Advisory Council on the Misuse of Drugs

METHYLAMPHETAMINE REVIEW

2005

Executive Summary

1. Introduction

1.1 Methylamphetamine (commonly referred to as methamphetamine) is a member of a broad class of psycho-stimulant compounds called amphetamines. Amphetamines act on the central and peripheral nervous system. In this document, 'amphetamine' is abbreviated as 'AMP' and methylamphetamine is abbreviated as 'MA'.

1.2 MA is produced as a medicinal product and is illicit manufactured. Non-medical MA is produced in tablet, powder, or crystalline form. These products are consumed orally, by smoking/inhalation or can be prepared for injection. A crystalline form of MA (commonly referred by its street name 'ice') is most commonly smoked in a similar manner to crack cocaine, and is typically of very high potency. MA is lipid soluble and readily crosses the blood-brain barrier. Once in the brain, MA increases activity in the dopamine and noradrenaline, neurotransmitter systems.

1.3 MA increases arousal and motor activity, diminishes fatigue and sleep and suppresses appetite. It causes dose-dependent effects in the cardio-respiratory system producing vasoconstriction, hypertension and tachycardia. The central activity effects of MA appear to be more pronounced than AMP but its peripheral effects appear to be less prominent. *In vivo*, MA has nearly twice the potency of AMP. The rapid, euphoric 'rush' that smoked MA produces is highly reinforcing and the active effects have a long half-life. MA exerts less peripheral nervous system effects than AMP and this may be why some MA users go on a protracted binge or 'run'. Given its molecular structure, MA is likely to act on the brain more quickly than AMP thereby producing a quicker and greater 'rush' to the user but there is presently insufficient evidence to confirm this.

1.4 Globally, MA is the most commonly produced illicit synthetic drug and it is associated with a range of legal, health, social and environmental harms. Use of MA is long-standing or has recently emerged in the following countries: Australia, China, Czech Republic, Japan, Philippines, Sweden, Thailand and USA. MA is currently rarely seen in the UK, although illicit use of MA has been seen in the past and there is long-standing misuse of illicit amphetamine sulphate powder.

2. Background

2.1 In 2004 the Advisory Council on the Misuse of Drugs (the "Council") set out to review the scientific evidence documenting the harmful effects of MA and the nature of the threat posed to the UK. Although there is little evidence that MA is widely available in this country, the Council considered it prudent to assess the drug at this time. The Council's Technical Committee was tasked to conduct the review and to offer recommendations concerning enhanced legal controls and other measures.

2.2 The Council was established under the Misuse of Drugs Act 1971 to keep under review the drug situation in the United Kingdom and to advise government ministers on the measures to be taken for preventing the misuse of drugs or for dealing with the social problems connected with their misuse. In particular, the Council is required to advise on the appropriate classification of substances being specified under Part I, Part II, and Part III of Schedule 2 of the Misuse of Drugs Act 1971.

2.3 The classification of drugs, in Schedule 2 of the 1971 Misuse of Drugs Act, is based on the harm they may cause:-

Class A (the most harmful) includes morphine and `diamorphine (heroin).

Class B (an intermediate category) includes amphetamines, and barbiturates.

Class C (the least harmful) includes cannabis, anabolic steroids, benzodiazepines and growth hormones.

2.4 When advising on the harmfulness of drugs, the Council takes account of the physical harm that they may cause, their pleasurable effects, any associated withdrawal reactions after chronic use, and the harm that misuse may bring to families and society at large.

2.5 The 2002 Misuse of Drugs Regulations defines the categories of people authorised to supply and possess drugs controlled under the Act. In these Regulations, drugs are categorised under 5 schedules:-

Schedule 1 includes drugs such as cannabis that are not, conventionally, used for medical purposes. Possession and supply are prohibited without specific Home Office approval.

Schedule 2 includes morphine and diamorphine, amphetamine and methylamphetamine which are subject to special requirements relating to their prescription, safe custody, and the need to maintain registers.

Schedule 3 includes the barbiturates and are subject to special prescription, though not safe custody requirements.

Schedule 4 includes the benzodiazepines and are neither subject to special prescription nor safe custody requirements.

Schedule 5 includes preparations that, because of their strength, are exempt from most of the controlled drug requirements.

