom or school are thought to be more effective than those that try to change individual behaviour. Research from the USA in 2008, which included interventions on improving classroom behaviour management, demonstrated a 50 per cent reduction in lifetime drug use among young males (aged 14) but no effect on young females. Stronger effects were found in boys who were identified as aggressive and disruptive at a young age.[13] This programme included no discussion of drugs, instead targeting changes in the school environment that promote consistency and reward positive behaviour. The long-term effects of this intervention appear to compare well with the best school-based programmes aimed specifically at drug prevention.[1] A possible explanation for this is the inter-relatedness of drug use and other aspects of young people's lives. Research has demonstrated that factors that predict development of a drug problem are also predictive of school failure, social isolation, aggression and other problems.[1] It should be noted that, of the 32 studies included in the above Cochrane review, none achieved the highest-quality rating for their research methods, and 28 of these were conducted in the USA.[11] This demonstrates the scarcity of high-quality reliable evidence, and presents difficulties in generalising any findings on the efficacy of school-based interventions from within the USA to the UK. It should be noted that, despite this limited evidence base, large amounts of pupil and staff time are invested in these types of intervention.

The current situation in the UK

The most recent guidance on drugs education in schools, published by the DfES in 2004,[14] states that all schools should have a drug education programme that should cover all drugs, and specifically cannabis, volatile substances and Class A drugs, and, to be effective, be supported by a whole-school approach.

This guidance also states that all schools should have a drug policy that sets out the school's role in relation to all drug matters, which includes the content and organisation of any drug education programme. This was reiterated in joint guidance published in 2012 by the Department for Education (DfE) and The Association of Chief Police Officers (ACPO).[15]

In the overwhelming majority of schools, drug education forms part of personal, social and health education (PSHE) programmes.[16] In terms of providing drugs education through PSHE lessons, in recent years the PSHE curriculum has expanded to include new modules (see **Box 7**). With no additional time provided for PSHE, this has had an immediate and negative impact on the time allocated to the provision of drugs education in some schools.[16] This is of concern, given the range of drug-promoting influences that exist (as identified in **Chapter 4**).

Box 7 – Combating the psychological attractiveness and social acceptance of drugs

As identified in **Chapter 4**, heavy exposure to substance use in popular media may influence drug use. Universal interventions aimed at reducing the use of drugs may need to be rethought by policy makers. This is because currently accepted health education usually takes place under the wider umbrella of PSHE in schools. These lessons take place for finite number of hours a year, with information on health behaviours such as drug use often competing with other modules. Over the same time period, the average person is likely to be exposed to a larger number of hours of drug-promoting references in film, television, popular music, video games and the internet. This large disparity between the exposure to drugs in popular media, and interventions to reduce the use of illicit drug use, may result in the efficacy of interventions to reduce the use of drugs being diluted by the widespread exposure to drug imagery. **Appendix 7** explores current and possible policy options to counter the psychological attractiveness and social acceptance of drug use within popular media.

The quality of provision of drug education in UK schools differs across age ranges. The most recent assessment of drugs education in the UK, conducted by Ofsted in 2005, found that the quality of teaching is good in around 80 per cent of lessons at key stages one and two (primary school)[16] and in around 65 and 75 per cent of lessons at key stages three and four, respectively (secondary school).[16] The review also noted that the evidence base for school-based drug programmes is poor, particularly with reference to primary school education.[16,17]

While the majority of young people of school age have never used an illicit drug, a proportion may experiment with illicit drug use, some of whom may then go on to become problem drug users.[18] In 2010, 9 per cent of pupils aged 11 years reported having ever taken drugs, with the prevalence increasing to 40 per cent among 15 year olds.[18] Further information on the prevalence and patterns of drug use can be found in **Chapter 2**.

From a UK perspective, there is a paucity of evidence for the efficacy of school-based drug prevention programmes. The Home Office's *Blueprint drugs education* programme,[19] which ran from 2003 to 2007, was the largest drugs education programme that has ever been run in Britain. The programme provided drug education lessons to school children aged 11 and 12 years, across 23 different schools in England. It aimed to equip pupils with the knowledge and experiences necessary to make informed choices about drug use.[19] The efficacy of the programme is not known, as the study design meant it was not possible to draw any conclusions from this research.

Despite a lack of evidence that UK school-based prevention programmes affect drug use, perception studies suggest that the messages taught in these programmes are reaching pupils, although the extent to which these are affecting behaviour, and therefore drug use, is less strong. The 2011 NHS Information Centre survey of smoking, drinking and drug use among secondary school pupils, surveyed 6,519 pupils aged 11 to 15 years across 219 schools in England.[20] It found that in relation to school-based prevention programmes, most pupils recalled lessons about drugs (60%), and felt they helped them think about the risks of taking drugs (96%).[20] Pupils also believed that lessons helped them realise that taking drugs was against the law (88%), think about what they would do if they were offered drugs (77%) and find out where they could get advice or information about drugs (71%).[20] Fewer pupils reported that the lessons helped them understand that not as many young people take drugs as they previously believed (38%).[20]

Boys were more likely than girls to say they had learnt messages from lessons about drugs.[20] Younger pupils were more likely in general to indicate they had learnt lessons from drug education programmes.[20] A more complex pattern was reported in

relation to pupils' previous experiences with drug use. Those who had never taken drugs were more likely to say that lessons had helped them to avoid drugs, and to think about what to do if they were offered drugs.[20] This contrasts with pupils who had taken drugs, who were more likely to say they had been helped to understand why people took drugs, and to see that not as many people as they thought took drugs.[20]

Drug testing

Drug testing in schools has been suggested as an alternative school-based policy intervention to reduce the use of illicit drugs. This policy has not been extensively evaluated in the UK. Drug testing in schools, whether random or on suspicion, is more common in the USA, albeit in a minority of schools.

In the UK, the DfES guidance on drug testing in schools states that the implementation of drug testing should be considered carefully.[14] It recommends that schools should formulate their own appropriate drugs policies and practices in consultation with staff, parents, governors, local drug services and the police. The guidance also advises that drug testing should be placed within the wider context of educating children about the risks, effects and consequences of drug use. Since the publication of this guidance in 2004, the uptake of drug testing in schools has been limited. It is recommended by the ACPO that drug testing should not be used in cases where there is no evidence of drug use.[15]

Drug testing in schools does not appear to affect the use of illicit drugs. Research has demonstrated that drug use does not differ between schools with and without drug testing.[21] A 2005 review of school-based prevention programmes found no convincing evidence to support random drug testing in schools.[22] It was also speculated that such programmes could have negative effects, which include reduced trust between pupils and staff.[22]

Non-school settings

Non-school settings for universal interventions that aim to reduce drug use can include youth clubs, primary care centres, colleges, and work with families and in the community. In 2006, the Cochrane Collaboration published a systematic review of interventions for the prevention of drug use delivered to young people in non-school settings.[23] The interventions included:

- multicomponent community studies
- family intervention studies
- education and skills training.

The lack of research in this area meant the authors were unable to carry out a meta-analysis and pool results across similar interventions. It was suggested that further high-quality research was needed before any conclusions could be made on the efficacy of non-school-based prevention strategies.[23]

Some evidence of efficacy was found in individual studies but this was not constant across the different study modalities. Significant effects on reducing drug use were detected for individual family interventions.[23] There was insufficient evidence that any of the multicomponent community studies for reducing illicit drug use that had been considered had any advantage over the school-based programmes. Education and skills training were found to have little effect on reducing drug use.[23] Overall, the findings suggest that community-based programmes offer little for reducing the use of drugs, although family interventions may have some impact.

Mass media and social marketing approaches

Mass media campaigns are commonly used as part of universal strategies to reduce drug use. They often involve the use of television, radio and other advertising media.

In the UK, the *Talk to FRANK* initiative (now called *Frank. Friendly confidential drugs advice*) is the most recent example of a mass media prevention initiative. This was established by the Department of Health and the Home Office in 2003 and included an online information source. It is advertised and promoted through television, radio and the internet.[24] As part of the 2010 drug strategy,[25] the UK Government affirmed its commitment to continue enhancing this service.

In 2002, WHO undertook a thorough analysis of mass media approaches for the prevention of psychoactive substance use. An analysis of 13 review papers concluded that the use of mass media alone improved awareness of drug harms in some cases, but overall was not effective in reducing illicit drug use.[26] This was particularly true in countries where the presence of countervailing influences, such as drug club cultures, drug imagery within music, drug-using role models and exposure to images of drug use was high.[26] These influences are common to the UK. Large-scale research, which evaluated the efficacy of the US National Youth Antidrug Campaign between 1999 and 2003 showed exposure to campaign materials had no effect on youth drug use.[27] The widespread use of mass media approaches to reduce drug use may need to be rethought by policy makers.

Using social marketing to enhance mass media approaches may be a useful way of increasing the efficacy of mass media campaigns. [28] Social marketing programmes are designed to bring about social change using concepts from commercial advertising and marketing. Social marketing differs from commercial marketing, in that it tries to sell 'ideas' to consumers, as opposed to products. Social marketing seeks to influence social behaviours and benefit the target audience.

Using social marketing to deliver health messages presents a developing area in reducing the uptake of drugs. An evaluation of social marketing to reduce alcohol and cannabis use found a significant effect in terms of lifetime cannabis use.[28]

Cannabis initiation was shown to be between 10 and 72 per cent less likely two years after exposure to the social marketing. This research has yet to be robustly replicated.

7.2.2 Selective and indicated prevention strategies

Aside from broader questions surrounding the impact of universal prevention strategies on drug use, universal strategies can also be inefficient, as they may address those who are not at risk of using illicit drugs, while not concentrating on those at highest risk. Selective and indicated prevention strategies overcome this by targeting specific groups at heightened risk of using drugs. Research has demonstrated that these groups commonly include the homeless, those looked after by local authorities or in foster care, sex workers, truants and those excluded from school, young offenders, children from substance-using families, and young people with conduct or depressive disorders (see **Section 4.4.4**).[29] There are benefits of these approaches but since selective and indicated prevention programmes are specifically targeted at those at risk of drug use, identifying these individuals also risks stigmatising or labelling those involved in these strategies.[30,31] This in itself is a risk factor for subsequent drug use.[30,31]

Despite the large amount of information concerning risk and protective factors for drug use, relatively little is known about what works to reduce the use and uptake of illicit drugs among high-risk groups. There is a limited amount of high-quality research in this area, but the evidence that is available suggests these interventions have some effect at reducing drug use among vulnerable groups. A 2005 review of US research of the effectiveness of drug use prevention programmes found that selective prevention programmes appear to be effective in reducing short-term drug use among vulnerable young people, although this was not found across all the studies reviewed.[32] A number of school-based programmes that provided life skills training to at-risk groups demonstrated positive effects on drug use, whereas similar studies did not.[32] Results from studies of the effectiveness of counselling services for at-risk groups were mixed, with some showing positive results, some showing negative results, and some showing no change at all.[32] Multicomponent studies also produced similarly mixed reports.[32]

While interventions targeted at vulnerable groups appear to have some effect on reducing drug use, it is not clear what type of intervention works best, and what format these interventions should take. It should be noted that all research from the above review is from the USA, raising issues of comparability to the UK.[32] There is a need for outcome evaluations of targeted drug prevention programmes that take place in the UK.

The age at which interventions take place among vulnerable young people appears to have a significant impact on illicit drug use. The 2005 review discussed above identified the age range 11 to 13 years as a crucial period for interventions.[32] This is a time when young people at high risk start to experiment with drugs.[32] This appears to be an

earlier age of onset than for the general population.[33,34] In the UK, this period traditionally marks the time of transition to secondary school, and it may be that interventions should be targeted at this age range among vulnerable groups within the school setting. For vulnerable children at high risk, interventions in non-school settings may need to be explored, as these children may have higher levels of school truancy. Targeting preventative interventions to those at heightened risk of problematic drug use relies on accurate identification of those groups that are susceptible to drug use. It is essential that all necessary agencies are provided with the appropriate resources to identify at-risk groups.

7.3 Evaluation of prevention strategies: conclusions

Prevention strategies have a relatively small impact on reducing drug use, other than delaying the initiation of use. There is little international evidence, and only a small amount of UK evidence, to suggest that such strategies have any impact on future drug use. Government policy currently focuses on providing universal and selective prevention programmes. While these interventions may have some benefit, this is limited and there is a lack of robust evidence to support their use. The question remains whether alternative policy options should be explored, which could potentially have greater benefit.

Prevention strategies that focus on positive social and behavioural development appear to be effective. Programmes that only provide drug-relevant information, or try to boost self-esteem, are less likely to be effective at reducing demand. Taking action on preventing the underlying causes of drug use may be as effective as, or more effective than, preventing drug use directly.

Summary

- Current prevention strategies aim to reduce drug use by influencing attitudes and behaviour, in order to prevent or delay the initiation of drug use.
- Primary prevention aims to avert or delay initial use, while secondary prevention aims to minimise the harms in those already using drugs. Secondary prevention interventions, such as harm-prevention strategies, are yet to receive much in the way of attention.
- There is no clear evidence that drug education and prevention strategies have an effect on reducing total drug use in the UK. Drug treatment programmes are more cost effective.
- All schools in the UK are required to have a drug education programme. These programmes improve young people's knowledge about drug use, and have a small impact, notably in delaying the onset of use.

- There is evidence that most pupils recall the content of their drug-education lessons and report that it helps them to make decisions about what to do if offered drugs. Those who had taken drugs said lessons helped them understand why people take drugs and that not as many people as they thought take drugs.
- Programmes that also address classroom behaviour management have been shown to reduce lifetime drug use in boys but not girls in the USA.
- Drug testing in schools does not appear to affect the use of illicit drugs; random testing in schools may have a negative effect.
- There is insufficient research on interventions outside the school setting to prevent drug use to provide evidence on their effectiveness.
- The use of mass media can improve knowledge but is not effective at reducing illicit drug use; social marketing may be a useful way of increasing the efficancy of mass media campaigns.
- Selective prevention strategies target at-risk groups and often address multiple and complex risk factors. There is conflicting evidence about their efficacy in reducing drug use among vulnerable groups, and there is a risk that they further stigmatise already marginalised individuals. The age range 11 to 13 years has been identified as a crucial period for effective intervention.
- Groups that are most susceptible to drug harm should be identified. Taking action on preventing the underlying causes of drug harm rather than preventing drug harm directly may be more effective.

Chapter 8 – Medical management of drug dependence: the doctor's role in managing heroin addiction

8.1 Introduction

This chapter examines management of drug dependence by medical practitioners. It then presents a detailed description of opioid substitution therapy (OST), the evidence for its effectiveness, and an analysis of the ingredients of effective treatment. This analysis provides a model for the components of effective medical management of drug dependence.

OST has been extensively researched, and evidence that it can reduce the adverse effects of heroin addiction has led to its widespread use internationally.[1] OST has always generated disquiet, as it challenges the intuitive notion that the best way to overcome addiction is to stop using drugs, and become drug free.[2] This chapter provides a brief overview of the extensive research evidence indicating that OST is as effective, or more effective, than short-term treatments aimed at 'cure' of heroin addiction, and describes the factors that have been identified as improving the outcomes of treatment.

In **Chapter 9**, medical responses to the use of other illicit drugs and drug-related harms are considered, while **Chapter 10** examines medical management of illicit drug use within the criminal justice system.

8.2 Managing drug dependence as a medical issue

Among people seeking treatment, heroin addiction tends to be a chronic, relapsing and remitting disorder, with few people achieving stable, sustained abstinence after an episode of care. The notion of medical management of chronic disease seems more useful than episodes of care.[3] The medical management of dependence is usually more difficult and challenging than for other chronic disorders. By the time they come for treatment, many dependent drug users are socially marginalised, or in prison, lacking access to the rewards arising from employment, personal relationships and family participation. As a result, there is little in their lives motivating them towards recovery. Treating heroin addiction frequently involves the social reintegration of marginalised individuals lacking in skills and having few and often tenuous social connections.

As outlined in **Section 4.4**, there is a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation. Hospital admission rates for drug-specific conditions have also shown a strong positive association with deprivation. Deprivation appears to be a strong predictor of drug-related harm.

8.2.1 Tackling stigma and the 'addict identity'

The stigma surrounding drug use further complicates management. Drugs, especially illicit drugs, are viewed with fear and disapproval (see **Sections 2.5 and 6.4**). The stigma associated with addiction is a significant barrier in providing healthcare to people misusing drugs, as negative attitudes – on the part of both practitioners and patients – can compromise effective care (see **Sections 2.5 and 6.4**).

Stigma may have a public health benefit, in making certain risky or harmful behaviours less attractive, and the stigma associated with illicit drugs probably discourages many people from using them. Stigma can also attract troubled young people; which probably explains why many drug prevention programmes paradoxically lead to more, rather than less, drug use.[4] Breaking rules, and experiencing the disapproval of family and peers, confirms their sense of badness, while providing a self-defeating sense of autonomy and independence (see **Section 6.3.1**).[5] Drug use is reinforcing, producing wellbeing and relaxation and relieving negative mood states such as pervasive guilt and shame, or alleviating painful conditions. Repeated use can lead to the development of dependence syndrome (see **Section 1.1.2** and **Glossary**), with physical and psychological symptoms that include characteristic narrowing of the individual's range of interests and activities, as drug use comes to displace other activities. This can progress to increasing isolation, disrupted relationships with family, and loss of social supports. All these factors contribute to the development of the 'addict identity' – someone who has become conditioned to see himself existing outside of normal society, isolated and defiant.

For people with an 'addict identity', seeking treatment can seem like a defeat. Once in treatment, and able to stop compulsive drug use, it is not rare for the patient to sabotage his own treatment, for example by dropping out, or missing scheduled appointments, taking refuge in the familiar experience of failure, disapproval and conflict.[6] This desire for the familiarity of experience, and the associated learned behaviour, can be understood as a form of conditioning (see **Section 4.3.2**). There is a major element of behavioural treatment in how doctors, nurses and pharmacists respond to the challenge of disaffected, impulsive behaviour. Clinics delivering the same 'treatment' often achieve dramatically different outcomes, and the quality of the therapeutic relationship is one factor contributing to the greater effectiveness observed in some settings.[7]

8.2.2 Staff attitudes

Managing a chronic disease is based on a partnership between doctor and patient, and the patients' self-efficacy and responsibility for their own wellbeing are critical determinants of outcome. Managing addiction involves long-term support, educating patients about their condition, promoting engagement in and compliance with treatment, monitoring symptoms and dealing with complications.

Practitioners treating drug-dependent patients require not just skills and knowledge, but also a positive attitude towards treatment and recovery. Negative attitudes on the part of drug-dependent patients may sabotage treatment, but so too can negative attitudes on the part of practitioners. Four decades ago, Dole and Nyswander, pioneers of methadone treatment (MT) for opiate addiction, recognised the critical importance of changing the addict identity,[8] a change encapsulated in Marie Nyswander's phrase '*from drug addict to patient*'. Their theme was that, freed from the cycle of addiction and treated with respect and dignity, heroin users can develop a different image of themselves, and behave with self-respect and dignity. They emphasised that negative assumptions about drug users need to be balanced by a belief in their capacity to change, and a sense of the practitioner's role in fostering that change.[8]

8.2.3 Shifting opinion: is drug dependence 'sickness' or 'badness'?

A shift in viewing dependence, from 'sickness' to 'badness', has been documented in the USA, and labelled the '*demedicalisation*' of treatment.[9] The result was widespread delivery of treatment out of line with research evidence,[10] and a proliferation of programmes oriented to abstinence rather than medical maintenance treatment of opioid addiction (see **Section 8.4**). In response to the weight of evidence that OST can reduce the harms of heroin addiction, there has been a 'remedicalisation' of treatment of addiction in the USA over the last 15 years. From the mid 1990s, neuroscience research has been promoted as showing that addiction is a '*chronic relapsing brain disease*' (see **Section 1.1**).[11] In 2000, the passage by Congress of the Drug Abuse Treatment Act liberalised regulations surrounding treatment, permitting the use of office-based treatment of addiction for the first time in the USA.[12]

8.3 Example of managing drug dependence as a medical issue: OST

The following case study illustrates an example of heroin addiction.

Case study: Treatment of heroin addiction with injectable diamorphine

Mr HT is a 42-year-old man who has been receiving injectable diamorphine treatment since March 2010.

Mr HT was adopted at the age of six months. He found school challenging, and truanted from mid primary school. The secondary school he attended recognised that he had learning difficulties and he was sent to a boarding school for children with special needs. His behavioural problems worsened there. At the age of 14 he began using drugs, and he was expelled at the age of 15. He had not learned to read and write.

Instead of returning to his home, Mr HT went to live in a 'hippy compound', supporting himself with occasional manual work, busking and some begging. Aged 22 he came to London, sleeping on the streets and squatting. He was to live on the streets for most of the next two decades. Within two years he was addicted to heroin, spending £150 to £200 daily on the drug, gaining the money by begging, thieving and raiding phone boxes and parking meters. He acquired an extensive criminal history, including five periods of imprisonment. The first thing he would do on release from prison was 'score' heroin.

In 2004, a community drug project found Mr HT sleeping on the streets and offered him a bed in a hostel. He began an MT programme, but continued to inject heroin and crack cocaine. He lost his place in this hostel during one of his spells in prison. In 2007, again homeless, he was picked up by another community drug project and placed in a hostel. He restarted an MT programme, but continued to inject street heroin, and to smoke crack cocaine and cannabis. His health and personal hygiene were poor. When his peripheral veins were scarred and difficult to inject, he began injecting street heroin into his neck, and his hostel referred him to an NHS injectable opioid clinic in 2010. Here, diamorphine (pharmaceutical heroin) is prescribed for patients not responding to oral methadone. Administration of diamorphine is all supervised by trained staff, and the service users attend twice daily and engage in frequent reviews and keyworking (see **Glossary**) sessions.

When first assessed for diamorphine treatment, Mr HT expressed doubt that he would be able to attend the clinic twice daily seven days per week. For the first several months he remained chaotic and disorganised, often missing doses and continuing to use street drugs. His dose was progressively increased, until he was stabilised on 200mg

diamorphine intramuscularly twice daily and 70mg of methadone once a day. In August 2011, although continuing to smoke crack about twice per month, he had ceased illicit heroin use, and his personal hygiene, mood and outlook had improved dramatically. He acquired a publicly funded flat, and began occupational therapy sessions to improve his literacy.

Mr HT presented as someone who, having lived on the streets for most of his adult life, lived 'for the moment', with little capacity for planning, and little motivation or hope that his life might be different. His primary reaction is surprise that he has made such a vast improvement in his life.

Case study details provided by Dr James Bell, Consultant in Addictions Medicine.

The case history starts with a story that is not rare. Mr HT was a vulnerable adolescent with limited education and a disadvantaged background, and went on a downward spiral as a result of dependence on drugs. Criminal sanctions were no deterrent to his drug-using career, and he did not respond to methadone. At present, his downward spiral has been interrupted and reversed by diamorphine treatment. The continuing challenge is to build a sustainable recovery, based on self-care in stable housing and gaining employment. That would provide a basis for progressively reducing his frequency of injecting, and eventually returning to oral medication.

Prescribing diamorphine for heroin addicts is a poorly understood, often controversial, modality of treatment. Diamorphine has been shown to reduce heroin use and improve self-reported quality of life in those who are not responding to MT,[13-15] but there has been little reflection on why injectable treatment has advantages over oral medication. This case history is presented to illustrate some of the reasons why prescribing diamorphine can have advantages over other treatment approaches. This is discussed further in **Section 8.4**.

Opioid substitution therapy is the prescribing and administration of a pharmaceutical opioid as a 'substitute' for illicit opioids, to patients who have become dependent. The most common form of OST is MT, but there is a rapidly increasing experience with buprenorphine, and a small experience with prescribed diamorphine (pharmaceutical heroin) in the management of heroin addiction.

In the 1980s, recognition that injecting drug use represented an important mode of transmission of HIV and other blood-borne viruses led to increasing provision of OST internationally.[16] Methadone is the most commonly used OST medication, and has the most extensive literature surrounding it. There has been increasing delivery of MT in primary care worldwide, placing medical practitioners in the frontline in delivering treatment.

Although it is thought of primarily as a pharmacological treatment, OST has important behavioural and interpersonal elements that contribute to outcome.[7] Opioid substitution requires ritualised, daily attendance for administration in a predictable, safe, non-punitive and non-judgemental treatment space, and establishment of a long-term therapeutic relationship with a keyworker (see **Glossary**) or doctor (see **Section 8.4.3**).[7] For a small proportion of people, the respite from withdrawal offered by MT is not sufficient to allow them to move away from repetitive heroin use.[7,17] For many marginalised individuals with little sense of purpose or planning beyond short-term survival, prescribed diamorphine is sufficiently reinforcing to motivate them to attend and comply with the requirements of treatment. Daily attendance provides a structure and routine in a previously chaotic life. Clear rules and expectations of behaviour, enforced consistently, offer a new (and sometimes challenging) experience for previously asocial or antisocial individuals.

The cornerstone of treatment is an adequate dose of opioid – in the words used by patients on prescriptions, the dose that 'holds' them. Psychodynamic psychotherapy involves 'holding' clients with the experience of empathy, while allowing them to come to terms with their own unacceptable thoughts and impulses. Prescribing opioids 'holds' patients with medication, while allowing them to explore the challenging possibility that they are acceptable, and capable of social reintegration.

8.3.1 The effectiveness of OST

Traditionally, treatment of dependence on alcohol and drugs has been based on two premises – that recovery from addiction requires abstinence from drugs, and that it requires a change of attitude and identity. The principle of OST – that people can recover while still dependent on an opioid – has challenged the assumption that the objective of treatment should be abstinence from all drugs (including methadone).This is currently re-emerging as an issue in the UK, as there are proposals in the *Drug strategy 2010* that the funding of drug treatment services should reward abstinence from all drugs.[18]

A comprehensive Health Technology Assessment undertaken in the UK in 2007 reviewed the evidence for the effectiveness of methadone and buprenorphine, and concluded that both drugs were effective in treating opioid dependence.[17] This finding was based on a synthesis of randomised trials, observational evidence

and expert opinion. This section seeks to go beyond the finding that OST is effective, and investigate how well it achieves the many different objectives of treatment of drug dependence.

8.3.2 Is OST effective in promoting abstinence from all drugs, including OST medications?

International studies suggest that for opioid-dependent persons in the criminal justice system, and those seeking treatment, addiction is a chronic, relapsing and remitting condition. People cycle through differing episodes, and differing modalities of treatment. In 2001, Hser et al reported on a group of heroin addicts in the USA, followed up 33 years after entering treatment.[19] Forty per cent were dead; many remained addicted. Among those who achieved prolonged abstinence, one-quarter had eventually relapsed in subsequent observations. Relapse was observed even among patients abstinent for as long as 15 years. Long-term follow-up studies documenting the natural history of heroin addiction estimate that among subjects who seek treatment, 2 to 5 per cent per year achieve stable abstinence from opioids.[20,21]

It has been argued that this view is overly pessimistic, and many more people can and do recover from dependence on drugs. The phenomenon of spontaneous recovery from addiction has been well documented.[22] Community surveys (notably, the Epidemiological Catchment Area (ECA) study from the USA), have identified a number of respondents who report previous dependent use of drugs, but are no longer dependent, confirming that many people do 'recover' from dependence. The prognosis for people who seek treatment for drug dependence is consistently worse than in non-treatment samples. Among people seeking treatment for addictive disorders, whether alcohol dependence[23] or heroin addiction,[22] the course of dependence tends to be chronic and relapsing, and recovery is less likely in this group than among people who never seek treatment. The reason for this disparity is most likely that people who present seeking treatment have more severe problems – '*problems that will not be resolved just by getting them off drugs*'.[22]

This is not to suggest that individuals cannot leave MT and remain abstinent. People leaving MT are less likely to relapse if they have ceased injecting heroin, and have achieved a degree of social reintegration – employment, a stable relationship, or community connections – before they attempt to withdraw from methadone.[24]

To optimise the effectiveness of OST, the NTA's Recovery Orientated Drug Treatment Expert Group has drawn attention to the importance of delivering OST in line with National Institute for Health and Clinical Excellence (NICE) clinical guidance. In their 2012 report, the group advised doctors and health professionals working with heroin addicts to:

- review all existing patients to ensure they are working to achieve abstinence from problem drugs
- ensure treatment programmes are dynamic and support recovery, with the exit visible to patients from the moment they walk through the door
- integrate treatment services with other recovery support such as mutual aid groups, employment services and housing agencies.[25]

A recent study from Scotland confirmed the protective effect of methadone treatment on mortality, but also found that longer duration of methadone treatment was associated with less likelihood of achieving abstinence from heroin.[26] This has been interpreted as showing that treatment with methadone may actually impede recovery from dependence, but a simpler explanation is that people with more severe problems tend to remain in treatment longer, and have a poorer prognosis.[26]

The implication of the chronic, relapsing nature of heroin addiction is that responding to an individual seeking help for heroin addiction is best conceptualised as management of a chronic disease, characterised by exacerbations and remissions (see **Glossary**), variable levels of disability, and risk of complications. The objectives of long-term management are reduced risk of death and disease, suppression of drug use, improvement in mental health and outlook, and restoration of impaired social roles. These are the key elements of 'recovery', and each element – cessation of heroin use, reduction in other drug use, improvements in health and social functioning – supports each other element in a holistic, biopsychosocial approach to chronic disease management.

8.3.3 How effective is OST in suppressing the use of illicit drugs?

Three major large-scale observational studies from different countries provide a reasonably clear indication of the effectiveness of OST in suppressing use of heroin, use of illicit drugs such as cannabis and cocaine, and misuse of alcohol and benzodiazepines.[27-29] These studies compared the effectiveness of OST with that of residential rehabilitation (RR), a drug-free approach to treatment involving prolonged residential treatment in a highly structured environment based on self-help and mutual support (see **Glossary**). Some observational studies have also compared OST to short-term detoxification (see **Glossary**).

The Treatment Outcome Prospective Study (TOPS) followed a large sample of US patients treated in RR and on MT.[27] The National Treatment Outcome Research Study (NTORS) was undertaken in the UK, using a similar methodology to TOPS,[28] and the Australian Treatment Outcome Study (ATOS) followed samples of heroin users entering RR, MT, detoxification or no treatment.[29]

These studies provide surprisingly consistent results. Over time, heroin use was reduced, with 25 to 35 per cent of heroin users reporting continuing heroin use 3-5 years after beginning their index treatment. Many were still in treatment at follow-up, and the majority of subjects had been though several episodes of treatment, making it difficult to attribute outcomes to any particular treatment modality – and emphasising that treating heroin addiction is best conceptualised as chronic disease management.

Three-quarters of subjects were using other drugs, mainly cannabis and alcohol. This is important, as there are few 'pure' heroin users, and most people entering MT have used, or are using, multiple drugs.[22] Results of large-scale, observational studies suggest both OST and residential, drug-free programmes seldom result in long-term abstinence from all drugs, and that alcohol misuse and cannabis use are common.[27,29]

The NTORS demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed.[30] Economic benefits were largely accounted for by reduced costs of crime. Among clients recruited to NTORS (549 in total, recruited from 54 residential and community treatment programmes), criminal behaviour costs were estimated to fall by £16.1 million during the first year of treatment, and by £11.3 million during the second year.[31] The findings demonstrate that there are clear economic benefits to directly funding treatment of drug users, which far outweigh the costs.

8.3.4 How effective is OST in improving physical and mental health?

Opioid substitution reduces the risk of death by overdose, the commonest cause of death among active heroin users. There is a long-recognised risk of death during induction into MT, and an increased risk of death by overdose after leaving any form of treatment. Clausen and colleagues had the opportunity to follow risk of death in subjects entering MT, and in subjects placed on a waiting list for MT.[32] This study demonstrated the protective effect of entry to treatment; despite risks during induction and an increase in mortality after leaving treatment, subjects entering MT had a lower risk of death than those placed on a waiting list for treatment. There is some indirect evidence that the reduction in risk for those entering treatment translates into a public health benefit. In France, in 1994, there were only 52 people

in treatment with methadone, and an estimated 160,000 people injecting illicit opioids. Five years later, there had been an expansion in MT to 7,000 people, and 60,000 people were being prescribed buprenorphine. Deaths from heroin overdose in France fell from 505 in 1994 to 92 in 1999.[33] A similar observation was made in Sweden following liberalisation of access to OST, particularly buprenorphine.[34] The number of patients in treatment increased more than threefold from 2000 to 2006, with the greatest increase for buprenorphine, which was introduced in 2000. There was a significant 20 to 30 per cent reduction in opioid-related mortality and inpatient care between 2000-2002 and 2004-2006 but not of other drug-related mortality and inpatient care. A small but significant increase in buprenorphine- and methadone-related mortality occurred. The authors concluded that liberalisation of Sweden's drug policy, and expanded access to OST, contributed to a decrease in overall opioid-related mortality and inpatient care.

Opioid substitution also reduces the risk of transmission of blood-borne viruses (HCV and HIV), particularly in conjunction with availability of clean needles and syringes.[35,36] There is considerably less data on which to assess mental health outcomes. Residential rehabilitation programmes usually place emphasis on attitude change and growth of a new consciousness. In TOPS, at five years post treatment, improvements in depression were identical in the MT and RR cohorts.[27] The ATOS study reported substantial self-reported reductions in risk taking and injection-related health problems, and improvements in general physical and mental health.[29] Positive outcomes were associated with more time in maintenance therapies and RR and fewer treatment episodes.

A 2010 review of studies of quality of life among opioid-dependent individuals identified 38 articles addressing the topic.[37] The results were quite mixed, but a few conclusions emerged. The subjective quality of life (QoL) and health-related quality of life (HRQoL) of opioid-dependent individuals is relatively low compared to the general population, and is most comparable with the QoL of individuals with psychiatric problems. Users of opioid drugs reported lower scores on mental health in particular, while their physical wellbeing was less affected. Entry to substitution treatment generally had a prompt beneficial effect on QoL, although this may reflect the fact that people enter treatment in very poor condition.[38]

The influence of drug use on HRQoL was inconsistent, although a negative impact of excessive alcohol use on the HRQoL of opioid users was shown in various studies.[37]

8.3.5 How effective is OST in improving social reintegration of marginalised heroin users?

One of the primary reasons for public support of treatment for heroin addiction is that treatment is associated with reduced acquisitive crime. To the extent that people in treatment reduce their use of illicit drugs (and reduce expenditure on illicit drugs), the level of acquisitive crime diminishes in individuals in treatment.[39] An Australian analysis of community rates of offending has demonstrated a statistically significant link between increased numbers in MT and falling levels of acquisitive crime in the community.[40]

There are very few quantitative data available on which to assess the extent to which people in MT are able to achieve social reintegration. One early randomised trial comparing MT to drug-free treatment included intensive psychosocial input, comprising vocational retraining and limit setting in relation to continued drug use. It is one of few studies demonstrating that MT can dramatically improve social reintegration.[41] The control group received no treatment, as none accepted drug-free treatment. At two years, 12-17 MT subjects were not using heroin regularly, and were employed or undertaking education. The remaining five subjects had been discharged from the programme for continuing drug use. These impressive results were dramatically better than the outcomes observed in subjects randomised to drug-free treatment, and, although the sample size was small, the study provides clear evidence that, with appropriate resources and policies, MT can contribute to social reintegration.

8.4 What are the components of effective OST?

There has been a proliferation of models of MT, with clear evidence that some treatment programmes are more effective than others.[7,42,43]

Ball and Ross investigated what actually occurred in treatment in six clinics in the USA, and compared the outcomes of patients treated in these clinics.[7] They reported that clinics achieving better outcomes had an '*orientation to maintenance*' (as opposed to an orientation to abstinence; see **Section 8.4.4**), had on-site medical services, and were better managed, with stable clinic leadership. They reported that patients who did better had received higher methadone doses, and reported a good relationship with at least one clinic staff member.

8.4.1 Drug and dose – the pharmacology of OST

Drug use starts out primarily as pursuit of the euphoric effects of drugs, but dependent drug use comes to be primarily driven by the compulsion to avoid withdrawal. The appeal of OST for dependent heroin users is that a daily dose of methadone (or buprenorphine) will abolish withdrawal symptoms (see **Section 8.3**). A dose of methadone means opioid-dependent individuals are no longer sick when

they are not using heroin, and this increases their control over their heroin use.[44] Methadone doses of 30-50mg/day are sufficient to block withdrawal for 24 hours in the majority of dependent heroin users. For around 10 per cent of heroin users seeking treatment, respite from withdrawal is sufficient to enable them to cease drug seeking and drug use.[25]

Heroin use is a powerfully reinforcing and motivating factor shaping the behaviour and consciousness of people who have been addicted. Dependence and the additional conditioning (see **Section 4.3.2**) associated with injecting drug use mean that in the first months of treatment, people maintained on low doses of methadone tend to continue injecting. By increasing the daily methadone dose, patients' tolerance to opioids is progressively increased, and high tolerance attenuates the individual's response to injected heroin. Heroin becomes less reinforcing, helping to extinguish the habit. This explains why high-dose methadone is far more effective in suppressing heroin use than low doses. A reasonable approach to dose setting is that after entry to treatment, the methadone dose should be progressively raised until patients cease heroin use, or reach a dose of 100mg/day. Once patients have ceased use of heroin for a period, it may be reasonable to lower the dose of methadone if side-effects are problematic, but there is a significant likelihood that, as doses are lowered, patients will return to heroin use.[45]

Not everyone responds to adequate doses of methadone. Up to one-third of heroin users metabolise methadone sufficiently rapidly that they experience low-grade withdrawal symptoms in the latter half of the dosing interval, when their blood concentration of methadone is falling. These patients experience withdrawal dysphoria, low mood and craving, and are more likely to persist in heroin use and to use other drugs.[46,47] Increasing the methadone dose in these subjects is unlikely to be effective, as the problem is not the absolute blood concentration of methadone, but the rate at which the concentration is falling.[46] In patients who have continued to use heroin despite receiving doses of methadone of 100mg/day, it may be that buprenorphine, or slow-release oral morphine, would be more effective in suppressing withdrawal symptoms and heroin use.

Qualitative interviews with a group of patients maintained on methadone provide an idea of the role of medication in enhancing social reintegration.[44] Gaining control over one's life and daily functioning and no longer being sick when no heroin is available, were only some of the frequently mentioned benefits of following a MT programme. The respondents emphasised that methadone did not cause changes in their lives, but allowed change to occur in important areas such as relationships. Methadone treatment can create the necessary preconditions to deal with a number of issues (eg developing one's skills to practise a job) that can enhance individuals' quality of life. Opiate-dependent individuals valued methadone's ability to help them

function normally, overcome their psychological problems and dependence on illicit opioid drugs, and support them in achieving certain life goals.[44] Stigmatisation, discrimination, dependence on methadone and the drug's paralysing effects on their emotions were mentioned as common negative consequences. A number of consequences (difficulty and unpleasantness of withdrawing from methadone, and stigmatisation) were mentioned as having a negative impact on important aspects of being in treatment.[44]

Buprenorphine

Buprenorphine is a partial opioid agonist, with different pharmacological properties to methadone. It has high mu-receptor affinity, remaining bound to opioid receptors for longer periods than drugs such as morphine or methadone. While receptors are occupied, they can no longer be activated. At low doses, buprenorphine is a potent opioid agonist, but as doses are increased, opioid receptors remain occupied and blocked, meaning that the effects of buprenorphine are self-limiting. Above quite low dosage levels, increasing doses prolong opioid actions, but do not produce increased sedation or respiratory depression. Buprenorphine has greater safety than other opioids in overdose.

Buprenorphine has a prolonged half-life, and a single daily dose produces sufficient opioid activity to block withdrawal for 24 hours or longer. Through prolonged receptor occupancy, buprenorphine also attenuates the response to heroin. It is thus a useful drug in treatment of addiction, and it has been used in OST for many years. A Cochrane review examined trials comparing buprenorphine and placebo, and reported that buprenorphine was statistically significantly superior to placebo in retaining patients in treatment and suppressing heroin use (although low doses of buprenorphine were not effective in suppressing heroin use).[47] Comparisons with methadone were reported as showing that methadone was more effective than buprenorphine in retaining patients in treatment.[48]

Buprenorphine is an important treatment option, for two reasons. Firstly, some patients tolerate methadone poorly, and the availability of buprenorphine provides a valuable alternative. More importantly, buprenorphine treatment is associated with a lower risk of death by overdose than that associated with MT.[49]

Diamorphine

For a small proportion of patients, relief from withdrawal is not sufficient to motivate them to comply with treatment. In this group of '*poorly motivated or treatment-resistant*' patients, who persist in heroin use despite other forms of treatment, injectable diamorphine has been shown to be effective in reducing street heroin use and improving self-reported quality of life.[13,15]

The rationale for this treatment is that, as illustrated by the case study at the start of the chapter, and discussed in **Section 8.3**, diamorphine is a more reinforcing drug than methadone, and provides a greater incentive to comply with treatment than methadone. Most of these participants have lost family support, and are so entrenched in a daily cycle of drug seeking and drug use that they have little other reward in life, and little capacity to hope or imagine that things might ever be different. Injectable diamorphine treatment is highly structured, requiring twice-daily (or more frequent) attendance to administer diamorphine under medical supervision. These onerous requirements deter many individuals who are addicted to heroin from participating in this treatment, but for others, access to diamorphine provides sufficient motivation to comply with the requirements of treatment. For many demoralised trial participants, the transition (not always smooth) from addict to patient begins a process of social reintegration that is made possible because sufficient incentive is offered to participate in structured treatment.

8.4.2 Supervised administration

The randomised trials establishing the effectiveness of methadone, buprenorphine and diamorphine treatment have all involved supervised administration.[13-15,48,50] There has been a substantial deviation from the model of care supported by evidence, namely a reduction in the requirement for supervision of administration. Although the benefits of supervised administration of OST are recognised and understood by patients,[51] they have received relatively little study. There is only one randomised controlled trial (RCT) comparing supervised and unsupervised treatment, and it showed no difference in effectiveness.[52] Entry criteria for the study were restrictive, and only 22 per cent of new entrants to treatment were eligible for randomisation. The main reason for excluding potential subjects was homelessness. For people in chaotic circumstances, it is plausible that structured treatment is more likely to be effective (see **Section 8.2**), while for those who are reasonably high functioning, the requirement to attend daily for treatment may well be a deterrent to participating. By only randomising relatively stable patients, this study would have missed the main potential benefit of supervised treatment, which is to treat marginalised individuals living in chaotic circumstances. At present, all that can be concluded is that for patients who have stable housing and no active mental health problems, treatment without direct observation of administration was as effective as supervised treatment.

Reports from France have shown that less clinical monitoring was associated with more heroin use and more injecting or prescribed buprenorphine,[53] and that less supervision of administration was associated with worse retention and more heroin use.[54]

There have been a variety of studies confirming that clear policies and expectations of behaviour produce better treatment outcomes. The most recent (2010) came from the USA, demonstrating that structured treatment (delivered according to protocol), is more effective than treatment that does not follow protocol.[55]

8.4.3 Counselling

There have been two randomised trials, both from the USA, comparing the effectiveness of differing levels of counselling in MT. The first reported that the provision of counselling and support improved outcomes – several counselling sessions were more effective than few, and few were more effective than none.[a,56] The second showed no difference in outcome between new entrants to MT offered no counselling, monthly counselling or weekly counselling.[57]

Interpretation of these trials is compromised by the fact that neither could be conducted double blind. Treatment is more likely to be effective when staff believe in the treatment they are delivering. In a trial to demonstrate the potential value of interim methadone (without counselling), it is probable that staff believed this approach would be effective – and it was.[58] In the McLellan trial,[56] staff probably believed that those who were randomised to minimal counselling were receiving suboptimal care – and found they were. The most plausible interpretation is that when staff believe in the treatment they are providing, it works better.[58]

The McLellan study,[56] finding benefit from formal counselling, is also at odds with the experience of Dole and Nyswander, who reported that although counselling was offered to their patients, very few availed themselves of it.[8]

Consistent with these observations, a recent Cochrane review analysed the results of trials of psychosocial interventions in conjunction with OST, and found no significant benefit of psychosocial services in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression.[59]

This finding does not negate the possibility that some individuals can benefit from psychological interventions, but in randomised trials no benefit was shown overall. While there is little evidence for formal counselling, there is substantial evidence that the quality of interaction between a patient and staff is an important ingredient of treatment (see **Section 8.2.2**).[7]

a One treatment group received no counselling; the second group received counselling on a weekly or biweekly basis; and the third group received the same as the second but could also access additional sessions with a psychiatrist, an employment counsellor and a family therapist.

It is worth reiterating that daily interaction with health professionals, in a non-judgemental, non-punitive environment in which there are clear rules and expectations of behaviour, enforced consistently, offers safety and structure to previously marginalised and chaotic individuals.

8.4.4 Orientation to maintenance

Longer periods in MT (and in RR)[b] are associated with better treatment outcomes – the duration of treatment is a linear, non-threshold predictor of outcome, with better outcomes from longer treatment.[61] After leaving treatment, relapse is usual.[26] Time-limited MT is not effective.[62,63] For these reasons, there are risks associated with encouraging or pressuring patients to withdraw from treatment, and OST is best regarded as a maintenance intervention.

The majority of patients aspire to an opioid-free life without methadone,[44] and an orientation to maintenance does not mean that people should be discouraged from seeking to withdraw from treatment if they are doing well, and have sufficient 'recovery capital' (social supports such as a relationship, job, family support, affiliation with mutual support groups – see **Glossary**) to sustain long-term abstinence. People who achieve good social reintegration, particularly employment, are more likely to be able to leave treatment without relapse.[24]

While, in general, individuals should be encouraged to remain in treatment, patients who are deriving no observable benefit from treatment, or who are compromising the safety of the treatment space, may need to be discharged. An unstructured environment without enforced expectations is unlikely to be a therapeutic environment.

8.4.5 Patient education and relapse prevention

The controlled withdrawal from an opioid is termed detoxification (see **Glossary**). Patients should be given detailed information about detoxification and the associated risks, including the loss of opioid tolerance following detoxification; the ensuing increased risk of overdose and death from illicit drug use; and the importance of continued support to maintain abstinence and reduce the risk of adverse outcomes.[64] Following detoxification, rehabilitation, or other periods of abstinence from opioid use, relapse is common.[65,66] Relapse prevention is discussed in more detail in **Section 9.5** and is likely to require continued community support in addition to the teaching of relapse prevention skills.

b The therapeutic community (TC) (see **Glossary**) for the treatment of drug abuse and addiction has existed for about 40 years. In general, TCs are drug-free residential settings (residential rehabilitation) that use a hierarchical model with treatment stages that reflect increased levels of personal and social responsibility. Peer influence, mediated through a variety of group processes, is used to help individuals learn and assimilate social norms and develop more effective social skills.[60]

Long-term favourable outcomes are more likely in those who remain in some kind of treatment, whether this includes OST with community support, or abstinence with community support, for example participation in Alcoholics Anonymous (AA), Narcotics Anonymous (NA) or other mutual-help programmes (see **Glossary** for further information on AA, NA and mutual-help groups).[67]

8.4.6 The role of naltrexone in relapse prevention

The opioid antagonist naltrexone is licensed in its oral form for use as an adjunct in relapse prevention for people who have undergone opioid detoxification, to help them remain abstinent. An essential safety precaution for the medical professional to be aware of and educate patients about is the risk of a fatal overdose if they return to heroin use after naltrexone treatment, because of loss of tolerance to heroin.[68]

While pharmacologically it is consistent that naltrexone would be an effective preventive strategy, the use of oral naltrexone requires significant motivation to remain compliant, and thus for it to be an effective therapeutic strategy. The results of studies have not been favourable, except in cases where there are added significant external motivating factors, such as might be the case for an opioid-dependent health professional.[69] Long-acting naltrexone preparations, in the form of an implant or depot, are not currently licensed in the UK. In a series of small trials, and one large study from Russia, implants were demonstrated to be superior to oral naltrexone and to placebo in reducing the risk of relapse.[68]

8.5 The limitations of treatment for heroin addiction

Like all forms of treatment for drug dependence (and like management of most chronic diseases), OST relies on patient motivation – willingness to accept treatment and, more importantly, the willingness, personal resources and social opportunities to take advantage of the respite from dependence to take steps towards sustained recovery.

8.5.1 Patient choice and motivation

The importance of patient choice and motivation was illustrated in an early randomised trial reported by Bale et al in 1980, in which 457 patients completing inpatient detoxification for heroin addiction were randomised to either MT or RR.[70]

Based on a retained-in-treatment analysis, both methadone and a long-term TC were more effective than no treatment or short-term treatment, but – as in other comparisons between these modalities – did not differ significantly in terms of heroin use, other drug use, crime or employment.[70]

The important aspect of this study was the failure of most subjects to accept any ongoing treatment, and especially failure to accept allocation to a treatment that they did not want.[70] It is an important illustration about the treatment of heroin addiction. The assumption underlying most clinical trials in medicine, that people will accept allocation if there is a reasonable expectation that the alternative treatments will be safe and effective, does not apply to people seeking treatment for addiction. Individuals who are addicted to heroin only enter treatment if it is perceived to offer some advantage over their drug-using state.[71] Often this means entering treatment during crisis, and only remaining in treatment until the crisis is past.

In the Bale study,[70] methadone attracted a significantly higher proportion of patients than RR. Methadone treatment is as effective as other modalities of treatment, and the public health rationale for supporting OST is that it attracts and retains in treatment a higher proportion of heroin users than other treatment modalities.[72] Participation in treatment is often patchy, with people cycling in and out of treatment, having periods of heavy drug use, periods of treatment, periods of abstinence or controlled drug use, relapse to dependent use, and return to treatment.[73] The ATOS study established that the best outcomes were associated with people remaining in continuous treatment for prolonged periods, rather than cycling through treatment episodes.[29]

8.5.2 The need for alternative rewards

A second limitation of OST is that people need alternative rewards in their lives if they are to recover from drug dependence. The rewards of everyday life – for most people, a stable, intimate relationship, employment, and family life – are less accessible for people who are marginalised by drug dependence, and lacking in interpersonal and vocational skills. Employment is a key step in social reintegration, and in settings in which unemployment is high, and social cohesion low, prospects for sustained recovery are compromised. There is some evidence that participation in training and employment can be fostered by treatment. In the Swedish trial described earlier,[41] two-thirds of patients receiving methadone were in employment or training two years after programme entry (compared to none in the group randomised to no treatment). Social reintegration in two-thirds of subjects receiving MT is an impressive outcome. This occurred in a programme providing 'intensive' psychosocial input, including vocational retraining. The programme also involved limit setting – subjects persisting in heroin use were discharged. It is not possible without further research to ascertain whether it was psychosocial support, limit setting, or both, that contributed to better outcomes. This is an issue for further investigation.

8.5.3 Subtherapeutic dosing

The greatest limitation on the effectiveness of MT is that subtherapeutic dosing remains common, even among patients who persist in daily heroin use. Evidence suggests subtherapeutic dosing is common in the UK, where the mean methadone dose is 56mg per day,[74] below the 60-120mg range recommended in national guidelines.[75] This low dosing is associated with high levels of persisting heroin use, with more than 60 per cent of patients in treatment reporting heroin use within the preceding month.[76] Indeed, it is common for people who prefer to use heroin to enter MT as a protection against the daily experience of withdrawal, but to remain on low doses in order to be able to use heroin and experience the reinforcing effect. The evaluation of '*low-threshhold*' methadone in Amsterdam showed that failure to suppress heroin use did not protect against blood-borne virus transmission.[77]

8.5.4 Opioid dependence as a chronic medical condition

Part of the problem is that methadone is not really seen as medical treatment – by patients, or by health professionals. Patients and practitioners reflect community assumptions that drug use is a matter of personal responsibility, rather than a disease, and many heroin users are reluctant to see themselves as ill. Adopting the role of 'patient' involves relinquishing their 'addict identity', and they may prefer to see participation in treatment as taking advantage of the supports available to them rather than seeking to recover.[78] Practitioners who prescribe methadone have been noted to have polarised assumptions about the nature of treatment.[79] Some see it as a way to control deviance and reduce crime, others as support and palliation for disadvantaged patients. It is uncommon for doctors to think of it as management of a chronic medical condition.

8.6 The safety of OST

Heroin addiction is associated with increased risk of death, predominantly by overdose. While in MT, heroin users are substantially protected against the risk of death by overdose. The overall protective effect is diminished by two factors.