2.6 AMP is listed in Schedule 2 of the Medicines Act 1968. Both AMP and MA are listed in Schedule 2, Part II, of the Misuse of Drugs Act 1971 as controlled drugs and are classified as Class B Drugs. As with other drugs, any AMP preparation listed in Schedule 2 of the Act which is designed for administration by injection is classified as Class A.

3. Brief early history

3.1 MA was first synthesized in 1919 by a Japanese chemist seeking a substitute for ephedrine. During the Second World War, medical supplies of AMP and MA was widely distributed to American, British and Japanese service personnel and workers in key industries to aid vigilance and diminish battle fatigue. Following the war, the misuse of pharmaceutical MA became common, notably in Japan and the USA.

3.2 AMPs were prescribed for depression and other mood disorders in the UK in the 1920s. From the mid 1940s there was liberal prescribing of drinamyl (a combination of amphetamine and barbiturate) and dexedrine as well as some over the counter sales of AMP-based preparations. In the early 1960s, diverted pharmaceutical AMP reached epidemic proportions. In 1964 and 1967 there were a series of amendments to the drug legislation which criminalized the possession, supply and importation of AMP.

3.3 In 1968 there was an epidemic of intravenous MA (mainly the pharmaceutical product Methedrine) and AMP use in London. Cases of AMP-induced brief psychotic disorder of a form very similar to schizophrenia were recorded by specialist medical and social agencies (see 5.2.4). At this time there were a small number of doctors in private practise prescribing MA ampoules as a substitute to cocaine addicts. In late 1968 there was a voluntary agreement on the part of the manufacturers with the Ministry of Health and British Medical Council to ban the sale of MA products from retail pharmacists.

4. Epidemiology

4.1 The UK is not a major centre for the production of synthetic stimulant drugs. At present, the majority of illicitly manufactured AMP sulphate is imported from Belgium and the Netherlands. The illicit use of AMP (almost exclusively in the form of AMP sulphate) is a longstanding element in the UK drugs scene. A major distinguishing feature of MA relative to AMP sulphate is that MA can be smoked (particularly in the crystalline form). AMP sulphate denatures before vaporization on heating and is rarely used in this manner.

4.2 Aside from minor and occasional seizures by customs and the police there is little current evidence that MA is manufactured or imported into the UK to any appreciable extent. However, there are informal anecdotal reports from the London area of MA being used by certain groups, including drug users within the

gay community, those attending dance music clubs and events and, to a lesser extent, some members of immigrant communities from South East Asia.

4.3 The British Crime Survey (BCS) is the most comprehensive estimate of illicit drug taking in the general population of England and Wales. Unfortunately, the BCS does not differentiate between AMP and MA. In the 2000 survey, a lifetime prevalence of 13% for AMP was reported for 16-19 year olds and 28% for 20-24 year olds. In the 2002/2003 survey, 3.7% of 16-24 year olds had used amphetamines in the last year, and 1.7% in the previous month.

4.4 High levels of stimulant and other drug use is reported by young people who attend clubs and dance events. For example, a study of drug use by 492 clubbers in 1997 found mean prevalence levels for lifetime AMP use among 15-19 year olds and 20-24 year olds of 83% and 86%, respectively.

4.5 In some South East Asian countries which have experienced an epidemic of MA in recent years, several high-risk occupational groups have been identified where the drug is taken functionally to support working over long hours. These groups include commercial long-distance and taxi drivers, agricultural workers, sex workers and employees of bars, restaurants and clubs.

5. Health risk

5.1 Acute health risks

5.1.1 Acute intoxication of MA can cause serious cardiovascular and neuropsychiatric toxicity. Racing heartbeat (tachycardia) and hypertension are common acute effects, but behavioural disturbances and psychiatric problems may also be caused including agitation, paranoia, confusion and violence. In addition to stroke, other pulmonary, renal and gastrointestinal disorders may also be present in patients presenting for emergency hospital treatment. The severity of overdose symptoms is dose-related but is also to be related to the patient's overall level of tolerance.

5.2 Chronic health risks

5.2.1 Chronic and acute administration of MA to experimental animals causes harmful neurochemical and neuroanatomical changes. This neurotoxicity appears to vary in severity and duration according to the species under investigation and the nature of the dosing regime employed. These changes are usually reversed following abstinence.

5.2.2 Chronic regular MA users are at risk of dependence. MA dependence is reflected by increased tolerance to the drug problems in controlling usage, and both physical and psychiatric withdrawal symptoms. Ingesting MA via intravenous injection, or by smoking crystal MA sharply increases the risk of dependence probably because of greater reinforcement.