The first is the risk of death of individuals not in treatment, as a result of diversion (see **Glossary**) of methadone. The primary mechanism for reducing diversion is supervised administration. In the UK, increased supervised administration has been associated with a reduced number of deaths relative to the total amount of methadone dispensed.[80] As discussed earlier, there is evidence that buprenorphine is associated with fewer overall deaths proportionate to the amount prescribed.[81]

The second is that there is an increased risk of death during the first two weeks of treatment, and in the month after leaving treatment.[75] Induction into MT involves inducing a high level of tolerance to opioids, such that usual doses of street heroin cease to be reinforcing. This must be undertaken gradually, starting with doses in the

range 20-30mg/day – doses that would be safe in non-tolerant individuals. There is consistent evidence that during induction into MT, there is an increased risk of death by overdose. This is the basis for clinical guidelines recommending slow induction and close monitoring during the first week of MT.[75]

Overall, as elegantly demonstrated by a Norwegian study, the risk of death for heroin users is diminished by entering treatment.[32] In the short term, the risk of death appears lower for people entering MT than for people entering abstinence-oriented treatment, particularly detoxification.[82]

Offsetting the protective effects on mortality among people who enter treatment is the risk of fatal overdoses resulting from diversion of medication prescribed in treatment programmes. Diversion is an inevitable accompaniment of OST, and around two-thirds of methadone-related deaths occur in people who were not in receipt of a prescription.[83] In the UK, guidelines on increasing supervision of dosing appear to have reduced the rate of fatal methadone overdoses.[80]

8.6.1 Reducing drug-related deaths at times of increased risk

In doses that exceed an individual's tolerance at any one time, opioid drugs can cause respiratory depression and death. Experiencing or witnessing an overdose is a common occurrence among users of illicit opioid drugs,[84] but prescribed opioid drugs also carry these risks. It is essential that the medical professional understands the process of careful and safe assessment and prescribing, as well as recognising the times when a patient is most at risk. While OST has a greater than 85 per cent chance of reducing overall mortality among users of opioid drugs if the average duration approaches or exceeds 12 months,[66] in the first two weeks of OST, the mortality rate has been found to be three times higher (after adjustment for sex, age group, calendar period, and comorbidity) than that during the rest of the time on treatment.[66] Overdose may occur if the initial dose is too high or if patients continue to use non-prescribed opioid drugs during this time.[66,85] Although further research is needed on which to base better and safer management of OST, closer supervision of induction of treatment is important.[66] This requires careful titration, but may also include repeated urinary drug screens, clear safety and educational advice to the patient, and frequent reviews. All patients starting an MT programme must be informed of the risks of toxicity and overdose, and the necessity for safe storage of any take-home medication;[64,86-88] and supervised daily consumption is recommended for new prescriptions, for a minimum of three months.[75]

Overdose in heroin users is common,[84] with intravenous drug use, polydrug use, early heroin use, not being in MT, and the initiation of substitution treatment all being periods of increased risk, in addition to being early in a period of abstinence

following opioid use, whether the abstinence is voluntary (such as detoxification in the community) or involuntary (such as in the prison setting).[84,89] The mortality rate is increased by eight- to nine-fold in the first four weeks after MT has stopped.[66]

Strategies to reduce the mortality rates from opioid overdose at these high-risk times are essential. One important strategy is training users of opioid drugs themselves,[84] and also healthcare staff and carers,[90] in the recognition of opioid (and other drug) overdose in the community and prison setting, and how to respond, including administration of the opioid antagonist naloxone. The possibility of prescribing take-home naloxone to high-risk groups was first suggested in the literature in 1996,[91] and has been proposed by others in the USA.[92] A national programme of naloxone provision and training has recently been rolled out in Scotland to those deemed to be at risk of opioid overdose (and their family, friends, carers and partners), including prisoners who use opioid drugs on release from prison.[93] An ongoing trial in England of supplying naloxone to newly released prisoners with a history of heroin use is described in **Section 10.11**.[94]

8.7 Research, training and resources for effective delivery of OST

8.7.1 Research needs

The foundation of OST remains suppression of illicit heroin use; currently 63 per cent of people in MT in the UK report continuing heroin use.[74] The immediate challenge for researchers and service providers is to find more effective ways to reduce heroin use. Ensuring delivery of a supervised, adequate dose of OST medication is the key to suppressing heroin use. In the UK at present, there is a substantial group of people on low or moderate doses of methadone, who continue to use heroin regularly.[74] Such people have settled into a pattern of treatment and are very resistant to change, whereas if, from the outset, treatment is approached with the objective of suppressing heroin use, outcomes tend to be better. Alternative methods of treatment for people not responding to methadone, such as slow-release oral morphine, could enhance consumer choice. Little is known about the efficacy of such approaches and research is needed in this area.

8.7.2 Training needs

The implication of delivering OST in primary care is that medical practitioners who choose to engage in this practice need the skills, knowledge and attitudes to work with heroin addicts. In order to deliver such care, doctors report that they need not just initial training, but ongoing supervision, support and reflection.[73]

8.7.3 Resource needs

Drug-dependent people, in particular those who inject heroin, are among the most challenging and disadvantaged of patients. Treatment requires structure, support and monitoring, and has been operationalised into clinical guidelines.[89] Compliance with guidelines is more expensive. A recent US study demonstrated that effective implementation of guidelines results in better outcomes, but is also considerably more expensive.[51] The authors reported that, after 12 months, treatment of new clients of highly staffed, guideline-concordant sites cost $10,252, which is significantly more than the $6,476 cost for less-concordant programmes.

In a climate of fiscal austerity, re-tendering of drug treatment programmes has become common, with a view to reducing costs in an already squeezed system. Quite apart from the financial pressure to provide minimalist services, re-tendering in itself risks compromising the quality and continuity of treatment. As reported by Ball and Ross,[7] more effective programmes are characterised by stable management, and frequent restructuring of services may compromise effectiveness. Clinical leadership, with well-understood, protocol-driven treatment and support and supervision for staff, are important ingredients of treatment.

Summary

- Medical management of drug dependence is more difficult and challenging than for other chronic disorders. Many users who present for treatment are socially marginalised, lead chaotic lifestyles and have little to motivate them towards recovery.
- Stigma and staff attitudes may also complicate management.
- Traditional methods for treating opioid addiction were based on two approaches – encouraging abstinence and a change of attitude on the part of the user.
- Although some individuals do recover spontaneously from opioid dependence, it is usually a chronic relapsing–remitting condition.
- The principle of opioid substitution therapy (OST) is to prescribe and administer a pharmaceutical opioid as a substitute for heroin. This attenuates the symptoms of withdrawal from heroin and allows the user to gain control over other aspects of their life, thereby creating the necessary preconditions to cease drug seeking and use.
- Substitution therapy provides a structured routine through daily attendance for administration in a safe non-punitive and non-judgemental treatment space, which may benefit users in restructuring a chaotic lifestyle.
- The basis of effective OST is suppression of opioid withdrawal.
- High-dose methadone is more effective than a low dose, because it progressively increases the patient's tolerance to opioids, making heroin less reinforcing and cessation of use more likely.
- For some users, the respite from withdrawal offered by methadone is insufficient to allow them to move away from heroin use; treatment with diamorphine is more reinforcing and successful in these individuals.

- Long-term studies suggest OST may reduce use of opioid drugs (in a relapsing–remitting manner), but seldom results in long-term abstinence from all drugs. Continued alcohol misuse and cannabis use are common.
- Opioid substitution has been shown to reduce deaths from opioid overdose and the risk of blood-borne viruses.
- Evidence on the effects of OST on mental health and quality of life is limited and equivocal.
- The National Treatment Outcome Research Study (NTORS) demonstrated that for every pound spent on treatment in the UK, a reduction of £3 in public costs was observed. Economic benefits were largely accounted for by reduced costs of crime.
- Opioid substitution has been shown to reduce rates of acquisitive crime and there is some evidence that it contributes to social reintegration.
- There has been little research on the effectiveness of supervised administration of OST, but limited evidence suggests it is more effective at reducing heroin use than non-supervised treatment.
- Randomised trials have shown no benefit overall of additional psychological interventions in terms of retention, non-prescribed opioid use, psychiatric symptoms, compliance or depression. There is substantial evidence that good-quality staff interactions are of benefit for recovery.
- Opioid substitution is associated with a risk of diversion of methadone to other individuals, as well as an increased risk of death during the first two weeks of treatment and in the month after leaving treatment. Overall, the risk of death is reduced by entering OST.
- Subtherapeutic dosing is a serious limitation on the effectiveness of OST.

Chapter 9 – Medical management of drug dependence: reducing secondary health harms

9.1 Provision of healthcare and identification of drug use as a health issue

This chapter considers the scope of medical practitioners' involvement in the reduction of drug-related harm, through the provision of healthcare to people using drugs, and the identification of users, provision of information, and monitoring where drug use is a risk factor for health problems.

Some people who use drugs report experiencing disapproval and frustration in their interaction with healthcare services,[1] and this can be a significant barrier to accessing healthcare. As discussed in **Chapter 8**, health professionals who adopt a non-judgemental, non-stigmatising empathic stance are most likely to be effective in delivering healthcare for these patients.

There is consistent evidence that in primary care settings, in hospitals, and in mental health settings, doctors frequently do not address alcohol and drug use.[2-5] A history of alcohol or drug use is seldom documented, even where presenting symptoms or signs provide an index of suspicion that alcohol or drugs may be involved.[2,3] There has been difficulty engaging doctors in the treatment of problems with addiction in Australia,[4] and reports of similar problems in the UK.[5] Possible explanations for the reluctance to explore alcohol and drug use include some doctors' sense of pessimism about being able to do anything, avoidance of antagonising patients, and, possibly, reluctance to work with stigmatised patients (see **Section 8.2**).

The medical frame of reference is a useful one in which to approach drug use – non-judgemental, factual, professional, accurate diagnosis and provision of information and referral, monitoring the response. Contrary to pessimism and reluctance to address drug use as a health issue, there is evidence that, in relation to the legal drugs alcohol and tobacco, medical management can have significant impact,[6-9] but it is unclear how far this can be extrapolated to illicit drugs. Opportunistic identification of drug use, and provision of brief health advice, may be useful in triggering individuals to reflect on, and sometimes to modify, their use of drugs.

If a doctor finds a patient is using illicit drugs, the response should be to undertake an assessment of the extent to which this use is impacting on the person's health and their life and the lives of others around them, while acknowledging the importance of patient autonomy and choice. The appropriate response may involve provision of information about health risks and harms, or referral for management. Referral to a specialist service is not always indicated. Screening and brief advice from physicians can affect the motivation for change among patients, including those with substance dependence.[10,11]

It is important to identify whether the patient perceives that their health, or other aspects of their life or that of those around them is negatively impacted by their drug use, whether their family members perceive this to be so, and whether the doctor, on the basis of the patient's symptoms and presentation, has identified negative effects of their drug use on the person's life. The doctor must also consider the impact the drug use may be having on children and young people. Guidance published by the General Medical Council (GMC) in 2012 on *Protecting children and young people* makes it clear that, while the adult patient must be the doctor's first concern, the doctor also has a responsibility to consider whether the patient poses a risk to children or young people.[12] The new guidance also stresses that, when responding to requests for information for child protection purposes, the doctor should:

> *'include information about the child or young person, their parents and any other relevant people in contact with the child or young person. Relevant information will include family risk factors, such as drug and alcohol misuse, or previous instances of abuse or neglect, but you should not usually share complete records.'*[12]

9.2 Opportunistic brief intervention

In the medical response to addictive disorders, prevention is probably better than treatment – ie opportunistic interventions with people identified as using drugs in ways that place them at risk. Strategies to prevent drug use are discussed in detail in **Chapter 7**. This section looks at strategies to reduce use in those who are already using drugs.

9.2.1 Young people and drug use

A review of randomised trials that evaluated an intervention targeting drug use by young people under 25 years of age, delivered in a non-school setting, noted that overall there is a lack of evidence in this area, so further research is still needed to determine which interventions can be recommended and which are cost effective.[13] Some larger studies show promising results, suggesting that, for medical professionals (and other healthcare workers), brief interventions using motivational

interviewing provide an important means of reducing drug use in young people, including in those who are most vulnerable or most at risk. Some authors have shown positive impact of brief interventions for use of individual drugs in young people,[9,14] while one UK study showed these benefits simultaneously derived across a number of different drugs,[15] which may also have useful implications for the busy primary care or emergency department setting.

McCambridge and Strang tested brief interventions in young people,[16] and found that a single session of motivational interviewing (including discussing illicit drug use) led successfully to reduction in use of these drugs among young people. The intervention took place across 10 further education colleges across inner London, with 200 young people aged 16-20 years who were currently using illegal drugs. Those randomised to motivational interviewing reduced their use of cannabis (and cigarettes and alcohol). Those most at risk benefited the most: for cannabis, the effect was greater among heavier users. The effect of reduction in cannabis use was also greater among youth usually considered vulnerable or high risk according to other criteria – for example young male individuals who smoked cannabis the most frequently, were in receipt of benefits, and had a prior history of selling drugs.

9.2.2 Cannabis

Relapse prevention CBT (see **Section 9.5.2**) appears to be effective for cannabis dependence, compared with a control group awaiting treatment. It appears that individual therapy may be more effective than group therapy.[17]

9.2.3 Stimulant use

Contingency management (see **Section 9.5.2**) is associated with much longer continuous periods of abstinence for cocaine compared with control groups, in both prize and voucher reinforcement studies.[18] This intervention has not been widely used in the UK, possibly due to training needs.[18] Couples-based interventions have also been found to be effective.[18]

9.2.4 Use of opioid drugs

Individuals with opioid dependence who are in close contact with a non-drug-using partner have been found to benefit from behavioural couples therapy, both during treatment and at follow-up.[19]

In order to reduce relapse and the associated increased risk of fatal overdose, services providing residential opioid detoxification should prepare people for admission, strive to retain them in treatment for the full admission period, and actively support their entry into planned aftercare, in order to improve outcome.[20]

9.2.5 Intravenous drug use and associated risks

Opportunistic brief interventions in intravenous drug users have also been shown to have significant impact. A randomised trial across 15 cities and 4,000 participants examined the effect of three sessions of motivation interviewing for intravenous drug users attending healthcare services for other purposes (HIV testing) compared to HIV testing alone. The study found that those who received additional counselling had better outcomes than those randomly assigned to receive just HIV testing. In the group that received additional counselling, there was half the rate of drug injection at 6-month follow-up, four times the likelihood of abstinence (confirmed by urinalysis), and significantly lower arrest rates.[10,11]

9.3 Safe prescribing

Management of illicit drug users is multifaceted. It requires medical management of the drug use and its sequelae, but also includes referring to other disciplines, such as social services, that can help with the wider aspects of improving quality of life. Medical management of dependent drug use focuses directly on treating physical and mental health issues and may involve prescribing. This section presents some of the safety issues that are important in this context. It considers the appropriate and safe prescribing of drugs of dependence and ways to minimise the risks of diversion, misuse and iatrogenic dependence.

Misuse of, and dependence on, prescribed drugs (in particular opioids and benzodiazepines) is a rapidly growing public health problem in many jurisdictions internationally.[21,22] There have been well-documented periods in the past when diversion and misuse of pharmaceuticals was the primary source of street drugs in some UK cities.[23] Caution in prescribing, particularly in patients with histories of drug dependence and misuse, is an essential part of minimising diversion and delivering safe and effective medical management. The most effective deterrent to diversion and misuse is supervised consumption.[22] There is clear evidence from the UK that increasing the level of supervision in patients receiving methadone has been associated with a marked reduction in deaths due to diverted methadone.[24]

In assessing patients seeking analgesics and/or hypnosedatives, it is appropriate to seek a history and family history of drug use, and to examine for any objective signs of use of injected drugs (such as scarred veins), with the patient's consent. Urine toxicology is also useful, to enhance the accuracy of self-report. In addition to minimising misuse, diversion and iatrogenic dependence, the medical professional must consider the physical safety of the prescribed drugs, as is the case in all prescribing. The impact of injudicious prescribing is illustrated in a study from Melbourne, Australia, where researchers investigated the medical attendances of young people who had died of opioid overdoses.[25] In the months leading to their deaths, these young people exhibited a pattern of increasing presentations to doctors, obtaining escalating prescriptions for

opioids and benzodiazepines – the drug combination that led to their deaths. In a UK-wide 17-year GP dataset of patients also prescribed OST, over one-third of prescriptions for benzodiazepines exceeded 8 weeks (twice the maximum timeframe recommended by the NICE guidelines).[26] In other cases, some patients who may initially be prescribed a short-term z-drug or benzodiazepine prescription for sleep problems or an episode of anxiety, but whose symptoms continue, may be at risk of developing dependence.[27,28] It is important for medical professionals to conduct regular reviews and consider the broader care plan options, including a stepped care approach and psychological interventions.[26]

9.4 Management of withdrawal

It is not unusual for patients to present to emergency departments, or sometimes to primary care, in acute drug withdrawal. Occasionally withdrawal from drugs that activate the GABA (gamma-amino butyric acid) system – alcohol, barbiturates and GHB/GBL can present with very severe and potentially life-threatening seizures. Such withdrawal is characterised by autonomic overactivity (tachycardia, hypertension, tremor and sweating), cognitive changes (confusion, agitation, sometimes psychosis) and perceptual disturbances (formication – a tactile hallucination of insects crawling on or in the skin, illusions, visual hallucinations). Fits may also occur. One role of therapeutic detoxification from illicit drugs is management of a clinical emergency, stabilising the individual and slowing the rate of change to allow their physiology to adapt. A second role is to decrease the distressing or uncomfortable symptoms of withdrawal, and, through this, a third role is to enhance engagement and increase the likelihood of continued abstinence. It is also essential that the medical professional promotes continued engagement and continues to provide support after the detoxification process is complete. Relapse prevention is discussed in **Section 9.5**.

9.4.1 Benzodiazepine withdrawal

Fits or a paranoid psychosis may also occur on abrupt withdrawal of benzodiazepines. This is relevant in considering illicit drug use, as it is usual for people who become dependent on illicit drugs to misuse a range of drugs, including alcohol and benzodiazepines. Where withdrawal from most illicit drugs is not associated with severe morbidity, withdrawal from benzodiazepines often poses a greater risk. It is more difficult to recognise, as the onset of withdrawal is often delayed. Withdrawal symptoms come on within two to three half-lives of the particular benzodiazepine (eg 2-3 days after short- and medium-acting compounds and 7-10 days after long-acting compounds) and usually subside within a few weeks.[28,29] Some patients report symptoms that have persisted for months or indefinitely.[30] This has been described as a '*post-withdrawal syndrome*',[31] and may complicate management of withdrawal from illicit drugs.

9.4.2 GBL withdrawal

As with benzodiazepine withdrawal, those with chronic heavy GHB or GBL use can experience severe withdrawal,[32] including delirium and the need for urgent inpatient care or, in some cases, transfer to an intensive therapy unit. Others can be managed by specialists, with high-dose diazepam and baclofen, titrated against withdrawal severity in ambulatory settings, but this needs to be backed up with access to inpatient treatment if required, because of the possible severity of the withdrawal symptoms.[33]

9.4.3 Opioid withdrawal

The distressing symptoms of opioid withdrawal can include dysphoric mood, nausea or vomiting, muscle aches, lacrimation, rhinorrhoea, sweating, diarrhoea and insomnia.[34] In those patients who wish to detoxify from all opioids, withdrawal symptoms are minimised by the process of opioid detoxification, using the same drug or another opioid in decreasing doses. This is discussed in more detail in **Chapter 8**. Methadone or buprenorphine are offered as the first-line treatment in opioid detoxification.[34] As with other withdrawal syndromes, adjunctive medications at low doses may also be considered where clinically indicated (for example, to treat diarrhoea), and where the medication does not interact with the other medications prescribed.

Following successful opioid detoxification, patients should be offered and engaged in continued support and monitoring designed to maintain abstinence.[19] This important topic is covered in **Section 9.5**.

The medical professional must also educate the patient regarding the loss of opioid tolerance following detoxification, and the ensuing increased risk of overdose and death if opioids are used again during this period. This is addressed in greater detail in **Sections 8.4.5** and **8.6.1**.

9.4.4 Stimulant withdrawal

When chronic heavy users abruptly discontinue amphetamine or cocaine use, a withdrawal syndrome occurring within hours to days of their last dose is commonly reported. While the two syndromes are distinct, they share symptoms, including dysphoric mood, fatigue, vivid or unpleasant dreams, insomnia or hypersomnia, increased appetite and psychomotor agitation or retardation.[33] The degree of severity is a relapse predictor in some individuals.[35] This is a distressing experience, and there are reports of suicidal ideation in some during this period.[36-38]

Research on pharmacotherapies for amphetamine detoxification[36,39] and cocaine detoxification[35,40,41] are currently ongoing but, as yet, no medications are licensed for detoxification in stimulant withdrawal. The medical professional's current focus should be on assessment; engagement; safe means of alleviating distressing symptoms, such as adjunctive medications where appropriate; relapse prevention strategies (discussed in

Section 9.5); and monitoring for the use of other potentially harmful substances the patient may be using to self-medicate.

9.4.5 Cannabis withdrawal

In managing cannabis withdrawal, the medical professional should be aware of the frequency and presentation of withdrawal symptoms, which are newly listed in the forthcoming *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V), scheduled for publication in 2013. The medical professional should also be aware of the possible responses of patients aiming to reduce their withdrawal symptoms, including relapsing[42] and self-medication with other substances.[42,43]

Symptoms of cannabis withdrawal in those who are dependent include anxiety, irritability, appetite changes, restlessness, sleeping difficulties, tension, thoughts and cravings for cannabis, and twitches and shakes, in both adults[42,44] and adolescents,[45] and commencing typically within hours to days of ceasing cannabis use. From a US general population study, of a sample of 2,613 individuals using cannabis on three or more days per week, 57.7 per cent (and 59.4% among the subset who did not use other substances) experienced at least one symptom of cannabis withdrawal on cessation, with feeling weak or tired, hypersomnia, anxiety, psychomotor retardation and depressed mood being the commonest symptoms. There was a strong, significant correlation between distress experienced during withdrawals and the use of other substances to relieve the distress.[43]

Research on pharmacotherapies for the management of cannabis detoxification is also ongoing.[46,47] In terms of management of withdrawals, the medical professional should monitor patients for withdrawal; address ways to alleviate significant symptoms to help avoid relapse and self-medication;[42] and engage the patient in other relapse prevention strategies (see **Section 9.5**).

9.5 Relapse prevention

Drug dependence, in particular in users of heroin, other opioids and cocaine, often presents as a chronic condition with periods of relapse and remission.[48] In the case of dependence on opioid drugs, relapse after a period of abstinence is associated with an increased risk of death from overdose due to decreased tolerance (see **Section 8.6**).[49,50] The medical professional has a key role in educating the opioid user[51] and their carers[52] about these risks and how to respond to them. The medical professional must also address relapse prevention strategies with those undergoing detoxification.[51]

9.5.1 The role of medication in relapse prevention

The use of naltrexone for relapse prevention after opioid detoxification is described in **Section 8.4.6**. Its use requires significant motivation for compliance and thus its use as an effective therapeutic strategy is limited.[53]

Prescribed OST (described in detail in **Chapter 8**) is used as treatment in opioid dependence, to maintain abstinence from illicit opioid use.

A Cochrane review addressing the use of psychostimulants to maintain abstinence from cocaine use found studies in this area to be currently inconclusive.[54]

9.5.2 The role of psychosocial interventions in relapse prevention

Relapse prevention CBT focuses on helping drug users to develop skills to identify situations or states where they are most vulnerable to drug use, to avoid high-risk situations, and to use a range of cognitive and behavioural strategies to cope more effectively with these situations.[18,55]

Relapse prevention CBT appears to be effective for cannabis dependence, with individual relapse prevention CBT lasting between four and nine sessions associated with greater levels of abstinence and reductions in drug use for people who use cannabis.[18,55]

In a meta-analysis, contingency management (CM), in the form of voucher-based reinforcement in the treatment of use and dependence on licit and illicit drugs, has been shown to significantly improve treatment outcomes for all substance use disorders apart from for alcohol.[56]

Contingency management has not yet been widely used in the UK,[18] but has been shown to increase the likelihood of abstinence in cocaine dependence, using either prize- or voucher-based reinforcement,[57,58] while relapse prevention CBT and standard CBT have not been shown to be effective for the treatment of cocaine dependence.[18] As Stulza et al highlight,[59] cocaine users are a heterogeneous group, so studying the impact of psychological therapies on this population as though they are psychologically uniform is likely to underestimate the effect size of therapies, which could be more effective when tailored to individual cases or if subgroups with shared characteristics are studied together instead of whole populations.

Individuals with cocaine and/or opioid dependence and who are in close contact with a non-drug-using partner benefit from behavioural couples therapy, both during treatment and at follow-up.[18]

Narcotics Anonymous (NA) and Cocaine Anonymous (CA) are mutual-help groups that offer a recovery programme based on the 12-step approach that began with AA – '*a non-profit fellowship or society of men and women for whom drugs had become a major problem*', which '*encourages its members to abstain completely from all drugs*'.[60] Although there are still only very few UK studies in this area,[61] a longitudinal, prospective cohort study of 142 drug-dependent clients interviewed at intake to residential treatment in the UK, and again at 1-year, 2-year and 4-5-year follow-up, found that those who attended NA/AA, in particular those who attended at least weekly, were more likely to be abstinent of opioid drugs at all follow-up points than those who did not.[15] This study showed reduced stimulant use at 1-year follow-up in those who attend NA/AA following residential treatment, but not at other follow-up points.[61] Other studies have shown that active participation rather than just attendance, at 12-step groups was associated with reduced cocaine use.[15] This is consistent with findings that the efficacy of certain psychosocial treatments, including 12-step programmes, is dependent on individual patient characteristics of cocaine-using populations, which can be subdivided based on personal characteristics, such as belief in the 12-step programme.[59] This emphasises the importance of the medical professional tailoring a treatment package to the individual patient in order to optimise outcomes.

9.6 Illicit drug use in pregnancy

Medical professionals have a responsibility to identify pregnant women who are using illicit drugs, and to engage them in treatment. The earlier members of this population are able to access treatment services, the better the outcome will be for their general physical health, the pregnancy and the neonate.

A sensitive, non-judgemental approach is essential in engaging this population and optimising treatment effectiveness. Medical professionals have a role to play not only in portraying this through their own clinical care and manner, but in leading their clinical teams to be approachable, non-judgemental and patient centred in this situation. This will include attention not only to physical healthcare and management of drug use, but sensitive attention to the coexistent psychological difficulties and social concerns that the patient may be experiencing. The medical professional and the full multidisciplinary team will need to address the woman's fears about the involvement of children's services; anxiety and guilt about the potential impact of their drug use on their baby;[62] and concerns the patient may have about finances, support networks, and coping strategies during pregnancy and their forthcoming parenthood. The NICE guidelines on *Pregnancy and complex social factors*[62] recommend that the first time a woman who uses substances discloses that she is pregnant, she should be offered referral to an appropriate substance use programme. They also recommend that a variety of methods (eg text messaging) should be used to maintain contact and engagement, and to remind women of upcoming and missed appointments.[62]

The medical professional must ensure high-quality effective interagency communication. Multiagency team work is also essential, working with social care professionals and ensuring seamless communication between general practice and the specialist services involved in the patient's antenatal care, including obstetrics, specialist drug services and any other specialist healthcare services. Multiagency case conferences, with prospective parents invited as participating attendees, will facilitate good inter-team communication and optimise clinical care.[63]

The following case study illustrates some of the additional issues to be considered in pregnancy.

Case study: Illicit drug use in pregnancy

Ms B is 23 years old. She is smoking about £30 of heroin and £10 of crack per day. She does not drink any alcohol. She has presented for treatment and is 14 weeks pregnant for the second time.

Ms B was brought up in a small isolated community and was one of six children. Her family were very strict and she was not allowed to have friends outside the community. Between the ages of 10 and 13 she was subjected to regular sexual abuse by an uncle who lived with the family. She once told her mother about the abuse but was told to keep it quiet and not tell anyone, as it would bring shame on the family. Her mother had been seriously depressed when she was a child.

She did well at school and started work in a local estate agent's office when she left school. She began to see Mr Y, who was the brother of one of her school friends. Mr Y was a heroin user and eventually she started smoking cigarettes that he gave her. She thought these were cannabis. After a few months, she noticed that she felt very unwell if she did not smoke and Mr Y told her that the cigarettes had heroin in them. She started rowing with her family and left home to live with Mr Y in a squat. Their drug habits were funded by Mr Y's shoplifting.

When she was 19 she found she was 28 weeks pregnant. She presented to a local GP, who prescribed her methadone and referred her for antenatal care. Social services were involved. She had very little antenatal care and avoided the appointments with the social worker, who she only met once. She continued to use heroin on top of her prescription. She went into labour at 36 weeks and had a baby boy. For a few weeks she went back, with her baby, to live with her parents (with the support of social services) and stopped using heroin but the rows with her mother were so bad she eventually left the baby with her mother and went to live with Mr Y in a big city.

For the next three years she lived in a series of squats with Mr Y and continued to use drugs. Ms B's son lived at home with her mother. She occasionally slept with men to get drugs. Mr Y started drinking alcohol and started hitting her when they argued.

She came into treatment when Mr Y was arrested for aggravated burglary and went to prison. He was sentenced to four years.

Ms B was engaged in treatment by the city's drug services. She registered with a GP. She was prescribed buprenorphine and managed in an antenatal liaison clinic, where she received antenatal care and drug treatment. Social services were involved from the beginning and found her a place in a local women's hostel.

Ms B was able to stop using heroin and begin to think about some of the problems she had with her abusive relationship and her history of sexual abuse. Her second baby, a little girl, was born at full term and was immediately subject to child protection proceedings and taken into foster care but Ms B had regular contact with the baby. She subsequently went, with the baby, to a mother and baby rehabilitation centre where her parenting could be assessed and she could reduce her buprenorphine. Ms B was clear she wanted to stop using all drugs, keep her daughter and re-establish a relationship with her son and her family.

Case study details provided by Dr Emily Finch, a consultant addiction psychiatrist.

9.6.1 Use of opioid drugs during pregnancy

For opiate use in pregnancy, the focus is on stability. It is safest to prescribe opiate substitution (see **Chapter 8**) '*at a dose that stops or minimises illicit use*'.[62] Detoxification may be considered, if requested, during the second trimester, as long as this does not precipitate a relapse in illicit drug use; but it should be avoided during the first and third trimester because of the risk to the fetus.[63,64]

Buprenorphine is not licensed for use with pregnant women, but research suggests no adverse effects on the pregnancy or neonatal outcomes.[65,66] The UK guidelines on the clinical management of drug misuse and dependence[63] advise that if a pregnant woman is stable on buprenorphine and informed of the risks, it is reasonable to leave her on a prescribed dose of buprenorphine, rather than risk inducing withdrawal in the fetus or destabilising the patient's treatment by transferring to methadone, unless otherwise needed. The treatment focus again is on stability and maintaining engagement.

In all pregnant women using or prescribed opioid drugs, particular consideration will also need to be given to their birthing plan, including pain management and the risk of fetal distress at birth.[64,65]

9.6.2 Cocaine use during pregnancy

As in the case of the non-pregnant woman, there is currently no substitution treatment for cocaine. In view of the potential harms to the fetus and to the mother's health, the pregnant woman should be given support to stop using cocaine during pregnancy. A non-judgemental, sensitive approach, with clear and effective multidisciplinary communication and team working are again essential, addressing the full spectrum of psychosocial and physical health needs. Psychological therapies, including family therapy where possible, may be offered.[63] Relapse prevention CBT should be offered, and marked efforts made to ensure continued engagement of the patient.

Summary

- Consistent evidence shows that doctors in primary and secondary care and in mental health settings frequently do not address alcohol and drug use.
- Caution should be exercised in prescribing drugs with potential for dependence, particularly for patients who are at high risk for dependence or diversion.
- Management of medical emergencies related to acute symptoms of withdrawal should be followed by longer-term medical management and support to reduce dependence.
- It is also important to address strategies for relapse prevention after detoxification.
- The use of naltrexone for relapse prevention after opioid detoxification is of limited value.
- Psychosocial interventions that help users to identify high-risk situations and use coping strategies have been shown to be helpful in managing cannabis dependence.
- In US studies, contingency management in the form of voucher-based reinforcement has been found to significantly improve outcomes for all substance use disorders apart from alcohol. Couples-based therapy and support groups are also of value.
- Brief therapist interventions and motivational interviewing have been shown to reduce drug use among young people. Opportunistic interventions in patients attending for HIV testing has also been shown to increase the likelihood of abstinence and reduce arrest rates.
- Illicit drug use in pregnancy needs particular care with medical management, to avoid harm to both the mother and her baby.

Chapter 10 – Medical management of drug dependence in the context of criminal justice: illicit drug use, courts and prison

10.1 Introduction

The criminalisation of possession and supply of illicit drugs, and acquisitive crime associated with drug use, result in many illicit drug users being imprisoned. The maximum penalty is life imprisonment for supply of Class A drugs, with seven years for possession, but sentences between two and 14 years are used for possession or supply of Class B or C drugs (see **Chapter 1**). This has implications for the medical professional, as many illicit drug users first come into contact with the medical profession via the criminal justice system.[1]

The general principles of medical ethics apply to all individuals who come into contact with medical professionals through the criminal justice system.[2] This includes their right to confidentiality; the right to choose their own doctor (although this is not a right for convicted prisoners); the requirement for informed consent to medical treatment; the right to refuse treatment; and, for those detained or in prison, the right of access to the same treatments that are available outside the detention setting. This can create particular challenges for medical professionals working within the criminal justice setting, which are highlighted throughout this chapter.[2] These issues are discussed in a recent joint publication by the Royal College of General Practitioners, Royal Pharmaceutical Society and The Secure Environment Pharmacist Group, *Safer prescribing in prisons*.[3]

The controlled environment of prison is, nevertheless, more likely to ensure compliance with drug treatment programmes than is possible after discharge. It offers a valuable opportunity for effective medical treatment of drug use disorder and ultimately the best chance for many dependent drug users to be rehabilitated. This is illustrated by the case study that follows.

Case study: Drug-related crime resulting in drug treatment in prison

A young woman aged 19 years appeared in the Crown Court charged with a series of offences that she had committed while on bail granted in relation to other earlier offences. A report from the Probation Service explained that she had been picked up by police after having collapsed in the stairwell of a housing estate in east London. It also explained that she was homeless; she had been living in a local authority hostel but had been thrown out of it for taking men back into the hostel for the purpose of prostitution in order to raise funds to feed her drug habit. She was barely conscious at the time that she was found by the police and was high on drugs. She was due to be sentenced for a series of offences, which included attempted robberies of mobile phones from young women whom she had threatened with a knife, and attempts to snatch handbags, also from young women leaving a tube station late at night. All the attempts had failed.

The probation report explained that she committed these offences to raise funds to buy drugs and that she was so dependent that, unless she was taken off the streets (and in effect given a lengthy prison sentence), there was a real risk that she would die. She had two children. The oldest was a six-year-old girl, who had been taken away by the grandmother to Belgium (it was said that she had, in effect, abducted the granddaughter to save her from her mother) and she also had a two-year-old child who was in care.

After hearing evidence from the Probation Services, the court imposed a prison sentence at the maximum end of the scale for offences of that nature. The court discussed the possible range of sentences with defence and prosecution counsel and the discussion proceeded upon the basis that it was, in effect, common ground that, for her own good, she needed to be given a custodial sentence of the longest duration that was proper in the circumstances. This would give the defendant the best chance of receiving drug treatment in prison. The case was unusual in that the Probation Service was able to make enquiries about which prison the defendant would be sent to, and about the availability of drug treatment courses in that prison. This was exceptional, since it is very rare indeed for a sentencing judge to know anything about the prison to which a defendant is to be sent, or about the availability of drug rehabilitation courses in that prison.

Case study details provided by Nicholas Green QC, who has a special interest in the impact of drugs policy upon the administration of the justice system.

10.2 Drug use prior to, during and after incarceration

The prevalence of problem drug use among prisoners in the UK is high. While drug treatment programmes delivered in a controlled prison environment may offer some prisoners the opportunity to be rehabilitated, rates of drug use during incarceration remain high. A survey of nearly 1,500 new UK prisoners in 2005-2006 found lifetime use of heroin, crack cocaine, cocaine powder, amphetamines or cannabis was reported by 79 per cent of prisoners, with approximately one-third having used heroin or crack cocaine during the year before custody.[4] These figures mirrored findings from a 1997 National Survey of Prisoners in England and Wales,[5] showing high rates of drug use prior to and during incarceration. It has been estimated that up to half of all recorded crime is drug related.[1]

Rates of first initiation of use of drugs in prison are also high. Analysis of the findings of the 1997 National Survey found that over a quarter of the men who had used heroin reported first initiating use in prison.[6] A study across 13 prisons in England and Wales found that prisoners were also much more likely to continue to use heroin than either cocaine or amphetamines while in prison.[7]

10.2.1 The Drug Interventions Programme

The bidirectional links between drug use and offending have already been highlighted. The Drug Interventions Programme (DIP) was introduced by the Home Office in April 2003, with the aim of developing and integrating measures for directing adult drug-using offenders into drug treatment and thereby reducing offender behaviour.[8] The majority of DIP referrals into treatment are achieved via drug testing in police custody suites. The DIP also provides for interventions at other stages in the criminal justice process, such as during an initial bail hearing or sentencing. DIP also has links with treatment-related community sentencing and the provision of treatment in prison.

Each person entering the DIP is unique and their care needs and treatment will be tailored to them. Care planning is integral to the process; this is an agreed plan of action between the service user and the Criminal Justice Intervention Team worker, which involves setting goals based on the individual needs identified. This plan documents and enables routine review of the service user's needs, goals and progress across four key domains:

- drug and alcohol use
- physical and psychosocial health
- offending
- social functioning (including housing, employment and relationships).[9]

Research by the Home Office has found the DIP to be effective in reducing reoffending behaviour.[8] Each person completing a DIP had a care plan with medical treatment at one or four levels or tiers dependent upon their individual needs, for example, the nature of their drug use (frequency of use, and number and types of drugs used). The different levels/tiers of treatment reflected their intensity and ranged from non-specialist general healthcare through open drugs treatment and community-based drug treatment to residential drug treatment.[8] The overall volume of offending of a cohort of 7,727 individuals was 26 per cent lower following identification through a positive DIP test. Around half the cohort showed a decline in offending of around 79 per cent post DIP.[8] Earlier research by the Home Office, conducted before the introduction of DIP, lent support to the idea that drug-using offenders who are not directed towards treatment are unlikely to change in their pattern of drug use.[10]

10.2.2 Drug Rehabilitation Requirement

The Drug Rehabilitation Requirement (DRR) was introduced as a sentencing option under the Criminal Justice Act 2003. This requirement is one of a menu of 12 requirements to which offenders can be sentenced. The DRR involves drug treatment and testing and is a rehabilitative as opposed to a punitive requirement. The period of treatment can last between 6 months and 3 years. There are three levels of intensity of contact, which include, but do not entirely consist of, medical treatment. These levels correspond to the criteria of low, medium and high seriousness.

Before making the requirement, the court must be satisfied that:
- the offender is dependent on or has a propensity to use any controlled drug
- he or she would benefit from treatment
- the necessary arrangements can be made for the treatment
- the offender agrees to comply with the requirement.

Arrangements for treatment are available through the Probation Trusts, which operate at a local level. Several private or charitable organisations also work in partnership with the Probation Trusts/the National Probation Service to deliver DRR programmes and testing.

There is provision for the court to review the progress of the offender during the order, and to agree changes in the treatment.

The treatment can be residential or non-residential, which is decided by the court, and must be supervised by a suitably qualified person. The type of treatment and the treatment provider must be written in the order.

In 2009-2010 there was an 11 per cent decrease in the number of DRR commencements in England and Wales, while the completion rate increased from

47 per cent to 56 per cent.[11] The 11 per cent reduction was partly due to police initiatives which diverted offenders from charge, and a change in focus so that targets were more focused on completion and not commencement.[11]

Accessing treatment, however, can be problematic for drug users subject to a DRR. A review of the National Drug Rehabilitation Requirement found a variation in treatment delivery across England and Wales.[12] In some cases this was due to *'local service level agreements or communication protocols not being set up between probation and treatment agencies, so that only a minimum number of agencies were seen as "DRR friendly"'*.[12]

10.2.3 Drugs courts

Since 2004, six pilot Dedicated Drug Courts (DDCs) specialising in dealing with offenders who are illicit drug users were introduced in magistrates' courts in England and Wales. Building on existing arrangements available through the drug treatment and testing order and DRR, a pilot model for England was launched in 2005 in Leeds and London, while a further four pilots (in Barnsley, Bristol, Cardiff and Salford) opened in 2009.

The DDC pilots in England and Wales were aimed at reducing illicit drug use and reoffending amongst drug-using offenders who commit low-level crime to fund their addiction.[8] The DDC model introduced a new framework in magistrates' courts for dealing with such offenders. Sessions were set aside in existing magistrates' courts for dedicated panels of magistrates or particular district judges to sit for sentencing. A drug-using offender who was convicted of a low-level 'acquisitive' offence, for example shoplifting, could be referred to the DDC for sentencing.

Appropriate sanctions and other rehabilitation services that could be included in community sentences were available to all courts in England and Wales. The DRR included conditions such as: increasing the offender's likelihood of successful rehabilitation through early, continuous and intense judicially supervised treatment; mandatory periodic drug testing; and community supervision.

In January 2011, the Ministry of Justice published *The Dedicated Drug Courts Pilot Evaluation Process Study*.[13] The evaluation did not attempt to measure the actual impact of the DDC on reducing reoffending through decreased drug use. Instead, it focused on identifying the factors that may have had an impact on the effectiveness of the DDC, such as the structure of the court and the styles of engagement used by staff. The findings indicated that the DDC model was perceived to be a useful addition to the range of initiatives aimed at reducing drug use and offending.[13] Continuity of judiciary when working with drug-using offenders was seen to be a key element of the model: offenders reported that they felt accountable to the DDC through seeing the same

judicial panel and through the formal monitoring of drug use, and that this continuity helped to reduce drug use and offending.

10.2.4 Ethical issues

Referrals for treatment from police custody suites, as in the DIP, and the power of courts to 'sentence' an offender to receive medical treatment rather than a custodial sentence or other type of punishment raise concerns about informed consent to treatment. It also leads to a blurring of the distinction between judicial and therapeutic strategies, with the result that a drug user may view the doctor treating them as part of the judicial system and be confused about whether they are being punished, or treated as a patient. Effective communication is essential to ensure that those undergoing treatment fully understand their rights as outlined in **Section 10.1**.

Issues that arise for health professionals include the following:

- high rates of illiteracy and learning disability in offenders, often coupled with a lack of time and/or privacy for consultations, which raise serious questions about their freedom to give informed consent
- the perception of offenders that the doctor is not impartial but is working for the police or prison
- the ethics of providing treatment when the patient has effectively been coerced to consent.[2]

It should additionally be noted that:

- it is unlawful to give compulsory mental health treatment in a setting other than a hospital
- all patients are owed a duty of confidentiality but this is never an absolute duty
- when governors or managers need information in order to protect the safety of other detainees or patients, doctors must make decisions about whether to disclose health information in the public interest, on a case by case basis and, where disclosure is necessary, only the minimum amount of information should be shared.[14] People detained in police custody have a right to request examination by their own doctor, and individuals held on remand have a right to consult a doctor of their choice; convicted prisoners have no general freedom of choice regarding the doctor that they see.[2]

It is paramount to build up trust between the doctor and patient, and to reassure all patients that the doctor is impartial and not working for the judicial system.[2]

10.3 Reducing the supply of drugs entering prisons

Drugs are introduced into prisons through a variety of means,[15] including being smuggled into prisons with prison visitors, being projected or catapulted (quite literally) '*over the wall*',[15] being hidden in items sent to prisoners in the post and in parcels, by prisoners themselves when they return from day release, and through corrupt staff.[15] The precise quantification of the problem is very difficult. It has been estimated that the value of illicit drugs within prison is about £100 million.[15] The incentive to supply drugs into prisons is exacerbated by the fact that the value of drugs in prison is greatly inflated relative to outside prices.[15] Controlling illicit supplies is very difficult; when the authorities succeed in curbing one supply route, this serves to increases supplies through other routes.

There is disagreement as to which of the routes of illicit supply is the most prominent. A report in 2008 by Blakey,[16] commissioned by the Director General of the National Offender Management Service (NOMS), did not differentiate between the frequency and extent of different routes of supply.[a,15] Recent analysis suggests that the major problem is staff corruption. A Policy Exchange report in 2010 contends that the majority of drug dealing within prison is highly organised and involves the collusion of around 1,000 corrupt staff, which equates to around seven prison officers per prison.[b,15] It is reported that they are able to introduce drugs into prisons due to lax security arrangements.[15] Given the inflated value of drugs in prison, it is suggested that prison officers are able to make substantial profits, effectively without fear of detection;[c] a prison officer bringing a gram of heroin into prison every week (about the size of two paracetamol tablets) could expect to more than double their basic salary.[15]

a This was the essential criticism made of the Blakey Report[16] by the Policy Exchange Report;[15] see the latter report pages 14,15, 21-5.

b The figure of 1,000 is based upon a 'leaked' internal Metroplitan Police investigation report conducted in 2006.

c Ministry of Justice data provided on 4 May 2011 (to a Channel 4 programme on illicit drug supplies in prison) indicates that between 2008 and 2011, 92 prison staff had been dismissed, 78 had been convicted and 167 staff who worked for other agencies within prisons had been excluded as a result of illicit drug supplies.

10.4 How effective are current treatment modalities?

It is important that medical professionals are able to make independent clinical and ethical decisions about the most appropriate treatment for individuals in prison, in exactly the same way as for those living in the community outside prison. It is also important to fulfil the requirement for informed consent to any treatment, including OST and opioid detoxification. This includes the right of patients to refuse any treatment offered.[2]

The Integrated Drug Treatment System (IDTS), jointly developed by the NOMS and the DH, aims to increase the volume and quality of drug treatment available in prisons, and the NOMS Drug Strategy 2008-2011 lists as one of its aims to '*Increase the access to and quality of drug interventions, matched to individual needs*'.[17] A national evaluation of the prison IDTS programme is now taking place, assessing post-release outcomes, including whether there are increased numbers of people remaining in treatment on release, and reduced offending.[18]

The effectiveness of MT (see **Chapter 8**) in prisons can be measured by key outcomes, including its impact on continued heroin use by those in treatment, continued levels of drug use in prisons, and the impact on drug-related harms, including blood-borne virus transmission and overdose (described in more detail in **Sections 10.5** and **10.6**). Treatment with methadone in prison has been shown to significantly reduce heroin use among those treated.[19] Lasting benefits of continued engagement with treatment services after release into the community have also been shown – those initiated in MT in prison in the USA have been shown to be significantly less likely to have urine drug screen results that are positive for either heroin or cocaine at 12 months after release.[4,20] A 4-year follow-up study after the initiation of MT in New South Wales, Australia showed that retention in MT was associated with reduced mortality, reduced reincarceration rates and reduced hepatitis C infection.[19]

10.5 Opioid detoxification in the prison setting

In 2005, the predominant method of clinically managing the majority of problem drug users in prison was detoxification (see **Chapter 8**),[21] while the following year, the IDTS sought to increase the available treatment options, akin to those available in community treatment settings.[21] As in the community, medical professionals managing opioid dependence in the prison setting must consider in each case the most appropriate treatment pathway or the individual's needs and circumstances. Treatment options will include continued opioid prescribing or slow reduction or detoxification if appropriate, with regular reviews, and clinical decisions based on a careful and full assessment, including risk assessment, in collaboration with the full team and the patient.

For those with shorter sentences, or soon to be released back into the community, an additional factor to consider is the reduced opioid tolerance following a break in opioid use, and the well-documented increased risk of drug-related death soon after release from prison.[22,23]

In addition to safety considerations (see **Section 8.6**), the medical professional will need to consider effectiveness. There is a paucity of research evaluating the most effective treatment for opiate detoxification in prisons. The Leeds Evaluation of Efficacy of Detoxification Study (LEEDS) Prisons Project Study, an RCT comparing methadone and buprenorphine for opiate detoxification, is currently under way,[24] and will help to provide an evidence base for medical professionals in considering detoxification care plans in the prison setting.

A randomised trial of the long-acting opioid antagonist oral naltrexone for treating opioid-dependent offenders after release from prison (6 months of either 300mg per week oral naltrexone plus standard psychosocial treatment as usual or standard psychosocial treatment as usual without naltrexone) in the USA reported large drop-out rates in both groups,[25] emphasising the limitations of giving oral naltrexone without supervision. A study in which prison volunteers were randomly allocated to naltrexone implants or methadone before release showed reductions in both groups in the frequency of use of heroin and benzodiazepines, as well as criminality, six months after prison release.[26] With the emphasis on patient choice and safety, clinicians may consider the option of naltrexone in their discussions around opioid detoxification with prison patients.

10.6 Reducing blood-borne virus transmission

It is important that detainees have full access to information about transmissible diseases, including TB, hepatitis and HIV; an ethical requirement is that they have the same access as those outside prison to harm-reduction measures and treatment.[2] As emphasised in **Section 8.3.4**, OST reduces the risk of transmission of blood-borne viruses (HCV and HIV), particularly in conjunction with the availability of clean needles, syringes and other injecting paraphernalia.[27,28]

Opioid substitution has been found to play an important role in reducing the transmission of HIV in the prison setting.[29] The high prevalence of problem drug use by the prison population[4,5] is accompanied by high rates of blood-borne viruses. In one meta-analysis, the pooled odds ratio of being positive for HCV was 24 times higher among inmates who were currently or formerly using drugs intravenously, compared with inmates who were not doing so.[30] Rotily et al found the HIV prevalence among users of intravenous drugs was 4 per cent (versus 1% among those not injecting drugs intravenously).[31]

10.6.1 Needle exchange

A cross-sectional survey carried out in six European prisons (including in Scotland), found that 27 per cent of respondents had ever injected drugs and 49 per cent of these reported they had injected while in prison.[31] Stark et al assessed the impact of a needle-exchange programme in a prison in Berlin.[32] They found baseline seroprevalences for HIV, HBV and HCV of 18, 53 and 82 per cent, respectively, among the prisoners. The seroprevalence of HIV and HCV at baseline was significantly associated with drug injection in prison prior to the introduction of a needle-exchange facility.[32] The provision of needle-exchange facilities was linked to a decrease in syringe sharing from 71 per cent during a 4-month period of previous imprisonment to 11 per cent during the first 4 months of follow-up, and to virtually zero thereafter. No HIV and HBV seroconversions occurred during the study period after the introduction of the needle-exchange facility, although four HCV seroconversions occurred.[32] (Although not the focus of this chapter, this emphasises the importance of also involving other coordinated approaches in the prevention of blood-borne virus transmission, such as the provision of condoms and sterile tattooing equipment.)

For those who use drugs intravenously, the provision of needle- and syringe-exchange facilities in the prison setting is an important harm-reduction measure, just as it is in the community (see **Chapter 9**). The provision of such needle-exchange programmes in prisons is part of the guidance from the WHO, the UNODC and the Joint United Nations Programme on HIV/AIDs (UNAIDS).[33] Proposals for such programmes in prisons have also been met with concerns about staff safety.[34] The 2011 DH document *Tackling blood-borne viruses in prisons: a framework for best practice in the UK* comments, '*nowhere in the UK currently offers needle exchange to prisoners*'.[35]

In Scotland, plans to pilot an in-prison injecting equipment initiative in the Scottish Prison Service as one of a range of harm-reduction measures to reduce the transmission of HCV were raised in the *Hepatitis C Action Plan for Scotland Phase II: May 2008-March 2011*.[36] The Scottish Prison Service also carried out its own review of the literature on prison-based injecting equipment provision (IEP) services in 2005. They reported on 46 prisons in four European countries with IEP schemes in operation for around 10 years, and found that these schemes resulted in lower transmission rates of HIV and HCV, and no increase in drug use or injecting among prisoners. They also noted that, since the introduction of the schemes, there had been no attacks on staff or other prisoners with injecting equipment.[37,38]

10.6.2 Hepatitis B vaccination

Screening and vaccination can reduce the likelihood of infection and transmission, and therefore need to be considered along with harm-reduction strategies.
The overall improvement in uptake of the HBV vaccine probably reflects improved provision through drug services and the prison vaccination programmes.[39-41]
There has been a marked increase in the number of injecting drug users receiving the hepatitis B vaccine, with over two-thirds now reporting vaccination.[41] In 2009, 80,762 doses of hepatitis B vaccine were reported to have been delivered to prisoners in England and Wales.[42] Medical professionals play an educative role in ensuring that staff and prisoners are aware of the importance of HBV vaccination in the prison setting.

10.7 'Drug-free' wings

According to its 2008-2011 strategy, the NOMS will aim '*within existing resources, subject to a detailed needs assessment, to offer to every prisoner who wants to make the commitment to lead drug-free lives, access to accommodation designated as drug-free*', also offering engagement in prison treatment, and interventions such as the 12-step programme (see **Section 9.5.2**).[17]

10.8 Reducing drug-related deaths in custody and after release

Some authors warn against the risks of death from methadone prescribing in the prison setting, in particular where the same dose is prescribed as that reportedly used in the community, where it may not have been consumed under supervised conditions, and some may have been diverted over a period of time, so the tolerance of the patient may be far lower than assumed.[43] There is evidence that '*...in the past patients have died as a consequence of uncontrolled vomiting during detoxification in prison*',[21] so careful assessment is essential.