5.2.3 Human brain imaging studies of chronic MA users have detected damage to the frontostriatal region. Neurocognitive studies have shown that relative to normal controls, MA users perform poorly on tests of verbal reasoning and working memory and also on tests requiring psychomotor function. Clinical studies suggest that chronic MA users have attention, decision making and memory deficits that persist long after cessation of drug use, but in most cases normal functioning returns after prolonged abstinence.

5.2.4 Since the late 1930s there have been reports that chronic high doses of AMP can induce a psychotic state characterised by disrupted behaviour and visual, auditory and paranoid hallucinations. On admission to hospital, these symptoms are diagnostically identical to positive symptoms of paranoid schizophrenia. AMP detoxification with psychosis is usually treated using conventional or atypical anti-psychotic medication. Most patients recover quickly from this psychotic state, but some experience long lasting residual symptoms such as emotional blunting and volitional disturbances.

5.2.5 Some chronic AMP users may have an enduring vulnerability to further paranoid hallucinatory states which are quickly triggered after further use of AMP. Japanese clinicians also suggest that there may be a spontaneous recurrence of psychosis in reaction to 'stressful circumstances' among patients with a history of AMP psychosis but who do not resume AMP use following hospitalisation.

5.2.6 In recent years a number of countries in South East Asia experienced an epidemic of MA use and high incidence of MA-induced psychosis. In Thailand, until the government crack down on MA use in 2002, there was dramatic rise in the number of admissions to regional psychiatric hospitals.

6. The health of society

6.1 In terms of public health, AMP is a risk factor for infection from HIV, Hepatitis C and Hepatitis B due to users sharing injecting equipment or other paraphernalia. MA use may also increase libido and risky sexual behaviour thereby increasing the risk of blood born virus transmission.

6.2 In terms of public safety, AMP is a risk factor for aggression and violence with several studies reporting users engaging in violent offending whilst experiencing the effects of the drug. There is also a link between chronic AMP use and acquisitive crime.

6.3 Individuals who manufacture MA can be harmed from exposure to flammable and hazardous chemicals and production methods. Clandestine MA manufacture may be performed in poorly ventilated locations, such as hotel rooms and domestic properties where a build up of toxic fumes can occur and there is a likelihood of explosion.

6.4 Clandestine laboratories are a danger to those who live nearby and to law enforcement and other service personnel such as fire officers who enter this environment. The operators of illicit laboratories may leave toxic waste behind or dump such material causing environmental problems.

7. Treatment

Substitution pharmacotherapy

7.1. Several clinics in England and Wales prescribe dexamphetamine sulphate to chronic AMP users as a substitution pharmacotherapy. This practice, mainly but not exclusively targeting injectors, has been justified by clinicians on a harm reduction basis, but remains controversial. A recent small-scale, two-centre trial of dexamphetamine maintenance commissioned by the English Department of Health did not provide evidence for better outcomes over standard counselling. Current Department guidelines dictate that this practice must be carried out and closely monitored by experienced practitioners as part of a comprehensive package.

Relapse-prevention

7.2 In California, an intensive outpatient therapeutic programme for MA dependence has been developed called the 'matrix model'. There have been three published outcome evaluations of this treatment with generally positive results.

7.3 In the UK, the National Treatment Outcome Research Study with 1075 drug dependent patients recruited at entry to English community and residential services, reported on a small subgroup of cases whose main drug was psychostimulant AMP or cocaine. Among a group of 60 clients who cited AMP as their main drug and were followed one year after entering treatment there were improvements in stimulant use and other problem behaviours.

7.4 There is currently no research supported relapse prevention pharmacotherapy for AMP dependence. A small set of trials have examined whether antidepressant medication can reduce the likelihood of MA relapse. The results have been generally negative, although there is some evidence that fluoxetine can reduce craving for MA during treatment and imipramine is associated with increased treatment retention.

8. Discussion

8.1 MA is powerful stimulant causing increased arousal, motor activity, diminished fatigue and suppressed appetite. These effects are highly reinforcing to many users and consequently the drug has a high misuse, dependence and relapse liability.

8.2 MA has a long-half life and it appears to cause less peripheral nervous system effects than AMP increasing the risk that users will consume relatively greater quantities in the course of a binge or 'run'.