The 2006 DH report on the clinical management of drug dependence in the adult prison setting makes recommendations to reduce this risk,[20] which include the following:

- clinical drug testing to include morphine, methadone and buprenorphine
- use of an opioid withdrawal assessment scale (eg short opiate withdrawal scale,[44] and intoxication monitoring)
- ensure the patient is fully alert, responding appropriately and that there are no signs of drowsiness/sedation; withhold medication in the event of any concern
- gradual dose induction, with divided doses
- a minimum of twice-daily monitoring of withdrawal and intoxication during stabilisation
- staff training in the administration of naloxone.[21]

The role of the medical professional includes careful assessment and careful prescribing, taking into account the unknown tolerance of the patient whose medication may not have been supervised in the community, and the possibility of polydrug use increasing their risk of overdose, balanced against the importance of engagement of the patient and minimising their seeking to engage with illicit drug use in prison.

The information in **Section 8.6.1** on reducing drug-related deaths at times of increased risk is particularly relevant for individuals who are newly released from prison. Prevention of relapse is discussed in **Section 9.5**.

10.9 Seamless transfer to community services from prison release

A meta-analysis of drug-related deaths soon after release from prison confirmed that there is an increased risk during the first 2-4 weeks after release from prison,[26] as found by other authors.[19] Drug-related deaths among men were more likely to involve heroin, and deaths among women were more likely to involve benzodiazepines, cocaine and tricyclic antidepressants.[22] The increased risk of drug-related death soon after release from prison is well documented.[22,45] A database linkage study covering 48,771 prisoners found that, relative to the general population, male prisoners were 29 times more likely to die during the week following release, while female prisoners were 69 times more likely to die during this period, with the prime cause of death being overdose of heroin or other opioids.[22]

Authors have highlighted the importance of ensuring that drug-dependent prisoners are linked with community drug services on release from prison,[46,47] and the DH gives guidance in this, including the role of CARAT (counselling, assessment, referral, advice and throughcare) workers in directly linking the patient with community clinical teams.[21] In cases where the patient-prisoner is being released late on a Friday and it has not been possible to link them directly with a pharmacist (although most pharmacists are also available for contact on Saturdays) or community drug service, the medical professional may play a role in carrying out a risk assessment in terms of the doses to be prescribed and taken home during the period before the patient will be reviewed in the community.[21]

10.10 Take-home naloxone

As described in **Chapter 8**, overdose in heroin users is common and is a particular risk with involuntary abstinence, as may occur in the prison setting.[48,49]

Strategies to reduce mortality rates from opioid overdose are described in detail in **Chapter 8**. A national programme of naloxone provision and training recently rolled out in Scotland for those deemed to be at risk of opioid overdose (and their family, friends, carers, and partners) includes prisoners who use opioid drugs on release from prison.[50] In England, a large randomised trial is currently under way,[51] in which naloxone is given on release to prisoners with a history of heroin use by injection. It is hypothesised that this will reduce heroin overdose deaths in the first 12 weeks after release by 28 per cent.

10.11 Promoting recovery after release from prison

While social integration is an important part of the purpose and function of prison, in many cases,[52] for those with drug dependence, the challenge of social reintegration, of moving away from drug use and to '*personal health and citizenship*'[53] continues after prison release. Liaison with community teams is essential at this crucial stage. In a primary care clinic setting, MT is effective in reducing convictions, cautions and incarceration over an extended period.[54] A study of 382 imprisoned male heroin users who had participated in an RCT of prison-based MT in 1997-1998 followed up subjects over a 4-year period, either in the general community or in prison, and found, among other benefits, that the risk of reincarceration was lowest during MT episodes of 8 months or longer.[19] A key role that treatment of drug use and drug dependence can play in promoting social reintegration is by reducing the likelihood of reincarceration. Recovery is about much more than avoiding harms, and while there is still debate about its definition,[55] it is generally agreed to be about positive elements – positive development, achieving potential, contributing to the social milieu, and accessing and benefiting from the rights of that shared society. Recovery capital has been described as the '*breadth and depth of internal and external resources that can be drawn upon to initiate and sustain recovery*' from substance use.[56] Medical professionals are an essential external resource, who may also help the patient identify some of their internal resources and access other external resources to utilise these, in their recovery journey.

10.12 Research, training and resource needs

10.12.1 Research needs

As discussed in this chapter, there are many gaps in evidence on the treatment of drug dependence in the prison setting. Robust research evidence is particularly required in the following areas:

- study of the impact of drug rehabilitation availability on drug-related harms in the prison setting and after release, including drug-related deaths after release
- study of the impact of drug rehabilitation in prisons on decreased recidivism and social reintegration
- continued work on improving systems for prompt and accurate communication with community services pre and post incarceration, with a view to limiting overdose in custody and after prison release
- study of the impact of increased treatment choices on the demand for and availability of illicit drugs in prisons and/or in the rates of initiation of drug use in prisons and the rates of relapse in prison of those in MT or post detoxification
- audit of the provision of HBV vaccination programmes and needle-exchange facilities in high-risk environments, including prisons.

10.12.2 Training needs

Medical professionals have an important role in day-to-day communication with non-medical colleagues in the prison setting, to enhance their understanding of issues in the management of problem drug users. They also have an important role in educating patients in the prison setting about reducing risks associated with drug use. In addition to the needs identified at the end of **Chapter 8**, training needs include:

- training on the beneficial impacts of harm reduction on increasing treatment choices, including opioid maintenance treatment
- training for all staff in recognising opioid and other drug overdose in custody and in the prison setting, and training in how to respond to this, including contacting emergency medical services and administration of naloxone
- training for prisoners in overdose recognition and use of naloxone
- training in the importance of needle exchange in reducing blood-borne virus transmission and the importance of HBV vaccination in this population.

10.12.3 Resource needs

The needs identified at the end of **Chapter 8** are relevant here. Optimising the response of hospitals to drug problems requires the presence of consultation-liaison services to support staff in the management of withdrawal. This is particularly important for the prison population and for those newly released from prison.

Summary

- Many illicit drug users first present to medical practitioners via the criminal justice system.
- Treatment of illicit drug users creates particular ethical challenges for medical professionals, especially in relation to coercion and informed consent within the criminal justice system. It is essential to recognise that these individuals have the same rights to accept or refuse treatment as the rest of the population.
- There is a high prevalence of drug use among prisoners in the UK, and high rates of first initiation of drug use.
- The Drug Interventions Programme (DIP), introduced by the Home Office in 2003, aims to develop and integrate measures for directing adult offenders who are illicit drug users into drug treatment and thereby reduce offender behaviour. Most DIP referrals into treatment are achieved via drug testing in police custody suites. This raises ethical issues about coercion to treatment.
- Methadone treatment in prisons has been shown to significantly reduce heroin use among those treated; retention in treatment is associated with reduced mortality, reincarceration and hepatitis C infection. It is hoped that a research study currently in progress in the UK will provide evidence about the most effective treatment for detoxification in prisons. Naltrexone may have a role in this treatment.
- Safety considerations are paramount in opioid detoxification treatment, especially in those soon to be released.
- Opioid substitution therapy has been shown to have an important role in reducing transmission of HIV in the prison setting.
- Needle-exchange programmes are important for harm reduction and are recommended for all illicit drug users in priosons in guidance from the World Health Organisation (WHO), the United Nations Office on Drugs and Crime (UNODC) and the Joint United Nations Programme on HIV/AIDs (UNAIDS). Nowhere in the UK offers such programmes in the prison setting.
- Vaccination for hepatitis B in the prison setting is important but not yet offered in every prison in England and Wales.
- The National Offender Management Service (NOMS) aims to offer all prisoners who want to commit to leading a drug-free life access to accommodation designated as 'drug-free'.
- There is a high risk of drug-related deaths in prison and shortly after release. Medical management must take this into account in planning treatment.
- It is important to ensure patients are linked with community drug services immediately on release from prison.
- The use of naloxone may reduce mortality from drug overdose.

Chapter 11 – The role of healthcare professionals

11.1 Introduction

There are three levels at which doctors are involved in responding to illicit drugs. All doctors in clinical practice will encounter patients whose health is affected by use of psychoactive drugs. The basic competence required of all practitioners is the ability to recognise when drug use is contributing to health risks. This is achieved by history taking and examination, provision of appropriate advice, diagnosis of drug-related harm, and prescribing safely in a way that minimises the contribution of prescribed drugs to drug-related harm.

Some doctors, particularly GPs and psychiatrists, will have greater involvement, requiring additional competence in treating drug dependence, in managing withdrawal and relapse prevention and in maintenance prescribing. The specific competencies required are discussed in more detail in a recent report from the Royal College of Psychiatrists and Royal College of General Practitioners, *Delivering quality care for drug and alcohol users: the roles and competencies of doctors. A guide for commissioners, providers and clinicians*.[1]

Many doctors involved in public health, and in specialist management, will also have a further role in advocating policies to minimise drug-related harm in the community. Medical practitioners' knowledge and experience of the biological, psychological and social factors predisposing to illicit drug use, and of the direct and secondary health harms of illicit drug use, have an important contribution to the development of prevention and treatment programmes.[1]

This chapter reviews the current situation in the UK and the competencies required of doctors to fulfil the responsibilities associated with these levels of involvement in responding to illicit drug use.

11.2 Current trends in the UK

As noted in **Chapter 2**, current use of illicit drugs has been declining in the UK since the 1990s, but this is not reflected in a long-term decline in problem drug use, drug-related deaths, recorded drug law offences or the number of people in/expenditure on drug treatment. These trends should inform medical professionals' response to illicit drug use in the UK.

The following list summarises the data related to drug use, offences and treatment presented in various parts of this report.

- It has been estimated that in 2009-2010, 35.9 per cent of 16 to 59 year olds in the UK had used drugs in their lifetime (ever), while 8.7 per cent had used drugs in the last year (recent use), and 5.0 per cent had used drugs in the last month (current use) (see **Section 2.1**).
- Current drug use in adults aged 16 to 59 years in England and Wales was reported to be 6.7 per cent in 1996, and fell to 5.2 per cent in 2011-2012 (see **Section 2.2**).
- This has largely been driven by a decrease in cannabis use. Over this time period, opiate and ecstasy use has remained relatively stable, amphetamine and hallucinogen use has declined slowly, and use of any cocaine has increased slightly (see **Section 2.2**).
- A survey of nearly 1,500 new UK prisoners in 2005-2006 found lifetime use of heroin, crack cocaine, cocaine powder, amphetamines or cannabis was reported by 79 per cent of prisoners, with approximately one-third having used heroin or crack cocaine during the year before custody (see **Section 10.2**).
- Rates of first initiation of use of drugs in prison are also high. In a 1997 survey, over a quarter of the men who had used heroin reported first initiating use in prison (see **Section 10.2**).
- The number of problem drug users aged 15 to 64 years in the UK has increased from 357,160 (9.26 per 1,000 population) in 2006 to a peak of 404,884 (10.10 per 1,000 population) in 2009, an increase of 9.07 per cent. This has since declined to 379,262 people (9.31 per 1,000 population), and represents approximately 10 per cent of all UK drug users (see **Section 2.2**).
- There were 1,930 (3.1 per 100,000 population) drug-related deaths in the UK in 2010, an increase of 67.5 per cent from 1996, although there are year-on-year fluctuations (see **Section 3.3**).
- The rate of drug-related deaths in 2010 was highest in the 35-39 years age group and 79.4 per cent of the deaths were men and most continue to be related to use of opioid drugs (see **Section 3.3**).
- The data from 2010 show a reduction in drug-related deaths for all age groups except the oldest (60 plus years), suggesting there is an ageing cohort effect (see **Section 3.3**).

- From 2005-2006 to 2010-2011, recorded drug law offences in the UK increased by 19.7 per cent from 255,670 in 2005-2006 to 270,045 in 2010-2011. Of the offences in 2009, 15.7 per cent were for trafficking and 83.8 per cent for possession (see **Section 3.4**).
- In 1994, around 67,000 people were counted as being in treatment, rising by 26.9 per cent to 85,000 in 1998-1999 and a further 129.9 per cent to 195,400 by 2006-2007, giving an overall rise from 1994 to 2006-2007 of 191.6 per cent (see **Section 5.10).**
- There is a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation. Hospital admission rates for drug-specific conditions for both male and female individuals have shown a strong positive association with deprivation (see **Section 4.4**).
- The most recent data available indicate that there are around 5,800 NHS hospital admissions for drug-related mental health and behavioural disorders each year in England, and over 11,500 admissions for drug poisoning (see **Section 3.5**).
- The budget for drug treatment interventions in the criminal justice system in England and Wales was over £330 million in 2006-2007 and spending on drug treatment in prisons increased from £7 million in 1997-1998 to £80 million in 2007-2008 (see **Section 5.10**).
- Expenditure on the UK's drug strategy is around £1.2 billion per annum, of which £300-400 million is on enforcement, with most of the rest spent on treatment. It is estimated that at least as much again is spent each year dealing with drug-related offences in the criminal justice system and prisons, while the wider social and economic costs of drug-related crime are estimated at around £16 billion a year in England and Wales (see **Section 6.4**).
- The economic and social costs of Class A drug use (cocaine, crack cocaine, ecstasy, heroin, methadone, LSD and psilocybin (magic mushrooms)) in 2003-2004 in England and Wales were estimated to be £15.4 billion, equating to £44,231 per year per problematic drug user (see **Section 3.5**). The costs of drug-related deaths were estimated to be £923 million.

11.3 Issues arising from these trends

In the general population in the UK, around 10 per cent of adults have ever used drugs and a little over half this number are current users. Of these, only around 10 per cent are problematic drug users (see **Glossary**). The level of use of opioid drugs has remained relatively unchanged over the last 15 years and most problematic drug use and drug-related deaths are associated with opiate use. Use of opioid drugs is an important area to target.

These population figures do not reflect the findings in socially deprived groups and those who are in prison, where rates of problematic drug use and treatment are many times higher. The problem of illicit drug use in the UK requires a multifaceted approach that tackles social deprivation and inequality, alongside dealing with the health consequences of drug use.

11.4 Basic medical competence

Doctors have a responsibility to treat all their patients. Many patients who use illicit drugs come from the most marginalised sectors of society, and present with distinct and complex medical and social issues. By the time they present for treatment, they are likely to be socially marginalised or in prison. Their presenting complaints can be either directly or indirectly related to their drug use, but often mean that each patient requires a high level of care and attention. These patients are likely to be difficult to treat, as a result of feeling they have little to lose. It is essential that they are offered treatment in a non-judgemental way that includes aspects to support their social reintegration. As set out by the GMC in *Good Medical Practice*:[2]

> '*You must not refuse or delay treatment because you believe that a patient's actions have contributed to their condition. You must treat your patients with respect whatever their life choices and beliefs. You must not unfairly discriminate against them by allowing your personal views* [including your views about a patient's lifestyle] *to adversely affect your professional relationship with them or the treatment you provide or arrange.*'

11.4.1 Maintain an awareness of the non-medical facets of drug use

Drug problems (and even more so, alcohol problems) are common, and although they often bring individuals into contact with the health system, they are frequently overlooked or ignored (see **Section 9.1**).[3-6] Failure to address underlying factors contributing to ill health is suboptimal care. Maintaining an awareness of the non-medical facets of drug use, taking a drug use history, and providing personalised health advice regarding drug use, are the three basic responsibilities of medical practitioners.

Patients are often defensive, and are not always open or truthful about drug use (see **Section 8.2.1**). History taking is more effective if undertaken in a neutral, non-judgemental manner, framing drug use as a medical rather than an ethical issue.

11.4.2 Undertake opportunistic brief interventions

Brief interventions are intended to prevent or reduce drug use, through getting patients to think differently about drug use and possible treatment. These interventions aim to increase the motivation of drug users to change their behaviour. The spectrum of advice ranges from stopping drug use to using drugs in ways that are less risky (see **Section 9.2**). Interventions that attend to the immediate priorities of people who inject drugs, such as advice on vein care for injecting drug users, have the potential to engage individuals and set them on a path towards treatment and social reintegration.

11.4.3 Prescribe safely

Doctors have the power to exert an immediate and powerful influence on drug use through their prescribing practices. Prescription regimes are the control structures that enable psychoactive substances to be consumed for approved medical purposes while preventing their use for non-approved purposes.[7] As indicated in **Section 9.3**, the non-medical use of, and dependence on, prescribed drugs is a rapidly growing public health concern. Prescribing safely in a way that minimises the contribution of prescribed drugs to drug-related harm is thus crucial. It also raises many issues for health professionals. Prescribing doctors accept absolute clinical and legal responsibility for their prescribing decisions,[8] and must exercise particular caution when prescribing to patients with a history of, or predisposition to, illicit drug use and dependence. Medications used for the relief of pain, including opioid drugs and certain sedatives, have the potential to trigger a relapse in recovering addicts, reactivating the original addiction or precipitating an addiction to a previously unknown substance.[9] Avoiding stimulating or exacerbating existing addictive disorders requires a rigorous assessment of the patient. The GMC's *Good practice in prescribing medicines* states that doctors must:

> *'Be in possession of, or take, an adequate history from the patient,including: any previous adverse reactions to medicines; current medical conditions; and concurrent or recent use of medicines, including non-prescription medicines.'*[10]

This can be particularly challenging to those in primary care, who operate under immense time constraints. It is important to refer to the *British National Formulary* as appropriate, to inform prescribing behaviour. When prescribing for a patient, doctors should also consider whether ongoing monitoring and supervision are required, such as:

> *'…further consultations; blood tests or other investigations; processes for adjusting the dosage of medicines, changing medicines and issuing repeat prescriptions.'*[10]

Supervision is particularly important when OST is prescribed. This tends to be provided by the dispensing pharmacist. Good communication between the prescriber and the pharmacist is essential: the DH recommends that prescribers liaise with the pharmacist when first prescribing controlled drugs for a patient, to ensure that the pharmacist is:

- introduced to the new patient
- part of a suitable local scheme and can provide supervised consumption of the prescribed medicine if requested by the prescriber
- able to confirm that the prescriber and prescription are genuine.[11]

Ongoing communication can also help to alert the prescriber to any concerns the pharmacist may have about the patient's health and wellbeing, as well as their treatment compliance.[11] Sharing information in this way should be conducted in line with locally determined confidentiality agreements.

Other interventions aimed at minimising the contribution of prescribed drugs to drug-related harm focus on preventing the diversion of psychoactive substances from the medical system into the illicit marketplace. Control strategies adopted in the UK include restricting the type and quantity of medicines that can be sold over the counter, enforcing prescription guidelines (including requirements for detailed record keeping), restricting the settings in which the drug in question can be administered (eg hospitals, specialist clinics) and withdrawing a drug from the legal market.[7] There are also limitations placed on the number of doctors who have the authority to prescribe particular drugs. Under the Misuse of Drugs (Supply to Addicts) Regulations 1997, doctors must hold a general licence that is issued by their relevant health department in order to prescribe, administer or supply diamorphine, dipipanone or cocaine in the treatment of drug addiction.[12]

The control strategies outlined above do not eliminate non-medical use of psychoactive drugs, since they can be sourced through other channels, including theft, prescription forgery/alteration, and via the internet.[13,14] In addition, doctors are increasingly advised to be vigilant for '*doctor shoppers*' – individuals visiting numerous physicians to obtain multiple prescriptions, often for the same drug.[14]

11.4.4 Lobbying medical schools for improved training on drugs of dependence in the medical curriculum

Those who use drugs will inevitably be seen by doctors. For this reason, it is vital that, as a part of the undergraduate medical curriculum, medical students have the core skills and knowledge to identify and understand the complexities of drug use.

Medical students receive very limited training in issues of drug use and dependence at an undergraduate level. Surveys of medical schools' curricula from the mid-1980s onwards have all indicated that the education of medical students about drug use is typically patchy and uncoordinated.[15-19] Although medical schools currently include some teaching and learning about drug use, this topic is often taught within psychiatry or public health,[19] with the result that drug use is often seen by students as a specialised, or peripheral subject, rather than the common pervasive problem that it is in reality.[19] It is essential that medical schools and medical students are encouraged to place a greater emphasis on the care of those who use drugs.

11.5 Managing patients with drug-related health problems

There is wide variation in the extent to which primary care physicians become engaged in managing illicit drug users.[20] As identified in **Chapter 9**, this may be because of a sense of pessimism about being able to effectively treat drug-using patients, avoidance of antagonising patients and, possibly, reluctance to work with stigmatised patients.

A 2005 joint report from the Royal College of Psychiatrists and Royal College of General Practitioners estimated there were around 130 consultants in addiction psychiatry in the UK.[21] In 2005, a random sample of GPs in England and Wales, found that over half of those surveyed provided treatment to users of opioid drugs.[20] The findings published suggest that during the time of the survey, between 41,000 and 62,000 users of opioid drugs were receiving GP treatment.[20] The previous survey of opioid treatment in general practice settings, which took place in the mid-1980s, found only 19 per cent of GPs were treating patients who used opioid drugs.[22,23] Over two-thirds (61%) of these patients were approaching their GP for help with withdrawal, rehabilitation, or both, indicating a demand by users of opioid drugs for help with initiating abstinence from drugs.[22] The findings suggest that not all drug users are receiving treatment in general practice settings, especially given recent estimates of there being over 260,000 users of opioid drugs in the UK.[24]

Both GPs and addiction psychiatrists provide services such as drug-related information and advice, screening, brief psychosocial interventions and harm-reduction interventions.[1,21,25] Community-based drug assessment, coordinated care planned treatment and drug specialist liaison can be conducted or arranged by GPs, but more complex patients are best managed by practitioners with specialist

experience and knowledge.[1,21,25] Inpatient specialised drug-treatment settings are usually headed by consultant psychiatrists, although this is often with the support of supervised junior medical staff.[1,21,25]

In 2007, NICE, in association with the National Treatment Association for Substance Misuse and the four UK health departments, published *Drug misuse and dependence: UK guidelines on clinical management*.[11] These guidelines, commonly known as 'The orange guidelines', provide guidance to all clinicians on the treatment of drug use and dependence, at all levels of interaction with drug users.

While 'The orange guidelines' have no specific statutory status, the standards and quality of care set out in the guidelines are taken into account in any formal assessment of clinical performance in this area. There are also separate defined legal obligations in relation to the prescribing of controlled drugs published in both 'The orange guidelines'[11] and the *British National Formulary*.[26,27] Clinicians should act in accordance with these. They include ensuring that prescribers act within Home Office licensing arrangements for the prescription of restricted medications such as diamorphine for the management of illicit drug use.

Chapter 8 discusses in detail the logistics of managing opioid-dependent patients using OST. **Chapter 9** details how patients may present to either primary or secondary care in states of acute withdrawal. In these instances, healthcare professionals have a responsibility to manage the clinical emergency, stabilise the individual, and slow the rate of change so that their physiology can adapt and the distressing and uncomfortable symptoms of withdrawal are reduced.

Doctors are also responsible for addressing the individual healthcare needs of patients who use drugs. As noted in **Chapters 8-10**, blood-borne viruses, such as hepatitis B and C as well as HIV, are common among drug users, especially those who use drugs intravenously. In addition to harm-reduction measures, an essential part of managing this aspect of drug use should include offering immunisation against hepatitis to patients who want it.

Harm reduction focuses on the safe use of drugs, and includes provision of clean injecting equipment and education on how to use drugs safely. There have been arguments over the ethics of harm reduction,[28] and there is a perception among some healthcare professionals that harm-reduction techniques may lead to an increase in drug use by individuals who would otherwise be deterred. Those who support harm reduction assert that, rather than encouraging drug use, it offers a realistic way to help keep drug users safe, as well as respecting their choice and individual freedoms.[28] **Chapters 5 and 6** also highlight some of the public health benefits for society at large that arise from harm-reduction and prevention methods.

The most serious potential harms associated with illicit drug use are overdose and death. **Chapter 8** details how this is particularly true for use of opioid drugs. Maintaining patients in high-quality treatment is the most effective preventative measure for these risks. Clinicians can also prevent the risk of drug overdose by providing education to drug users on the risks of overdose, the dangers of combining drugs, and how to respond effectively if overdose takes place. In the event of an overdose at a healthcare facility, all services working with drug users should have an emergency protocol in place that covers the management of drug overdoses (see **Section 8.6.1**).[11]

Chapter 4 explores the high comorbidity between drug use and mental health problems; this comorbidity is associated with complex factors that often impact negatively on treatment.[11] To ensure the needs of the individual patient are met, medical professionals should undertake a comprehensive assessment, produce an individual care plan and ensure appropriate care pathways are in place.

11.6 Promoting public health policies and practices to reduce drug-related harm

Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.

The drug debate, both nationally and internationally, has been influenced by emotions and ideologies, when, in reality, a subject as important as the use of drugs should be based on rationality and scientific evidence. What is needed is a solid and pragmatic approach to drug use, which is informed by the best available evidence and puts health at the centre of any decisions.

As highlighted in **Chapter 6**, there are strong views in this debate. There is a widely held view within the drugs field that the prohibition of production and supply of certain drugs has not only failed to deliver its intended goals, but has been counterproductive.[29] This is especially so with regard to health.[30] Stringent user-level enforcement does not necessarily reduce levels of drug use,[31,32] as many other factors are also involved (see **Chapter 6**). It may be that a new approach is required. Before this can occur, rational debate is needed to inform an understanding of what is, and what may not be, working with the current approach to drug use, and options for change. As emphasised by the 2012 UKDPC report, *A fresh approach to drugs*,[33] such deliberations must be independent, evidence based, and centred on the health and wellbeing of all. An essential component of this will be ensuring that all relevant parties, including health professionals, and the organisations that represent them, are consulted, so that a clear, unbiased and effective approach is achieved.

These conclusions are echoed by the 2012 Home Affairs Select Committee report, *Drugs: breaking the cycle*, which is based on a year-long inquiry into national and international aspects of drug use.[34] It focuses on the need to 'break the cycle' of drug addiction and concludes that *'…there is now, more than ever, a case for a fundamental review of all UK drugs policy in an increasingly globalised world'*. The report recommends establishment of a Royal Commission – to be set up immediately and report in 2015 – to *'consider the best ways of reducing the harm caused by drugs'* and *'instigate a public debate on all of the alternatives to the current drug policy'*. It presents strong arguments for focusing on problem drug users, with interventions that are 'tailored to the individual', and calls for the setting of measurable targets that are based on evidence of what works. Recognising the lack of reliable data in some areas, it further recommends allocation of ring-fenced funding to drugs policy research.

11.7 Conclusion

Medical practitioners responding to drug dependence need a frame of reference that helps them to respond empathically and effectively to challenging patients. Dependent drug users have the same rights to medical treatment as any other individuals with a chronic disorder, and effective medical management is likely to include harm reduction, maintenance treatment and support to eventually abstain from drug use.

An effective drug policy must take account of the complex biological, psychological and social factors involved in illicit drug use and aim to distinguish the harms associated with drug use from the unintended adverse consequences of attempts to minimise drug use.

An effective policy that significantly reduces the harms associated with illicit drug use would have enormous benefit for individuals and generate large savings to society in terms of the cost of medical treatment and the financial and social costs of associated crime.

There is a widely held view within the drugs field that the current legal framework has failed to deliver its intended goals of reducing illicit drug use. There are strong views on both sides of this debate, but it should be informed by the best evidence. While it must be accepted that international consensus dictates that supply and possession of illicit drugs must remain a criminal offence, this framework deserves to be re-examined in a way that takes account of all the evidence available.

Doctors are ideally placed to play a key role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and founded on rigorous scientific evidence.

Summary

- Medical training should provide graduates with basic knowledge about the social and personal factors increasing the risks of illicit drug use, the adverse health consequences of the illicit use of drugs, and the role of doctors in identifying drug-related harm and initiating intervention.
- Doctors should maintain an awareness of the non-medical facets of drug use, and exercise caution in prescribing drugs with the potential for non-medical use.
- Doctors should take a drug use history when indicated, undertake brief opportunistic interventions to reduce drug-related harm, and refer to specialist services as appropriate.
- Guidance on clinical management of drug use and dependence is provided by 'The orange guidelines', available to all clinicians.
- Doctors can play an essential role in refocusing debate and influencing global drug policy, so that it is based on public health principles, and results in better health outcomes for all illicit drug users.
- Doctors with knowledge and experience of helping patients affected by illicit drug use are ideally placed to engage in debate to promote a rational approach to drug policy that is evidence based and health oriented.

Appendix 1: Membership of the BMA Board of Science Reference Group

Professor Sue Bailey

President, Royal College of Psychiatrists

Professor Sue Bailey is a Consultant Child and Adolescent Forensic Psychiatrist at the Greater Manchester West NHS Foundation Trust, and was recently elected the President of the Royal College of Psychiatrists. Professor Bailey was dual trained in child and adolescent psychiatry and forensic psychiatry. The focus of her clinical and research work has been on developing needs- and risk-assessment programmes, as well as evidenced-based interventions to improve outcomes for young people with complex mental health needs who present as high risk of harm to others and themselves. She has worked in specialist inpatient and community services, and has interests in human rights in practice, and mental health and social care policy in national and international contexts. Through various roles in the Royal College of Psychiatrists, Professor Bailey has worked to support stronger partnerships between users, carers and families. She has sought to increase recognition of the importance of mental health across medicine, as well as the negative impact of psychosocial adversity on the mental health of the individual, their families and local communities.

Declaration of interests:
Professor Bailey declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Dr James Bell

Consultant in Addictions Medicine, South London and Maudsley NHS Foundation Trust

Dr James Bell is a physician specialising in addiction medicine. He is a consultant in addictions at South London and Maudsley NHS Foundation Trust. Dr Bell has been active in the development of training programmes for health professionals, and was a leading figure in establishing the Chapter of Addiction Medicine within the Royal Australasian College of Physicians. His major research interest is the treatment of opioid dependence but he has also recently developed a 'party drugs' clinic in South London, and has been involved in developing a new clinical pathway for management of acute alcohol withdrawal presenting to emergency departments.

Declaration of interests:
Dr Bell is in receipt of research funding from Reckittbenckiser PLC, manufacturers and distributors of buprenorphine. He has been funded to attend conferences and seminars by Reckittbenckiser, Schering-Plough Corporation and Titan Pharmaceuticals.

Dr Owen Bowden-Jones

Consultant Psychiatrist, Addictions Directorate, Central and North West London NHS Foundation Trust; Chair, Faculty of Addictions, Royal College of Psychiatrists; and Honorary Senior Lecturer, Imperial College, London

Dr Owen Bowden-Jones is a Consultant in Addiction Psychiatry at the Chelsea and Westminster Hospital and Honorary Senior Lecturer at Imperial College. He oversees three teams providing treatment for alcohol, drugs and mental health problems. Recently, Dr Bowden-Jones set up the UK's largest multidisciplinary service for people using novel psychoactive substances ('legal highs') and 'club drugs' and is developing innovative approaches to treat dependence on these substances. Dr Bowden-Jones is the Chair of the Faculty of Addictions, Royal College of Psychiatrists. In this role he sits on a number of working groups. The position also requires regular meetings with Government and other professional groups. Other responsibilities include clinical lead for a large quality improvement project for blood-borne virus treatment in west London and Chair of Medicines Management for his trust.

Declaration of interests:
Owen Bowden-Jones declares that he has no conflicts of interests.

Ms Amanda Feilding

Director, The Beckley Foundation

Ms Amanda Feilding established the Beckley Foundation in 1998 to help reform national and global drug policy by creating evidence-based, health-orientated, harm-reducing, cost-effective drug policies that recognise human rights. The Foundation has organised nine influential international drug policy seminars, hosted mainly at the House of Lords, and has commissioned over 35 books, drug policy reports and proceedings documents, including *Cannabis policy: moving beyond stalemate*. The Foundation has also recently commissioned two important reports: (1) *Roadmap to reforming the UN drug conventions*, which describes possible amendments to the United Nations drugs conventions that would give individual signatory countries more freedom to experiment with alternative drug policies; and (2) *A cost/benefit analysis of a regulated and taxed cannabis market in England and Wales.* The Beckley Foundation Scientific Programme investigates the neurophysiology and psychopharmacology of cannabis, psilocybin, MDMA (ecstasy), LSD (lysergic acid diethylamide) and novel psychoactive substances ('legal highs'), to better understand how these compounds work, and identify potential therapeutic applications, as well as to inform policy.

Declaration of interests:
Amanda Feilding declares that she has no conflicts of interests.

Dr Emily Finch

Clinical Director, Addictions Clinical Academic Group, South London and Maudsley Foundation NHS Trust

Dr Emily Finch is a Consultant Addiction Psychiatrist working for the South London and Maudsley NHS Foundation Trust. Emily is Clinical Director for the Addictions Clinical Academic Group, with responsibility for addiction services across Lambeth, Southwark, Bexley, Greenwich and Croydon, and inpatient services based at the Maudsley Hospital. From 2004 to 2007, Emily was the Clinical Team Leader at the National Treatment Agency, where she took a lead in the clinical aspects of national drug policy and in liaising between the National Treatment Agency and the professionals working in the field. She was part of the secretariat for the 2007 joint publication of the Department of Health (England), the Scottish Government, the Welsh Assembly Government and the Northern Ireland Executive, *Drug misuse and dependence: guidelines on clinical management,* and a member of the guideline development group for the National Institute for Health and Clinical Excellence guideline on opiate detoxification. Emily is also a member of the Addictions Executive of the Royal College of Psychiatrists. Emily is a tutor, lecturer and examiner on the MSc in Clinical and Public Health Aspects of Addiction, and is an experienced expert witness in family and criminal cases. Emily is a Trustee of Phoenix Futures. Emily is currently Chair for the National Institute for Health and Clinical Excellence Drug Use Disorders Quality Standard Topic Expert Group.

Declaration of interests:
Emily Finch declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Professor Sir Ian Gilmore

Immediate Past President, Royal College of Physicians

Professor Sir Ian Gilmore is a Professor of Medicine at the University of Liverpool and was a consultant physician at the Royal Liverpool University Hospitals until April 2011. His specialty interest is liver disease. He is the immediate past president of the Royal College of Physicians and is president-elect of the British Society of Gastroenterology. He has particular interest in harms related to alcohol misuse and the role of regulation in reducing this. He chaired a Royal College of Physicisns Working Party in 2001, producing the report *Alcohol – can the NHS afford it? A blueprint for a coherent alcohol strategy*. He chairs the UK Alcohol Health Alliance, in which relevant agencies work together in a coherent and focused framework. He has also been appointed as Chair of the European Alcohol and Health Forum Science Group and chairs the global science group of a European Commission cofunded multimillion Euro project on reframing addiction. He is a member of the Climate and Health Council and of the National Quality Board. He received a Knighthood in the Queen's Birthday Honours in 2010.

Declaration of interests:
Sir Ian is a trustee of Alcohol Research (UK) and of the British Society of Gastroenterology. He is Chair of the Alcohol

Health Alliance UK, Liverpool Health Partners, and the Global Science Group of ALICE-RAP, a European Commission cofunded project on reframing addiction in Europe. Sir Ian is also a Special Adviser on Alcohol and Public Health to the Royal College of Physicians.

Ms Arsha Gosine

Policy Adviser, Crown Prosecution Service

Arsha is a Policy Adviser with the Crown Prosecution Service and is their policy lead for drugs. Arsha holds a Masters in International Law and has presented on criminal law issues in the UK and abroad. For the last four years Arsha has acquired an expertise in drug-related offences and provides legal guidance and updates for prosecutors nationally. Arsha is a member of the Association of Chief Police Officers Drugs Committee.

Declaration of interests:
Arsha Gosine has no competing interests that might be perceived as posing a conflict or bias.

Mr Nicholas Green QC

Barrister, Brick Court Chambers

Nicholas Green is a barrister specialising in all aspects of competition, European, regulatory and administrative law. He appears before all levels of the domestic English courts and appears regularly in international courts and tribunals. In 2010 he was the Chairman of the Bar Council of England and Wales. In his capacity as Chairman of the Bar he was involved in leading negotiations with Government on behalf of the profession on all issues from reform of criminal and civil justice systems to legal aid reform. He represented the profession internationally at conferences and in bilateral negotiations and discussions with foreign Bars and Governments. Prior to becoming Chairman he had been a member of the Bar Council for nearly 10 years. He has subsequently been appointed as the Chairman of the Advocacy Training Council, a body that facilitates and coordinates the training of and professional support for the Bar. He has held a long-term interest in the impact of drugs policy upon the administration of the justice system. He sits as a Recorder in the Crown Court. He is also joint Head of Chambers at Brick Court Chambers in London.

Declaration of interests:
Nicholas Green has no interests that conflict or compete with the issues being considered in the report and that would affect his views.

Mr Tim Hollis CBE

Chief Constable of Humberside; Vice President, Association of Chief Police Officers; and Chair, Association of Chief Police Officers Drugs Committee

After attending Bristol University and undertaking a short service commission in the Parachute Regiment, Tim Hollis joined the Metropolitan Police in 1977. He subsequently served in Sussex Police and as a Chief Officer in South Yorkshire Police, during which time he also held national responsibilities for public order policing. In 2002, he moved to Her Majesty's Inspectorate of Constabulary prior to becoming Chief Constable of Humberside Police in 2005. He leads nationally on drugs and is one of the Vice Presidents of Association of Chief Police Officers. He was awarded the QPM (Queen's Police Medal) in January 2000 and CBE (Commander of the British Empire) in January 2010.

Declaration of interests:

Tim Hollis declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have an interest in the submitted work in the previous three years.

Baroness Molly Meacher

Chair, Parliamentary International Drugs Policy Reform Group; Chair, East London NHS Foundation Trust; and House of Lords

Baroness Molly Meacher is the Chair of the All Party Parliamentary Group on Drug Policy Reform. She is also the Chair of East London NHS Foundation Trust and a crossbench member of the House of Lords. Formerly she has been the Chairman of the Security Industry Authority and Deputy Chairman of the Police Complaints Authority. In the 1990s, Molly worked in Russia for four years, advising the Russian Government on the development of a system to handle unemployment. She is the author or editor of a number of books on the benefits system, mental health and the tax system. She was actively involved in the development of the 1983 Mental Health Act and spent five years as a Mental Heath Act Commissioner. Her political interests include mental health, criminal justice, welfare benefits and social care.

Declaration of interests:

Baroness Meacher declares no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Dr David Pickersgill

Immediate past Treasurer, British Medical Association

Dr Pickersgill was Treasurer of the BMA from 2002 to 2011. He is a long-serving member of BMA Council and has served on many other BMA committees, including its Private Practice and Forensic Medicine Committees, both of which he previously chaired. David was a GP in North Norfolk for 30 years, running a market town dispensing practice. For approximately half of that time he was a local police surgeon.

Declaration of interests:
David Pickersgill declares that he has no conflicts of interests.

Dr Kylie Reed

Honorary SpR and Research Worker, National Addiction Centre, Institute of Psychiatry, King's College London, and South London and Maudsley Foundation NHS Trust

Dr Kylie Reed is an Addiction Psychiatrist working for the National Addiction Centre, Institute of Psychiatry, and South London and Maudsley NHS Foundation Trust. Kylie has worked in clinically diverse settings in addiction psychiatry, including inpatient units and the smoking cessation service at the Maudsley Hospital, community treatment centres, a homelessness hostel, and a clinic prescribing injectable opiates as second-line treatment. From 2008 to 2009, Kylie worked as an adviser in the Substance Misuse Policy team at the Department of Health. Kylie tutors, lectures and is an internal examiner on the MSc in Clinical and Public Health Aspects of Addiction, at King's College London. She completed her MA in clinical sciences at St John's College, Cambridge, and her degree in medicine (BMBCh) at Oxford University. She trained in psychiatry at the Maudsley and Bethlem Royal Hospitals and Southampton University Hospital. Her clinical and research interests include dual diagnosis, the healthcare of opiate users, dependence on prescribed medications, smoking cessation and homelessness healthcare.

Declaration of interests:
Kylie Reed coordinated a Department of Health-funded review of published English and international evidence and available data to inform consideration of the extent of dependence on and harm from prescribed benzodiazepines and z-drugs and of over-the-counter codeine-containing products in England. Kylie has received support from Schering-Plough to attend a conference on new advances in opiate addiction treatment, and has received honoraria for two small reviews for a market research company that works with Acetelion, a pharmaceutical company that does not currently produce any medicines for use in the addiction treatment field. In the past, Kylie has been seconded to work at the Department of Health, and has worked with the World Health Organisation, the General Medical Council and currently works with National Institute for Health and Clinical Excellence. Kylie Reed has worked in the field of addiction psychiatry since 2006.

Mr Stephen Rolles

Senior Policy Analyst, Transform Drug Policy Foundation

Steve is Senior Policy Analyst for Transform Drug Policy Foundation, where he has worked since 1998. Transform is a UK-based drug policy think tank and registered charity working in the field of drug policy and law reform. As well as publications in journals, periodicals and book chapters, Steve has been lead author on a range of Transform publications including *After the war on drugs: blueprint for regulation* (2009). Steve has been a regular contributor to the public debate on drug policy and law: in print and broadcast media, as a speaker at UK and international conferences/events, and at various UN, UK Government and Parliamentary Select Committee hearings and inquiries. Before Transform, Steve worked for the Medical Research Council and Oxfam, having studied Geography at Bristol University (BSc) and Development Studies at Manchester University (MA).

Declaration of interests:

Transform Drug Policy Foundation is a charitable think tank. Its purpose is to draw public attention to their opinion that drug prohibition itself is the major cause of drug-related harm to individuals, communities and nations. Transform campaigns for drug prohibition to be replaced by effective, just and humane Government control and regulation.

Professor John Strang

Professor of the Addictions and Director, Addiction Research Unit, Institute of Psychiatry, Kings College London

Professor John Strang is the Head of the Addictions Department at King's College London and has been a Consultant Psychiatrist in addictions treatment for over 30 years, first in Manchester and subsequently at the South London and Maudsley NHS Foundation Trust. He has had extensive experience in charge of a wide range of treatments in community and residential settings. His area of particular clinical expertise is heroin addiction. Professor Strang completed his undergraduate medical (MBBS) and postgraduate psychiatry studies at Guy's Hospital, London. He trained in psychiatry at the Maudsley/Bethlem Royal Hospital between 1976 and 1982. In 1995, he was awarded a thesis-based higher degree (MD) at the University of London. Research interests include: supervised injecting clinics for managing entrenched heroin addicts who cannot otherwise be engaged in treatment; new approaches to preventing drug-overdose deaths, involving family members; and contingency management to improve treatments to reduce drug use and associated harms. He has made contributions to the Department of Health, Home Office, Royal College of Psychiatrists, BMA, General Medical Council, General Dental Council, Royal Pharmaceutical Society, National Treatment Agency, World Health Organisation and United Nations, and has published over 400 papers.

Declaration of interests:
Professor Strang declares that he has worked with UK and international Government agencies on treatment guidelines, including chairing UK Department of Health and National Institute for Health and Clinical Excellence clinical guidelines committees; has contributed to the work of organisations that review evidence of effectiveness of drug policy; has received research and educational grant support or honoraria, consultancy payments, and travelling, accommodation, or conference expenses from pharmaceutical companies that produce, or have been considering producing, new medicines or new formulations for use in the addiction treatment field, including (past 3 years) – Genus (Britannia),Viropharma (Auralis), Martindale (Catalent), Reckitt-Benckiser, Schering-Plough, Lundbeck, UCB, Napp (MundiPharma), Lightlake, and Fidelity International. He works within an integrated university and NHS academic health sciences centre (Kings Health Partners AHSC) and is supported by the National Institute for Health Research Biomedical Research Centre for Mental Health at the Institute of Psychiatry, Kings College London and South London and Maudsley NHS Foundation Trust, which provides treatments and undertakes research study; and has close links with various other treatment provider organisations.

Mr John Witton

Researcher, King's College London

John Witton is a researcher at the Addictions Department at King's College London and previously worked in the Library and Information Service of the Institute for the Study of Drug Dependence (now DrugScope) 1977-1997. He has received project grant support and/or honoraria and/or consultancy payments from the Department of Health, National Treatment Agency, Home Office, European Monitoring Centre for Drugs and Drug Addiction and United Nations Office on Drugs and Crime. He is on the management board of Drug and Alcohol Findings and a trustee of Bromley Mind.

Declaration of interests:
John Witton declares that he has received no support from any organisation for the submitted work and no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Professor Jonathan Wolff

Professor of Philosophy and Director of the Centre for Philosophy, Justice and Health, University College London

Professor Wolff's work has largely concentrated on issues of distributive justice, with a particular interest in the relation between theory and policy. Recently, he has worked on topics such as disadvantage, disability, risk and the measurement of health, and was principal investigator on the Arts and Humanities Research Council funded project, *The Ethics of Risk*. He is a member of the Nuffield Council on Bioethics, and the Ethics Committee of the Royal College of Obstetrics and Gynaecology. Formerly, he was a member of the Gambling Review Body, the Nuffield Council Working Party on the Ethics of Research Involving Animals, and the Academy of Medical Sciences Working Party on Brain Science and Addiction. He is currently advising an interdepartmental government committee on the valuation of life and health. His recent books include *Ethics and public policy: a philosophical inquiry* (2011) and *The human right to health* (2012).

Declaration of interests:

Professor Wolff declares that he has worked with the Academy of Medical Sciences and the Nuffield Council of Bioethics on issues related to the topic of this report, and has received research and educational grant support or honoraria, consultancy payments, and travelling, accommodation, or conference expenses from Pfizer UK Ltd and Merck Sharp and Dunne. He has had no support from any organisation for the submitted work and, other than the above, no financial relationships with any organisations that might have had an interest in the submitted work in the previous three years.

Appendix 2: The nature and addictiveness of commonly used illicit drugs

Drug	What is it?	Desired effect	Addictiveness
Amphetamine	A synthetic drug that can easily be produced on a small scale. It can be snorted, swallowed or smoked or, less frequently, injected.	Stimulant used for a 'buzz' of alertness and energy and the sense that anything is possible. Relieves boredom and tiredness. Effects last for about 6 hours.	People can become dependent on the psychological effects and although amphetamines do not create physical withdrawal, stopping can produce strong feelings of depression and anxiety.
BZP	A synthetic stimulant derived from piperazine, often seen as an alternative to ecstasy or amphetamine, although usually considered to be less potent than these drugs. It is sold as a tablet, capsule, or off-white powder. BZP pills are marketed under a huge variety of names and the tablets come in many different shapes.	Provides a sense of euphoria and increased alertness, enhanced senses and a raised heart rate. Depending on the dose taken, the effects of the drug can last for up to 6-8 hours.	Early studies have suggested that people can become dependent, as is the case with amphetamine use.

Drug	What is it?	Desired effect	Addictiveness
Cannabis	Naturally occurring plant used as leaves ('grass', 'ganja', 'marijuana', 'weed'), resin ('hash', 'hashish') or oil that can be smoked or eaten. There are many different varieties of varying strengths. Around 100 varieties have high levels of the psychoactive component tetrahydrocannabinol (THC). These are often given the generic name 'skunk'.	A mild hallucinogen that also has some sedative and disinhibiting properties. It induces relaxation and heightens the senses. Positive uses to relieve symptoms in chronic illnesses like multiple sclerosis and glaucoma are being actively researched.	There is some evidence of physical dependence associated with cannabis use, which can lead to withdrawal symptoms. It may be psychologically addictive if people depend on it as part of a coping strategy or as a way to relax.
Cocaine	Derived from natural coca leaves. Usually snorted as a powder but can be injected or smoked.	A powerful stimulant to the central nervous system (CNS) and a local anaesthetic. It gives a powerful physical and psychological rush of exhilaration and excitement, alertness, confidence and strength within 3 minutes of ingestion and the effects last 15-40 minutes.	High. Produces psychological dependence, owing to changes in the brain. Does not produce physical dependence to the same degree as heroin, but its physical effects are powerful and withdrawal creates very unpleasant symptoms.

Drug	What is it?	Desired effect	Addictiveness
Crack cocaine	Smoked version of cocaine, derived by 'freebasing': heating cocaine powder with water and a reagent such as baking soda. It is called crack after the crackling sound it makes when smoked using a pipe, glass tube, plastic bottle or foil.	Stimulant. Has the same effect as cocaine, but far more intense: crack makes users feel alive, exhilarated, confident and wide awake. It kills all feelings of pain, tiredness and hunger.	Potentially very high. The very steep high and 'come-down' can produce strong and immediate cravings, which can rapidly develop into a 'binge' pattern of drug use.
Ecstasy	Synthetic drug, derived from the chemical 3,4-methylenedioxymeth amphetamine (MDMA). Usually taken in tablet form.	Stimulant. Gives a rush of alertness and energy and a feeling of being in tune with one's surroundings and other people. The effects can last 3-6 hours.	Not considered to be physically addictive, but it is possible to build up a tolerance and require larger doses to achieve the same effect. It may be psychologically addictive.
GHB/GBL	Synthetic chemicals. Once GBL enters the body, it is rapidly converted to GHB.	Depressant and anaesthetic. Lowers inhibitions and increases libido. Used as a club drug. Associated with date rape.	May produce physical and psychological dependence.

Drug	What is it?	Desired effect	Addictiveness
Heroin	Painkiller derived from the morphine from the opium poppy. It is injected, smoked or snorted. When pure, it is a white powder, but it is usually brownish-white by the time it is sold on the street.	Depressant. Acts to depress the nervous system and slow down body functioning. Users experience a rush, a warm sensation and sense of being cut off from physical and psychological pain.	Very high. No instant dependency, but physical dependence will develop if it is used for a number of days consecutively, even at relatively low levels.
Ketamine	Synthetic chemical, ketamine hydrochloride, found as liquid or tablets.	Anaesthetic. Can produce euphoria at lower doses, hallucinations and out-of-body experiences at higher doses.	May produce psychological dependence. Tolerance develops quickly.
LSD	Synthetic chemical known as LSD or acid. Usually sold as tiny squares of paper, often with pictures on them, but also found as a liquid or as tiny pellets.	Hallucinogen, mind and mood altering effects, which may last up to 8-12 hours, include heightened and altered perception.	Not addictive. Very dose sensitive.
Psilocybin (magic mushrooms)	Mushrooms growing in the wild. There are two main types: *Psilocybe*/liberty cap and *Amanita muscaria*/fly agaric. Can be eaten raw, cooked in food or made into tea.	Hallucinogens, producing much the same effects as LSD, only milder.	Not addictive, but tolerance may develop, resulting in increasing use during the short growing season.

Drug	What is it?	Desired effect	Addictiveness
Methamphetamine	Synthetic drug. Can be swallowed as pills, snorted as powder or smoked as crystals.	Stimulant. Produces euphoric effects similar to those of cocaine, but longer lasting.	Highly addictive.
Spice (synthetic cannabinoids)	A collection of herbs or plant material that has been sprayed with synthetic cannabinoid receptor agonists, and that mimic the psychoactive effects of THC.	When smoked, they produce cannabis-like mild hallucinogenic effects, sedation and relaxation.	Not known to induce physical dependence. As with cannabis, they may be psychologically addictive if people depend on them as part of a coping strategy or as a way to relax.

Source: www.drugscope.org.uk and Royal Society for the encouragement of Arts, Manufactures and Commerce (2007) *Drugs – facing facts*. London: Royal Society for the Encouragement of Arts, Manufactures and Commerce.

Appendix 3: Health-related harms of emerging and established licit and illicit drugs commonly used in the UK

Source: Jones L, Bates G, Bellis M et al (2011) *A summary of the health harms of drugs*. London: Department of Health.

Amphetamines*
Acute adverse effects associated with the use of amphetamines

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Excitation syndrome • Abnormal heart rhythms (arrhythmias) associated with collapse/cardiac arrest leading to sudden death **Vascular accidents** • Increase in blood pressure (hypertension) • Stroke • Heart attack (myocardial infarction) • Cardiovascular shock	**Acute intoxication** • Agitation/aggression • Pupil dilation • Headache • Tremors and writhing movements of the body and limbs (dyskinesia) • Nausea, abdominal cramps • Dry mouth • Sweating • Anorectic effects, decreased appetite • Increase in body temperature (hyperthermia) • Increased breathing rate, blood pressure and heart rate (possible arrhythmia) • Dizziness, tremor, irritability and confusion • Hallucinations • Convulsions *Methamphetamine* **Acute intoxication** • More pronounced CNS stimulant effects and longer duration of effect than amphetamine sulphate **Lifestyle factors** • Use strongly associated with risky sexual practices	**Organic/neurological** • Toxic delirium with amnesia • As stimulant effects dissipate, users may experience drowsiness, reduced ability to concentrate and/or judgement and learning impairment **Personality/mood** • Low mood (dysphoria) • Anxiety, depression • Irritability, aggression **Acute paranoid psychosis** • Psychotic reaction similar to acute paranoid schizophrenia (vivid visual, auditory, or tactile hallucinations, paranoid ideation possibly resulting in aggressive behaviour) • May develop after single or repeated ingestion of amphetamines • People with underlying mental problems are at greatest risk

* Including amphetamine sulphate and methamphetamine.

Chronic adverse effects associated with the use of amphetamines

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Excitation syndrome • Abnormal heart rhythms (arrhythmias) associated with collapse/cardiac arrest leading to sudden death **Cardiovascular complications** • Inflammation of the blood vessels (vasculitis) • Aortic dissection • Cardiovascular shock **Other complications** • Depression leading to suicide	**Cardiovascular complications** • Cumulative risk of cardiac and coronary artery disease • Abnormally high blood pressure in the arteries of the lungs (pulmonary hypertension) • Inflammation of the blood vessels (vasculitis) • Bleeding into and along the wall of the aorta (aortic dissection) **Lifestyle factors** • Negative health effects from lack of food and sleep, such as lower resistance to disease	**Organic/ neurological** • Cognitive deficits associated with damage to the nervous system and brain (eg impairment of memory, learning and monitoring of complex goal-directed behaviour [executive function]) • Behaviour stereotypes – mechanical hyperactivities, repetitive actions, stereotype motor phenomena (eg teeth grinding)	**Dependence** • High abuse potential due to mood-elevating properties • Good evidence for an amphetamine dependence syndrome • Typically occurs after a period of sustained regular use **Withdrawal** • Rarely life threatening • Symptoms may include depression (increasing risk of suicide), seclusiveness, craving, fatigue/exhaustion, weakness, lack of energy and sleep disturbance • Psychotic symptoms may also be a feature of the methamphetamine withdrawal syndrome

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	Complications in pregnancy • Use in pregnancy has been associated with low birth weight, prematurity and increased fetal morbidity • Confounded by the impact of other situational, health and lifestyle factors, and polysubstance use	**Chronic paranoid psychosis** • Psychotic reaction similar to paranoid schizophrenia – hallucinations, paranoid ideation, possibly resulting in aggressive behaviour, potentially reversible • Incidence and severity of methamphetamine psychosis is related to the frequency of use and injection or smoking as the route of administration • Symptoms usually resolve with abstinence, but case reports suggest some methamphetamine users may experience prolonged or recurrent psychosis, even after stopping use	**Tolerance** • Users may become tolerant to the euphorigenic, anorectic, hyperthermic and cardiovascular effects

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Personality/mood • Irritability • Suspiciousness • Dysphoria • Anxiety • Paranoid psychosis • Depression • Restlessness • Delirium • Depersonalisation • Feelings of persecution • Lethargy *Methamphetamine* **Personality/mood** • User reports of physical aggression	

Cannabis
Acute adverse effects associated with the use of cannabis

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
• No cases of fatal overdose have been reported • No confirmed cases of human deaths	**Acute intoxication** • Irritant effects of smoke on the respiratory system (coughing, sore throat and bronchospasm among people with asthma) • Facial flushing • Abdominal pain, nausea, vomiting • Can cause an increase in heart rate (tachycardia) and in some cases increased blood pressure (hypertension) • Difficulty in motor coordination and performance *Synthetic cannabinoids* • Not documented, limited evidence base	**Organic/neurological** • Perceptual distortion (hallucinations) • Amnesia/forgetfulness • Confusion of thought processes, impaired judgement **Personality/mood** The effects of cannabis upon mental state vary considerably between individuals; they are determined by dose, route of administration, expectations, concomitant use of other drugs, emotional state and psychiatric illness: • temporary psychological distress (especially naive users) • low mood (dysphoria) • anxiety • confusion • drowsiness • depression • panic attacks • agitation • symptoms indicative of a persistent and pervasive elevated (euphoric) or irritable mood (hypomanic symptoms)

Physical		Psychological/psychiatric
Morbidity	Mortality	
		• short-lived and reversible psychotic reaction *Synthetic cannabinoids* **Organic/neurological** • Suggestion that overdose could include significant alterations in mental state with paranoia and perceptual distortions

Chronic adverse effects associated with the use of cannabis

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Cancers • No conclusive evidence that cannabis causes cancer • Cannabis use may be an important risk factor for the development of respiratory cancers but the relationship is unclear[a] **Chronic respiratory disease**[a] • Chronic bronchitis • Lung damage • There are a number of reports in the literature of an association between cannabis use and bullous lung disease in relatively young users	**Cancers** • No conclusive evidence that cannabis causes cancer **Immune function** • Evidence for the effects of cannabis on human immune function is limited **Complications in pregnancy** • Like tobacco, cannabis use in pregnancy may be harmful to fetal development; studies show a consistent association between cannabis use in pregnancy and reduced birth weight – though less so than as a result of tobacco smoking during pregnancy	**Organic/ neurological** • No evidence of structural change in the brains of heavy long-term cannabis users • No severe or grossly debilitating impairment in cognitive function (subtle impairment in higher cognitive functions of memory, learning processes, attention and organisation and the integration of complex information – may or may not be reversible after abstinence)	**Dependence** • Good evidence for a cannabis dependence syndrome • Frequent, heavy users are at the greatest risk of dependence **Withdrawal** • Irritability • Anxious mood • Physical changes (tremor, perspiration and nausea) • Sleep disturbance **Tolerance** • Tolerance to psychoactive and physical effects is unlikely to occur unless there is sustained heavy exposure

[a] Studies of the harms associated with cannabis use are limited by confounding factors, as many users smoke tobacco as well as cannabis, or use tobacco as a vehicle for smoking cannabis resin. Although tobacco smoke and cannabis smoke are known to contain a similar range of mutagens and carcinogens, actual exposure to these compounds may differ between tobacco and cannabis users in terms of the frequency and duration of use, and because of factors such as the depth of inhalation.

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• There are some reports that children born to women who have used cannabis in pregnancy may face mild developmental problems; however, the evidence is mixed and confounded by the other situational, health and lifestyle factors and polysubstance use in this population, eg cannabis users are more likely to use tobacco, alcohol and other illicit drugs during pregnancy **Reproductive disorders** • Use may inhibit reproductive functions and disrupt ovulation, sperm production and sperm function **Other complications** • Persistent sore throat	**Personality/mood** • Evidence that early initiation and regular, heavy cannabis use is associated with a small but significantly increased risk of psychotic symptoms and disorders in later life • Complex association between cannabis use and schizophrenia – some evidence that use may exacerbate psychotic symptoms and is linked with relapse but it is unknown whether this is a universal risk or due to differences in individual vulnerability • Insomnia, depression, aggression, anxiety	*Synthetic cannabinoids*

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		• Inconsistent and mixed evidence for whether heavy, chronic cannabis use is associated with a persistent 'amotivational syndrome' characterised by social withdrawal and apathy	**Withdrawal** • Some evidence of a withdrawal syndrome among heavy users **Tolerance** • Suggestion that users may develop tolerance quickly

Cocaine*
Acute adverse effects associated with the use of cocaine

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Toxic reactions (eg cardiovascular complications) are not predictable from the route of administration, quantity taken, an individual's pattern of drug use, or blood concentrations of cocaine (or its metabolites) • Injection of cocaine powder or crack cocaine is associated with a greater risk of death than infrequent, intranasal use of cocaine powder alone; this appears to be linked to factors associated with injecting (such as more frequent use and higher levels of cocaine dependence) rather than the route of administration per se **Vascular complications** • Abnormal heart rhythms (arrhythmias) • Heart attack • Inflammation and injury to the intestines (mesenteric ischaemia) • Stroke	**Cardiovascular complications** • Increase in blood pressure • Accelerated heart rate • Abnormal heart rhythms (supraventricular/ventricular tachycardia, torsade de pointes) • Increased risk of heart attack, particularly in the first hour after use **Respiratory complications** • Chest pain • Shortness of breath • Rapid breathing **Neurological complications** • Stroke • Convulsions **Other complications** • Hyperthermia • Muscle spasms, tremor • Abdominal pain, nausea, vomiting • Insufficient blood flow (ischaemia) • Bleeding (haemorrhage) • Liver damage	**Personality/mood** • Sleep disturbance • Anxiety • Paranoia • Grandiosity • Transient psychotic reactions • Hallucinations (visual, auditory and tactile) after large doses • Aggression and possible violence (especially associated with crack cocaine use)

* Cocaine hydrochloride (eg cocaine powder) and cocaine base (eg crack cocaine and freebase cocaine).

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Allergic reaction from intravenous use of cocaine • Based on anecdotal citations – possibly caused by additives in street cocaine **Excited delirium syndrome** • Characterised by hyperthermia, delirium and agitation • Associated with cardiac/respiratory arrest and subsequent death	**Genitourinary** • Increased sexual appetite and desire	

Chronic adverse effects associated with the use of cocaine

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Cardiovascular complications • Increased risk of cardiovascular disease through toxic effects on the cardiovascular system (including premature atherosclerosis, vasospasm and thrombus formation) • Heart attack • Heart failure • Abnormal heart rhythms (arrhythmias) • Aortic dissection • Inflammation and injury of the heart muscle (endocarditis, cardiomyopathy) • Sudden death	**Vascular complications** • Increased risk of cardiovascular disease through toxic effects on the cardiovascular system • Abnormally high blood pressure in the arteries of the lungs (pulmonary hypertension) • Inflammation and injury of blood vessels (vasculitis) **Neurological complications** • Stroke • Inflammation and injury of the blood vessels of the brain (cerebral vasculitis) **Renal complications** • Kidney failure – commonly associated with rhabdomyolysis	**Personality/mood** • Anxiety, depression • Obsessional rituals/ preoccupation, repetitive behaviours • Sleep disturbance (decrease in quantity and quality of sleep) • Irritability, restlessness • Auditory hallucinations • Paranoid delusions and psychosis • Hyperexcitability • Exhaustion • Aggression and possible violence (especially associated with crack cocaine use)	**Dependence** • Good evidence for a cocaine dependence syndrome • A minority of users may exhibit cocaine dependence soon after onset of cocaine use (in the first 1-2 years of use) – risk is greater among those who smoke crack cocaine and those who begin use at an earlier age **Withdrawal** Symptoms may be mild to moderate but the type and severity vary from person to person: • craving • exhaustion/lack of energy, fatigue • over-eating • depression • low (dysphoric) mood • unpleasant dreams

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
	Lifestyle factors • Anorectic effect – may contribute to malnutrition and weight loss • Chronic use diminishes sexual appetite and ability – reversible on stopping use **Localised effects** • Dental erosions • Perforation of the nasal septum • Chronic rhinitis • Loss of sense of smell • Nosebleeds **Complications in pregnancy** • Premature rupture of the membranes and placental abruption are associated with use during pregnancy	**Toxic syndrome** • Psychotic reaction similar to acute paranoid schizophrenia and psychoses with vivid auditory and tactile hallucinations, picking and excoriation of skin, delusions of infection from parasites, paranoid ideation **Neurological** • Studies have shown that chronic cocaine use may contribute to cognitive impairments in the group of processes involved in the learning, control and monitoring of complex goal-directed behaviour (executive function) • May include deficits in memory function and inhibitory control	• insomnia or hypersomnia, psychomotor retardation • agitation, irritability • anxiety, restlessness • aggression *Substance specific* **Withdrawal** • Craving – possibly of a greater magnitude for crack cocaine as compared to that for cocaine powder

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Effects of cocaine exposure may persist into childhood; suggestion that this may impact on behaviour problems, attention, language and cognition • Situational, health and lifestyle factors and polysubstance use in this population may also affect pregnancy outcomes		

Dissociative anaesthetics*
Acute adverse effects associated with the use of dissociative anaesthetics

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
Acute complications • Death is more often a result of accidents due to loss of coordination/ control, disassociation and analgesia (eg jumping from heights, road traffic accidents, drowning) • Risk of respiratory depression *Ketamine* **Acute complications** • The evidence base is limited, but there is a low risk of mortality associated with the medicinal use of ketamine • Rare reports of overdose deaths from heart attack or respiratory problems • The majority of fatalities have been attributed to polysubstance use (multiple drug toxicity)	**Acute intoxication** • Increased heart rate and respiration • Loss of consciousness, coma • Muscle jerking, repetitive movements, outbursts (automatic behaviour) • Gastric/stomach pain • Many effects are polarised among users (ie reports of opposing responses in different individuals) *Ketamine* **Injury** • Increased risk of injury from jumping from heights, road traffic accidents and drowning; associated with loss of coordination/temporary paralysis and/or dissociative effects (eg depersonalisation, derealisation and reduced perception of pain)	**Organic/neurological** • Hallucinations, distorted sensory perception • Impaired attention, memory and learning • Altered body perception • Impairments of cognitive function and verbal fluency **Personality/mood** • Confusion • Depersonalisation • Derealisation • Panic attacks, agitation, paranoia • Delirium • Depression • Night terrors • Behavioural effects resembling certain symptoms of schizophrenia • Extreme loss of motor skills (catatonia)

* Ketamine and phencyclidine (PCP).

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
PCP **Acute complications** • Substantially more toxic than ketamine • Death as a result of hyperthermia, convulsions	*PCP* **Acute intoxication** • Increase in body temperature (hyperthermia) • Stroke • Respiratory arrest • Nausea, vomiting • Loss of coordination (ataxia) • Hypersalivation	*PCP* **Organic/neurological** • Toxic psychosis (catatonia or paranoia)

Chronic adverse effects associated with the use of dissociative anaesthetics

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Very low risk of mortality	*Ketamine* **Chronic complications** • Ketamine-induced ulcerative cystitis (marked thickening of the bladder wall and severe inflammation) has been described in clinical case reports; only following heavy use • Vague abdominal pains (gastritis) *PCP* **Chronic complications** • No human evidence to suggest long-term physical damage • Evidence from animal studies of congenital malformations and reproductive disorders	**Organic/ neurological** • Memory impairment • Prolonged hallucinations, flashbacks, persistent perceptual changes **Personality/mood** • Night terrors • Evidence of triggering depression, post-traumatic stress disorder, or mania in susceptible individuals • May aggravate psychotic symptomatology	*Ketamine* **Dependence** • There have been few published reports of ketamine dependence; however, cases have been noted among regular, heavy users **Withdrawal** • No evidence to suggest withdrawal symptoms or syndrome **Tolerance** • Evidence to support the rapid development of tolerance over regular repeated dosing *PCP* **Dependence** • Evidence to suggest a dependence syndrome for PCP

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Ketamine **Organic/ neurological** • Evidence from animal studies suggests that ketamine may accelerate nerve cell death in the brain – no evidence that such an effect occurs in humans • Some evidence of cognitive impairments among regular, heavy users *PCP* **Personality/mood** • Anorexia • Insomnia • Auditory hallucinations • Disorientation • Paranoid delusions	**Withdrawal** • Some evidence to suggest withdrawal syndrome • Craving • Increased appetite • Hypersomnia • Depression

Gamma-hydroxybutyrate and gamma-butyrolactone*
Acute adverse effects associated with the use of GHB, GBL or 1,4-BD

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Loss of consciousness – difficult to get dose right and solutions of GHB often vary in concentration • Deaths solely caused by GHB appear to be rare – fatalities appear to be mostly in combination with alcohol or other CNS depressants	**Acute intoxication** • Loss of consciousness • Coma • Respiratory and cardiac depression, bradycardia • Hypothermia • Nausea, vomiting • Seizures • Confusion • Involuntary muscle twitching or spasm (myoclonus, dystonia) • Breathing difficulties • Agitation	• Limited evidence for the psychological/psychiatric effects of GHB, GBL and 1,4-BD **Personality/mood** • Agitation • Combativeness

*Gamma-hydroxybutyrate (GHB), gamma-butyrolactone (GBL) and 1,4-butanediol (1,4-BD).

Chronic adverse effects associated with the use of GHB, GBL or 1,4-BD

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Withdrawal • Severe cases of withdrawal, including fatalities have been reported	• Not documented	• Not documented	**Dependence** • Evidence of a dependence syndrome associated with heavy, frequent use • No dependence syndrome has been observed at low doses of GHB **Withdrawal** • Examples in the literature of physical dependence evidenced by a withdrawal syndrome • Anxiety • Insomnia • Increased heart rate (tachycardia) • Hallucinations, delirium and psychosis • Sweating • Aches • Abdominal pain • Impotence • Severe depression • Reports of severe withdrawal symptoms (eg rapid onset of delirium) associated with unplanned detoxification

Khat and *Salvia divinorum*

Acute adverse effects associated with the use of khat and *Salvia divinorum*

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
• Not documented, limited evidence base	*Khat* **Acute complications** • Dry mouth • Hyperthermia • Sweating • Aching **Cardiovascular complications** • Transient facial and conjunctival congestion • Increased heart rate (tachycardia) • Raised blood pressure • Heart palpitations (extra-systoles) • Myocardial insufficiency and cerebral haemorrhage through stimulation of adrenergic pathways **Gastrointestinal complications** • Constipation **Genitourinary complications** • Increased libido	*Khat* **Personality/mood** • Insomnia • Transient confusional states *Salvia divinorum* **Organic/neurological** • Hallucinations • Giddiness/dizziness • Confusion/disorientation

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
	Salvia divinorum **Acute complications** • Some users report experiencing physical and mental tiredness • Flushed sensation • Tachycardia	

Chronic adverse effects associated with the use of khat and *Salvia divinorum*

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented, limited evidence base	*Khat* **Cardiovascular complications** • Transient facial and conjunctival congestion • Increased heart rate and raised blood pressure • Heart palpitations (extra-systoles) • Myocardial insufficiency and cerebral haemorrhage through stimulation of adrenergic pathways **Gastrointestinal complications** • Brown staining of the teeth, periodontal disease • Inflammation of the mouth and digestive system • Anorectic effect and delayed intestinal absorption; may contribute to malnutrition	*Khat* **Personality/mood** • Anxiety • 'Mood swings' (lability of mood) • Nightmares • Irritability, aggressive behaviour • Psychotic phenomena • Khat psychosis cases have been reported in the literature; individuals had recorded family histories of psychotic disorders **Organic/ neurological** • Cognitive dysfunction including disturbed perceptual-visual memory function *Salvia divinorum* • Not documented	*Khat* **Dependence** • Limited evidence for a khat dependence syndrome • Elements of ICD-10 stimulant dependence have been described among users including: compulsive consumption; tolerance; borderline withdrawal syndrome of tiredness, fine tremors and nightmares; craving and the urge to seek out khat are well known *Salvia divinorum* **Dependence** • Limited evidence base but one survey found little evidence of dependence among users

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Constipation – may lead to laxative abuse • Liver cirrhosis **Respiratory complications** • Increased prevalence of respiratory diseases including tuberculosis may be related to secondary malnutrition and heavy tobacco smoking **Reproductive disorders** • Limited evidence suggests that khat chewing during pregnancy may have an impact on fetal growth and development; low mean birth weights have been reported in some studies • No published evidence that khat causes teratogenic effects in humans		

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
	• Limited evidence base for effects on male reproductive health but suggestion that use may be associated with decreased fertility *Salvia divinorum* • Not documented		

MDMA and related substances*

Acute adverse effects associated with the use of MDMA and related substances

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Overheating/heat stroke (hyperthermia) • Major acute symptom of MDMA-related toxicity that can lead to death • Associated with serotonin syndrome, and complications including rhabdomyolysis, abnormal blood clotting (disseminated intravascular coagulation), kidney failure and liver failure **Swelling of the brain (cerebral oedema)** • Caused by low sodium levels (hyponatraemia) secondary to water intoxication • Propensity for women to be disproportionately affected	**Acute intoxication** • Elevated blood pressure and increased heart rate (palpitations) • Nausea, vomiting • Fatigue, dizziness and/or vertigo • Overheating, dehydration • Headache • Dry mouth and throat • Loss of appetite • Difficulty with bodily coordination, muscle aches or tightness • Agitation/aggression • Convulsions	**Personality/mood** • Anxiety, panic attacks • Confusion • Depressive symptomatology • Insomnia • Restlessness • Fatigue • Anorexia • Paranoia • Visual and auditory hallucinations are rare – tend to be associated with high doses • Suggestions that use may have mild and transient effects on cognition after acute administration • Individual or unpredictable psychotic episodes may occur • Incorrect interpretation of emotions and other social cues

* 3,4-Methylenedioxymethamphetamine (MDMA; ecstasy) and related analogues, including 3,4-methylenedioxyamphetamine (MDA), 3,4-methylenedioxyethylamphetamine (MDEA), methylbenzodioxolylbutanamine (MBDB), 3-methoxy-4,5-methylenedioxyamphetamine (MMDA), 4-methylthioamphetamine (4-MTA).

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Other complications • Fatal cases of liver damage are rare • A small number of case reports have linked the use of ecstasy with cerebrovascular accidents (eg stroke) • A few fatalities have been reported in the literature associated with the use of 'counterfeit ecstasy' containing paramethoxymethamphetamine (PMMA) and/or paramethoxyamphetamine (PMA) • Many MDMA-related fatalities are attributable to polysubstance use (multiple drug toxicity)	**Other complications** • May inhibit orgasm in men and women, and male erection • Examples of acute liver injury reported in the literature – may be secondary to hyperthermia or caused by direct drug toxicity • Associated with risk taking in general, and sexual risk taking in particular • Teeth grinding and clenching (bruxism)/teeth problems	*4-Methylthioamphetamine (4-MTA)* **Personality/mood** • 4-Methylthioamphetamine (4-MTA) has a greater propensity to cause visual hallucinations than MDMA

Chronic adverse effects associated with the use of MDMA and related substances

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented, limited evidence base	**Immune function** • Emerging evidence that MDMA may have immunosuppressive properties – users report increased susceptibility to minor ailments including colds, flu and sore throats **Other complications** • Possible liver damage	**Organic/ neurological** • Unclear whether long-term use is associated with memory and learning (cognitive) impairment • Growing evidence that chronic, heavy use is most strongly associated with subtle cognitive effects • Unclear whether deficits reflect the use of MDMA or the combination of MDMA and other substances **Personality/mood** • Repeated use may have long-lasting effects on mood and personality characteristics, such as depression and anxiety, but evidence is inconsistent	**Dependence** • Evidence for a dependence syndrome is limited • In cases of dependence, the psychological aspects of dependence appear to predominate **Withdrawal** • Features of a withdrawal syndrome are not clearly defined and are mainly based on user reports **Tolerance** • Tolerance potential, but evidence is based on self-report

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
		Animal studies • An excess of serotonin in the CNS (serotonergic toxicity) has been demonstrated in experimental animal studies of MDMA • Inconsistent effects in humans – may result in increased risk of depression or other mental illness later in life but the equivalence is uncertain	

Nitrites*
Acute adverse effects associated with the use of nitrites

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Death may be caused by a lack of oxygen (hypoxia) resulting in severe injury to red blood cells and reduction in the supply of oxygen to vital organs • Users may lose consciousness and die through choking on own vomit • 'Sudden sniffing death syndrome' fatality caused by abnormal heart rhythms (cardiac arrhythmia) • Some cases of death have been reported from direct oral consumption of nitrites	**Acute intoxication** • Nausea • Headache • Loss of consciousness, sedation, anaesthesia • Loss of coordination (ataxia), weakness (less common) **Lifestyle factors** • Associated with high-risk sexual practices **Cardiovascular complications** • Profound hypotension (low blood pressure) • Rebound tachycardia • Flushed skin followed by vasoconstriction **Other complications** • Rash around the nose and mouth and contact dermatitis • Irritation of the nose and throat • Increased ocular pressure, blurred vision	**Personality/mood** • Disorientation • Distorted perceptions • Delirium

* Amyl nitrite, butyl nitrite and isobutyl nitrite.

Chronic adverse effects associated with the use of nitrites

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Carcinogenic properties • Use produces nitrosamine which is carcinogenic – however it is still to be determined whether this is formed in sufficient quantities to make the risk clinically significant **Lifestyle factors** • Some evidence that, by facilitating unsafe sexual practices, use indirectly increases susceptibility to Kaposi's sarcoma in people who are HIV positive **Immune function** • Limited evidence that immunologic function may be suppressed – use of nitrites has been associated with facilitating the transmission of HIV	**Chronic medical problems** • Rash and irritation around the nose, mouth or other exposed areas • Sinusitis **Blood-related (haematological) complications** • Anaemia • Difficulty circulating oxygen through the blood stream (methaemoglobin-aemia)	**Organic/ neurological** There is some evidence to suggest impairment to: • cognition • movement • vision • hearing	**Dependence** • No evidence for a dependence syndrome **Withdrawal** • No withdrawal syndrome documented **Tolerance** • Evidence to suggest chronic, regular users may develop tolerance

Novel psychoactive substances*
Acute adverse effects associated with the use of novel psychoactive substances

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Substituted cathinones (primarily mephedrone) have been implicated in deaths in England and Scotland – however, with a limited evidence base, the exact role of cathinones in causing or contributing to death is still to be determined • One case of fatal overdose has been reported in the international literature relating to the use of 2C series phenethylamines • One case of fatal overdose has been reported in the international literature relating to the use of tryptamine derivatives	**Acute intoxication** • Few clinical data are available for novel psychoactive substances, most data regarding harms are self-reported • Chest pain is a common feature of acute intoxication *Substituted cathinones and piperazines* **Acute intoxication** Consistent with sympathomimetic toxicity: • agitation • palpitations • seizure • vomiting • sweating • headache • reduced appetite • severe vasoconstriction of the extremities, leading to bluing of the fingers or hands (cathinone users)	*Substituted cathinones and piperazines* **Personality/mood** Consistent with sympathomimetic toxicity: • mood swings • anxiety • strange thoughts • irritability, confusion *Substituted cathinones* **Organic/neurological** • High doses may be associated with hallucinations and psychosis *2C series phenethylamines* **Organic/neurological** • One case of acute intoxication associated with psychosis has been reported in the international literature *Tryptamine derivatives* **Organic/neurological** • Hallucinations

* Substituted cathinones, piperazines, 2C series phenethylamines and tryptamine derivatives.

Physical		Psychological/psychiatric
Morbidity	**Mortality**	
	2C series phenethylamines **Neurological complications** • One case of damage to the blood vessels in the brain associated with persistent neurologic deficits has been reported in the international literature *Tryptamine derivatives* • Not documented, limited evidence base	

Chronic adverse effects associated with the use of novel psychoactive substances

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Not documented	• Not documented	• Not documented	*Substituted cathinones and piperazines* **Dependence** • Suggestion that they are similar to amphetamine in terms of abuse and dependence potential **Tolerance** • Some evidence to suggest that substituted cathinone users may develop tolerance quickly

Opioid drugs*
Acute adverse effects associated with the use of illicit opioids and abuse of prescription opioids

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Overdose • Respiratory depression and drop in blood pressure resulting in respiratory arrest • Illicit opioid use is associated with the majority of illicit drug-related deaths in the UK, primarily from overdose **Common correlates of overdose fatality** • Long history of opioid dependence • High level of opioid dependence • Recent abstinence (eg prison, detoxification release) • Polydrug use (particularly with alcohol and benzodiazepines) • Being male • Increasing age (most fatalities occur among those in their 30s) • Social isolation • Neurocognitive deficits	**Common features of acute intoxication** • Nausea, vomiting • Depressed nervous system activity • Constipation • Drowsiness, decreased consciousness • Sedation, mental confusion **Infrequent features of acute intoxication** • Sweating • Facial flushing • Itching (pruritus) • Dry mouth • Hallucinations • Dysphoria • Difficulty in passing urine (urinary retention) **Rare features of acute intoxication** • Complications associated with non-fatal overdose eg hypoxia causing brain damage	• No acute psychological adverse effects • Cause little psychomotor or cognitive impairment in tolerant users

* Including illicit (ie heroin) and prescription (eg methadone, buprenorphine, tramadol, dihydrocodeine and oxycodone) opioids.

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
• While drug treatment generally provides a protective effect, there is a significantly enhanced risk in the first 2 weeks of methadone treatment, following detoxification treatment and on cessation of naltrexone treatment • Recent abstinence on release from prison	• Disease of the white matter of the brain (leukoencephalopathy) resulting from inhalation of heroin vapours, which does not seem to occur with injection; there are sporadic reports of cases in the literature *Prescription drugs* **Serotonin syndrome** • A few cases of tramadol use associated with serotonin syndrome, a potentially life threatening condition, have been reported in the literature	

Chronic adverse effects associated with the use of illicit opioids and abuse of prescription opioids

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
Overdose • Increased mortality risk from overdose and route-specific hazards **Suicide** • Suicide rate higher than in the general population; associated with situational, health and lifestyle factors	**Chronic complications** • Non-injected opioids carry little risk of chronic adverse health effects • Chronic constipation • Dry mouth • Menstrual irregularity • Malnutrition, anorexia; associated with situational, health and lifestyle factors • Tooth decay • Decreased sexual desire and performance **Respiratory complications** • Respiratory diseases (asthma, chronic obstructive pulmonary disease)	**Personality/mood** • Depressive disorder is common among those who are dependent on opioid drugs but it is difficult to attribute causality • Instability of mood • Lethargy • Opioid drugs are not causally linked to chronic psychiatric disorder	**Dependence** • Characterised by profound psychological and physical dependence • Develops after repeated administration over a period of time, which varies according to the quantity, frequency and route of administration – factors of individual vulnerability and the context of drug use also play a role **Withdrawal** • Rarely life threatening • Dependent on opioid used, dose, route of administration, the interval between doses, duration of use, and users' physical and psychological health

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	Hormones and immune function • Modest suppression of hormone levels • Suppression of immune system; social deprivation and malnutrition may also be factors **Complications in pregnancy** • Intra-uterine growth of the fetus may be inhibited • Neonates exposed to illicit opioid drugs may have low birth weight compared to non-exposed children, be born prematurely, and experience respiratory depression and withdrawal symptoms – these symptoms may contribute to the increased risk of perinatal mortality associated with use of illicit opioid drugs in pregnancy		• Symptoms include watery eyes, nasal discharge, yawning, sweating, sleep disturbance, dilated pupils, anorexia, gooseflesh, restlessness, irritability, tremor, sneezing, weakness, depression, nausea, vomiting, abdominal cramps, muscle spasms and diarrhoea **Tolerance** • Characterised by shortened duration and decreased intensity of the drug's depressant effects; there is marked elevation in the average lethal dose

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	Morbidity		
	• Evidence for a direct effect of illicit opioids is confounded by other situational, health and lifestyle factors (eg use of other drugs, mother's nutritional status, lifestyle, infections and exposure to trauma) that may be at least as decisive for the outcome of the pregnancy • Suggestion that a deprived social environment may also contribute to problems with neurological development		

Serotonergic hallucinogens*
Acute adverse effects associated with the use of serotonergic hallucinogens

Physical		Psychological/psychiatric
Mortality	**Morbidity**	
Acute complications • Risk of injury and accidental death owing to perceptual distortions and impaired decision making *LSD* **Acute complications** • One case of fatal overdose has been reported in the literature; associated with a high dose of LSD *Psilocybin* **Acute complications** • Fatal poisoning owing to mistaken identity of mushrooms	**Violence and injuries** • Self-harm, accidents or violence while intoxicated *LSD* **Common effects** • Adrenergic 'fight or flight' effects • Tachycardia • Flushing • Dry mouth • Sweating • Exhaustion, tiredness, weakness **Rare effects** • Ataxia • Convulsions • Hyperpyrexia *Psilocybin* **Acute intoxication** • Nausea, vomiting, stomach pains – commonly owing to mistaken identity of mushrooms • Dizziness *DMT* **Acute intoxication** • Nausea and vomiting	**Personality/mood** • Dysphoria • Unpleasant distortions in shapes and colours • Frightening illusions, delusions; 'true hallucinations' in psychiatric terms (ie indicative of psychiatric morbidity) are very rare • Anxiety, panic, depression • Dizziness, disorientation • Impaired concentration • Frequent mood changes (emotional lability) • Recall of psychologically troubling memories • Depersonalisation and derealisation at high doses • Short-lived psychotic episode (hallucinations, paranoia) • Precipitates relapses in schizophrenia

* Lysergic acid diethylamide (LSD), psilocybin, mescaline and *N*,*N*-dimethyltryptamine (DMT).

Chronic adverse effects associated with the use of serotonergic hallucinogens

Physical		Psychological /psychiatric	Dependence/ withdrawal/ tolerance
Mortality	**Morbidity**		
• Limited evidence base	• No known physical dangers associated with long-term LSD use	**Personality/mood**[a] • Persistence of low-level hallucinations, known as hallucinogen persisting perception disorder – rare • Brief flashbacks or recollection of previous hallucinatory experience may occur days or months after use • Depression • Feelings of isolation • Delirium **Psychosis** • It is uncertain whether this is a drug-induced condition or unmasking of a latent mental illness	**Dependence** • Evidence suggests that few users of hallucinogens experience signs or symptoms of dependence **Withdrawal** • A withdrawal syndrome has not been identified **Tolerance** • Tolerance develops rapidly to behavioural effects, and sensitivity returns after a comparable drug-free interval; tolerance to cardiovascular effects is less pronounced • Cross-tolerance between serotonergic hallucinogens

[a] Post-exposure.

Appendix 4: UK illicit drug usage data

Percentage of 16 to 59 year olds reporting lifetime, last year and last month use of individual drugs in England and Wales, 2009/2010, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	42.8	29.9	36.4	11.9	5.4	8.6	7.3	2.6	5.0
Amphetamines	14.6	8.7	11.7	1.4	0.6	1.0	0.5	0.2	0.3
Cannabis	36.7	24.5	30.6	9.3	4.0	6.6	5.7	2.0	3.9
Cocaine	11.5	6.0	8.8	3.6	1.5	2.5	1.7	0.6	1.1
Ecstasy	11.4	5.2	8.3	2.4	0.8	1.6	1.0	0.3	0.6
LSD	7.5	3.1	5.3	0.3	0.1	0.2	0.1	0.0	0.1
Magic mushrooms	10.7	4.1	7.4	0.6	0.2	0.4	0.1	0.0	0.1
Opioid drugs	1.2	0.5	0.9	0.2	0.1	0.2	0.2	0.0	0.1

Source: Home Office (2010) *Drug misuse declared: findings from the 2009/10 British Crime Survey. England and Wales*. London: Home Office.

Percentage of 16 to 64 year olds reporting lifetime, last year and last month use of individual drugs in Scotland, 2008/2009, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	37.2	25.6	31.3	13.4	5.5	9.4	8.0	3.0	5.5
Amphetamines	12.2	6.6	9.3	1.8	0.7	1.3	0.6	0.3	0.4
Cannabis	34.3	22.6	28.4	11.2	4.3	7.7	6.5	2.2	4.4
Cocaine	11.8	5.1	8.4	5.5	1.5	3.5	2.6	0.6	1.6
Ecstasy	12.1	6.0	9.0	3.6	1.0	2.3	1.5	0.4	0.9
LSD	9.2	3.0	6.1	0.8	0.1	0.5	0.3	0.0	0.2
Magic mushrooms	10.4	3.4	6.8	0.7	0.1	0.4	0.4	0.0	0.2
Opioid drugs	1.7	0.9	1.3	0.6	0.2	0.4	0.4	0.2	0.3

Source: The Scottish Government (2010) *2008-09 Scottish Crime and Justice Survey: drug use*. Edinburgh: The Scottish Government.

Percentage of 16 to 64 year olds reporting lifetime, last year and last month use of individual drugs in Northern Ireland, 2008/2009, by sex

	Lifetime use			Last year use			Last month use		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Any drug	32.0	21.3	26.3	8.3	4.5	6.2	4.9	2.5	3.6
Amphetamines	8.8	5.6	7.1	0.4	0.7	0.5	0.1	0.1.	0.1
Cannabis	23.7	15.6	19.4	6.5	2.9	4.6	3.9	1.4	2.6
Cocaine	5.9	3.2	4.5	1.4	0.6	1.0	0.7	0.4	0.5
Ecstasy	9.1	5.9	7.4	1.0	1.0	1.0	0.6	0.4	0.5
LSD	5.5	3.0	4.2	0.4	0.4	0.4	0.2	0.1	0.2
Magic mushrooms	7.0	2.8	4.8	0.2	0.1	0.2	0.1	0.1	0.1
Opioid drugs	1.1	0.9	1.0	0.2	0.0	0.1	0.2	0.0	0.1

Source: Department of Justice (2010) *Experience of drug misuse: findings from the 2008/09 Northern Ireland Crime Survey*. Belfast: Department of Justice.

Appendix 5: Overview of drug adulterants

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Illicit drugs	Sucrose Lactose Dextrose Mannitol	Sugars	To dilute/add bulk Legally and readily available	Inactive adulterants	Minimal risk of adverse health effects. Can cause nasal irritation
	Lead	Soft, malleable metal	*Heroin* Potentially a by-product of the use of lead pots in illicit drug manufacture *Methamphetamine* Sometimes used in methamphetamine manufacture. Poor manufacturing can result in lead residue in drug product	In low dosages lead poisoning can have mild effects. Injecting of illicit drugs adulterated with lead causes severe adverse health effects	• Abdominal pain and cramping • Headaches • Anaemia • Dizziness • Nausea/vomiting • Muscle weakness • Seizures • Coma • Renal injury • CNS damage

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Caffeine	Psychoactive stimulant drug	Caffeine is legal, cheap and more readily available than illicit drugs *Heroin* Vaporizes heroin at lower temperature when smoked – slightly increases efficiency *Cocaine/ amphetamine/ methamphetamine/ ecstasy* Stimulant properties of caffeine can create similar, although usually milder, effects to the primary drug	In small doses there are few serious health repercussions Moderate to large doses can cause considerable harms	• Mood disturbances • Induces anxiety • Addictive • Sleep disturbance • Increases risk of a range of health problems

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Procaine	Local anaesthetic	*Heroin* Facilitates smoking of heroin and may relieve the pain of intravenous injection due to anaesthetic properties *Cocaine* Similar anaesthetic and subjective effects as cocaine	Risk of toxicity at high doses	• CNS problems • Nausea • Vomiting • Dizziness • Tremors • Convulsions • Anxiety

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Paracetamol/ acetaminophen	Over-the-counter pain-relief medication	Easily available, relatively cheap *Heroin* Analgesic effects and bitter taste of paracetamol may disguise poor-quality heroin May be used because it has similar melting point to heroin	Low dosages should have minimal impact Risk of toxicity at high doses	• Liver damage • Gastrointestinal effects • Adverse effects when mixed with alcohol

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Strychnine	Pesticide	A fine motor stimulant. Low doses act as a muscle stimulant *Heroin* Enhances retention of heroin when volatised. Has only been found at non-life threatening quantities *Cocaine* Reason for inclusion unknown. May have been unintentional	While it has only been reported in non-life threatening quantities, small increases could potentially be fatal	• Muscle spasm • Opisthotonos (holding of body in awkward rigid position)

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Heroin	Phenobarbital	Barbiturate	Psychoactive drug that facilitates smoking of heroin	Risk of overdose in intravenous drug users who are hypersensitive	• Overdose • Death
	Quinine	Antimalarial medication	Bitter taste similar to heroin and may be used as a diluent Also mimics the respiratory 'rush' felt by injecting heroin users shortly after administration	Can cause overdose and a host of other adverse health reactions	• Acute renal failure • Cinchonism • Gastric disturbances • Thrombosis and hypotension (intravenous use) • CNS overstimulation • Visual disturbances (blindness) • Death

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Clenbuterol	Asthma decongestant and bronchodilator drug	Reason for inclusion unknown but may have been unintentional contamination	Can cause overdose and poisoning at moderate to high dosages Low doses typically cause adverse cardiovascular effects	• Cardiovascular effects • Neuromuscular syndrome • Mydriasis (excessive pupil dilation) • Agitation
	Scopolamine	Anticholinergic alkaloid	Colourless, odourless and tasteless and therefore not easily detectable	Low doses cause sleepiness and drowsiness High doses can cause euphoria	• Anticholinergic toxicity • CNS depressant

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Diazepam	A benzodiazepine derivative drug used to treat anxiety disorders, muscle spasms, and alcohol withdrawal	To enhance the euphoric effects of heroin by increasing its depressant effects on the CNS	Can cause overdose – increased risk of coma, respiratory depression and death associated with use in combination with CNS depressants Risk of injury arising from sedative properties	• Low rates of mortality but implicated in a significant proportion of opioid overdose • Mood disturbances • Dependence syndrome and withdrawal symptoms (eg convulsions, dysphoria, anxiety, tremors, nausea and vomiting)

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Cocaine	Lidocaine	Local anaesthetic	Similar, but stronger, anaesthetic effects than cocaine and gives the impression of higher-quality cocaine	Adverse cardiovascular and CNS reactions can occur at low doses Overdose can occur at excessive doses; it increases the toxicity of cocaine	• CNS problems • Nausea • Vomiting • Dizziness • Tremors • Convulsions
	Hydroxyzine	Sedative, anxiolytic, used as an antihistamine	Unknown, but potentially used in the final processing stages of cocaine manufacture	Use in combination with sedative drugs can cause unconsciousness Rare cases of overdose resulting in CNS problems	• Dizziness • Drowsiness • Gastrointestinal effects • Tinnitus • Headaches

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Phenacetin	Analgesic substance	Pain-relieving properties and similar physical properties to cocaine	Phenacetin is banned in many countries due to links with renal failure and suspected carcinogenicity	• Analgesic nephropathy • Haemolytic anaemia • Methaemoglobin-aemia • Kidney cancer • Bladder cancer
	Levamisole	An anthelmintic medication (used for expelling parasitic worms)	Unknown; however, it is theorised that it gives a more intense 'high'	Generally no longer used with humans, but still available as a veterinary medicine Highly toxic	• Fever • Agranulocytosis

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Methamphetamine	Methylsulfonyl-methane (MSM)	Naturally occurring in some foods and also marketed as a dietary supplement	MSM is readily available and is physically similar to methamphetamine (odourless, white, crystalline powder) Methamphetamine adulterated with MSM creates the impression of high-purity methamphetamine	None identified	None identified

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
Ecstasy	Dextromethorphan	Antitussive drug (cough suppressant)	A high dose can cause an individual to feel 'high' in a similar way to ecstasy Dextromethorphan is legal and therefore cheaper and easier to obtain than MDMA	High doses can cause adverse health effects	• Lethargy • Tachycardia • Ataxia • Nystagmus • Heatstroke
	Amphetamine/ methamphetamine	Illicit stimulant drugs	Amphetamines have similar properties to the stimulant effects of ecstasy, although these adulterants are not entactogens Amphetamine substances are often sold as, or in combination with, MDMA	Moderate doses can cause a range of adverse health effects and high doses can cause overdose and death	• Mood disturbance • Induce anxiety • Addictive • Sleep disturbance • Increases risk of a range of health problems

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Paramethoxymetham phetamine (PMMA) and paramethoxyam-phetamine (PMA)	Illegal psychoactive chemical	Purposefully added to ecstasy due to stimulant properties	Relatively unknown, but high dosages have caused death	
Cannabis	Lead	Soft, malleable metal	To increase weight	Lead poisoning	• Abdominal cramps • Anaemia • Nausea • Fatigue • Polyneuropathy • Toxic effects • Seizures • Coma • Death
	Aluminium	Soft, malleable metal	Unknown, but aluminium contamination may have resulted from impure water supply	Contribute to smoking-related diseases	Smoking-related adverse health effects

Drug	Adulterant(s)	Licit use	Potential reason for presence as adulterant	Public health risks	Health consequences
	Glass		Unknown, but potentially to improve apparent quality and increase weight	Inhalation of hot glass fumes	• Sore mouth • Mouth ulcers • Chesty persistent cough • Tight chest

Source: Cole C, Jones L, McVeigh J et al (2010) *CUT: a guide to adulterants, bulking agents and other contaminants found in illicit drugs*. Liverpool: Centre for Public Health, Liverpool John Moores University; and Jones L, Bates G, Bellis M et al (2011) *A summary of the health harms of drugs*. London: Department of Health.

Appendix 6: UK government strategies for reducing illicit drug use

England

In England, the 2010 Home Office drug strategy, *Reducing demand, restricting supply, building recovery: supporting people to live a drug-free life*,[a] sets out two overarching aims: to reduce illicit and other harmful drug use, and increase the numbers recovering from their dependence. This includes action in the following three areas:

1. **reducing demand***:* creating an environment to discourage people from starting to take drugs and making it easier for those that do to stop, through measures that will:
   - break intergenerational paths to dependency by supporting vulnerable families
   - provide good-quality education and advice so that young people and their parents are provided with credible information to actively resist substance use
   - use the creation of Public Health England (PHE) to encourage individuals to take responsibility for their own health
   - intervene early with young people and young adults
   - consistently enforce effective criminal sanctions to deter drug use
   - support people to recover

2. **restricting supply**: making the UK an unattractive destination for drug traffickers, through a coordinated response across Government and law enforcement to make the country a more challenging environment for organised crime. This includes the cross-Government organised crime strategy, *Local to global: reducing the risk from organised crime*, published in July 2011[b]

3. **building recovery in communities**: the Government will work with people who want to take the necessary steps to tackle their dependency by creating a recovery system that focuses not only on getting people into treatment and meeting process-driven targets, but getting them into full recovery and off drugs for good.[a]

a Her Majesty's Government (2010) *Drug strategy 2010: reducing demand, restricting supply, building recovery: supporting people to live a drug free life*. London: Her Majesty's Government.

b Her Majesty's Government (2011) *Local to global: reducing the risk from organised crime*. London: Her Majesty's Government.

Wales

The Welsh Assembly Government's substance misuse strategy for 2008-2018, *Working together to reduce harm*,[c] sets out action in the following areas:

1. **preventing harm**: through the provision of information about the damage that substance use can cause to health, families and the wider community, and where to seek help and support. This includes raising awareness among parents and carers, and targeting young people

2. **support for substance users to improve their health and aid and maintain recovery**: the provision of support for substance users, through improved access to basic harm minimisation, outreach, treatment and social services

3. **supporting and protecting families**: engaging substance-using parents in effective treatment programmes, developing a multiagency approach to identifying and supporting vulnerable families, and supporting greater use of family intervention projects and the role of carers

4. **tackling availability and protecting individuals and communities via enforcement activity**: focusing on tackling the supply of drugs to children and young people, through improved local intelligence gathering in communities and stronger links between drug enforcement activities at a local and regional level.[c]

c Welsh Assembly Government (2008) *Working together to reduce harm. The substance misuse strategy for Wales 2008-2018*. Cardiff: Welsh Assembly Government.

Scotland

The 2008 Scottish Government strategy, *The road to recovery: a new approach to tackling Scotland's drug problem*,[d] set out the following priorities:

1. better prevention of drug problems, with improved life chances for children and young people, especially those at particular risk of developing a drug problem

2. to see more people recover from problem drug use so that they can live longer, healthier lives, realising their potential and making a positive contribution to society and the economy

3. having communities that are safer and stronger places to live and work because crime, disorder and danger related to drug use have been reduced

4. ensuring that children affected by a parental drug problem are safer and more able to achieve their potential

5. supporting families affected by drug use

6. improving the effectiveness of delivery at a national and local level.

d Scottish Government (2008) *The road to recovery: a new approach to tackling Scotland's drug problem*. Edinburgh: Scottish Government.

Northern Ireland

In 2006, the Department of Health, Social Services and Public Safety published the *New strategic direction for drugs and alcohol 2006-2011*,[e] which set out the following overarching long-term aims to:

1. provide accessible and effective treatment and support for people who are consuming alcohol and/or using drugs in a potentially hazardous, harmful or dependent way

2. reduce the level, breadth and depth of alcohol- and drug-related harm to users, their families and/or their carers and the wider community

3. increase awareness on all aspects of alcohol- and drug-related harm in all settings and for all age groups

4. integrate those policies that contribute to the reduction of alcohol- and drug-related harm into all Government department strategies

5. develop a competent skilled workforce across all sectors that can respond to the complexities of alcohol and drug use and misuse

6. promote opportunities for those under the age of 18 years to develop appropriate skills, attitudes and behaviours to enable them to resist societal pressures to drink alcohol and/or use illicit drugs, with a particular emphasis on those identified as potentially vulnerable

7. reduce the availability of illicit drugs in Northern Ireland.

e Department of Health, Social Services and Public Safety (2006) *New strategic direction for drugs and alcohol 2006-2011*. Belfast: Department of Health, Social Services and Public Safety.

Appendix 7: Societal measures to restrict drug influences

A range of measures exist for ensuring inappropriate popular media, including those that make reference to drug use, are less accessible by young people. The efficacy of these measures is currently unknown.

Film

The British Board of Film Classification (BBFC) is responsible for classifying film works in relation to their content, with a particular emphasis on protecting children from harm. In relation to drugs, the 2009 BBFC guidance sets out that no film taken as a whole may promote the use of illicit drug use, and any detailed portrayal of drug use likely to promote or glamorise the drug use may be cut.[a] Any film that shows drug use while emphasising the dangers may receive less restrictive classifications, in comparison to films presenting drug use in a more neutral manner (see table on page 276).[a]

a British Board of Film Classification (2009) *The guidelines.* London: British Board of Film Classification.

Film/video game classification	Description	Guidance in classifying film/video game
U: Universal	Suitable for all	No reference to illegal drugs or drug use unless they are infrequent and innocuous, or there is a clear educational purpose or antidrug message suitable for young children
PG: Parental guidance	General viewing, but some scenes may be unsuitable for young children	Reference to illegal drugs or drug use must be innocuous or carry a suitable antidrug message
12A/12	Suitable for 12 years and over. The 12A category only exists for cinema films, where children under 12 must be accompanied by an adult to enter. Films classified as 12A are not recommended for children under 12	Any use of drugs must be infrequent and should not be glamorised or give instructional detail
15	Suitable only for 15 years and over	Drugs may be shown but the film as a whole must not promote or encourage drug use. The misuse of easily accessible and highly dangerous substances (for example, aerosols and solvents) is unlikely to be acceptable
18	Suitable only for adults	No specific guidance on drugs
R18	To be shown only in specially licensed cinemas, or supplied only in licensed sex shops, and to adults of not less than 18 years	No specific guidance on drugs

Source: British Board of Film Classification (2009) *The guidelines.* London: British Board of Film Classification.

In addition to adhering to film classifications, policy makers may also wish to consider requiring all films portraying drug use to be preceded by a warning message advising on drug-related harms. This is because evidence suggests that warning messages displayed ahead of films portraying pro-smoking imagery may mitigate some of the effects these images have in terms of encouraging uptake of smoking.[b] It is not unreasonable to assume similar beneficial effects may be seen with the portrayal of drug use.

Given that evidence suggests film images can influence drug behaviour, film producers should consider the impact that depicting drug use may have on individuals.[c-e] Any such inclusions should only be used when editorially justified. To aid in this process, policy makers may wish to consider informing those involved in the production of film of the potential damage done by the depiction of drug use in film.

Television

Governance of television is relatively strong. On television, the watershed operates to protect young people from materials that may be unsuitable for them, which may include drug use. The watershed begins at 9pm on standard television and runs until 5.30am. The most recent guidance from Ofcom on the UK television watershed, states that material unsuitable for children should not be shown before or after this time period.[f] As well as these restrictions, Ofcom encourages programme makers to consider the potential harm that displaying the use of illegal drugs to younger viewers may have, and that any inclusion of drug use pre-watershed, or at times when children are particularly likely to be viewing, must be editorially justified.[f]

Music

Similar to classification ratings used by the BBFC in film, the Recording Industry Association of America uses parental advisory warning messages to inform consumers that a recording contains explicit material that is not suitable for children. Many retailers in America limit the sale of such albums to adults only. While similar warnings are commonly used in the retail of UK music, sale restrictions do not apply. Policy makers

b Edwards CA, Harris WC, Cook DR et al (2004) Out of the smokescreen: does an anti-smoking advertisement affect young women's perception of smoking in movies and their intention to smoke? *Tobacco Control* **13**: 277-82.

c Hunt K, Sweeting H, Sargent J et al (2011) Is there an association between seeing incidents of alcohol or drug use in films and young Scottish adults' own alcohol or drug use? A cross sectional study. *BMC Public Health* **11**: 259.

d Stern SR (2005) Messages from teens on the big screen: smoking, drinking, and drug use in teen-centered films. *Journal of Health Communication* **10**: 331-46.

e Gunasekera H, Chapman S & Campbell S (2005) Sex and drugs in popular movies: an analysis of the top 200 films. *Journal of the Royal Society of Medicine* **98**: 464-70

f Ofcom (2009) *Guidance notes section one: protecting the under 18s.* London: Ofcom.

may wish to consider the classification of music, in restricting the influence of drug-promoting references to young people. Given that a large proportion of music sales now take place online, where assessments of age is not easily verifiable, policy makers should also consider the difficulties in enforcing controls in this market. Taking action to inform major artists and musicians of the potential harm of depicting drug use in music should also be considered by policy makers.

Celebrity

Available evidence suggests celebrities can have both a role in reducing drug use, and also a conflicting role in increasing drug use.[g] Informing and educating celebrities, as well as encouraging them to act as spokespeople for drug-related harm, may be an interesting area for policy makers to consider.

Video games

The BBFC is also responsible for classifying video games in relation to their content. As with film, any video game glamorising drug use is likely to receive a more restrictive classification, in comparison to a game emphasing the danger, or presenting drug use in a more neutral manner.[h]

The efficacy of video game classifications may not go far enough. Research has demonstrated that parents are less likely to supervise video games, compared to other forms of media, suggesting there is potential for young people to ignore classifications.[i] It may be necessary to supplant video games that have drug references with advisory messages informing about the harms of drug use.

Internet

Content-control software is a form of software designed for controlling what content is permitted to a user on the internet. The restrictions on which web pages can be accessed can be applied at various levels. While research has not investigated the impact of these forms of software on reducing illicit drug use, they may represent useful tools in restricting exposure of drug influences to young people. Further research in this area is needed.

g Brown WJ & de Matviuk MAC (2010) Sports celebrities and public health: Diego Maradona's influence on drug use prevention. *Journal of Health Communication* **15**: 358-73.

h British Board of Film Classification (2009) *The guidelines*. London: British Board of Film Classification.

i Haninger K & Thompson KM (2004) Content and ratings of teen-rated video games. *The Journal of the American Medical Association* **291**: 856-65.

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Chapter 11

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