8.3 The feature that most distinguishes MA from AMP is that it can be smoked. Smoking MA, particularly the crystalline form, produces an intense 'rush' similar to that produced by crack cocaine but longer lasting. The greater potency of the crystal form of MA and the intense subjective effects when smoked make it a potentially greater threat than other forms of MA.

8.4 As with other stimulant drugs such as cocaine, acute administration of MA can cause cardiovascular and psychiatric problems. Chronic users are likely to experience substantial mood and anxiety disturbance and MA may induce a psychotic episode characterized by disturbed behaviour and acute paranoid-type delusions.

8.5 In countries which have an established problem with MA, the drug is identified as causing significant harms to the user, the family and community. Use of flammable chemicals and production processes pose an immediate danger to those involved in MA manufacture; also hazardous materials and waste products represent a significant health threat to law enforcement and safety personnel and to the environment.

8.6 Aside from minor and occasional seizures by customs and the police there is little evidence that MA is manufactured or imported into the UK to any appreciable extent. However, there are informal anecdotal reports from the London area of MA being used by certain groups, including drug takers within the gay community, those attending dance music night-clubs and, to a lesser extent, drug users within immigrant communities from South East Asia. These groups appear at risk of MA and where a market for the drug may be first established. It seems reasonable to presume that if MA became more widely available it would take its place in the illicit drugs scene alongside users of AMP and possibly some users of cocaine, particularly crack cocaine.

8.7 There is substantial experience of treating MA dependence in the USA. Published outcome evaluations suggest that MA dependence can be treated with reasonable success using specialized intensive counseling. There is experience in the UK and Australia of dexamphetamine substitution pharmacotherapy. This treatment may be viable for a small segment of the chronic, dependent AMP using population, but the characteristics of users who are suitable remain unclear. If MA use were to increase in the UK, it is likely that specialist services would need special training and resources to treat MA patients and particularly those with psychiatric complications.

8.8 The UK authorities maintain a high level of control over access to chemical precursors required for MA manufacture and distribution and importation surveillance and seizure activities are in place.

9. Conclusions & Recommendations

9.1 MA is a potent derivative of AMP with a substantial health risk and dependence liability. There is substantial evidence that MA is neurotoxic and is capable of inducing a brief psychotic state requiring hospitalisation. There are reasonable grounds and some evidence to argue that MA has a higher dependence liability and harm profile than other forms of AMP including AMP sulphate. Nevertheless, there does not appear to be evidence in the UK that MA is present in the drugs scene to any appreciable extent, although this may change. There does not, therefore, appear to be a firm foundation and rationale for reclassifying MA under the Misuse of Drugs Act 1971, at least at the present time. The authors of this review note that it is also possible that reclassification could have the unintended consequence of engendering interest in the drug amongst potential users.

9.2 However, although the current prevalence of MA is relatively low in the UK, The Council appreciates that this may change and that it is essential to have strategies in place to detect any shifts in the pattern of prevalence of use. In order to assist with this the Council recommends:

9.3 Closer monitoring of **certain sub groups** within the UK who are more likely to use MA, for example, the Gay community and clubbers. General population surveys would not pick up the drug taking behaviour of such groups. In order to achieve this outcome we recommend;

i) Encouraging the commissioning of specific research studies / surveys for identified sub groups likely to use the drug.

ii) Encouraging additional questions on MA to be considered for inclusion in existing or future surveys / research that is being carried out on the identified sub groups or stimulants. As part of this the ACMD recommends -

a) The profile of MA is raised at the National Treatment Association Research Steering Group so that it is considered for inclusion in any future stimulant-related research.

b) The Home Office to consider funding the Amnesty Bins Project.

c) FRANK and its devolved equivalents to extend their options for MA to include MA in its powder form and crystal from as well as ‘yaba’.

9.4 **Treatment Data**: The ACMD recommends that MA is differentiated from AMP and recorded by Drug Treatment Monitoring Systems.

9.5 **Arrestee Survey** (also referred to as the ADAM and NEW-ADAM Survey): This survey is designed to measure the drug use and self reported offending among a nationally representative sample of individuals at the first point of entry in the criminal justice system. The Arrestee Survey has an achieved sample size of about 9,000 arrestees a year. This is a very high drug-using population so it is more likely to pick up new drugs of use than a household survey. The ACMD recommends that thought is given to developing questions to be put forward for consideration in the Arrestee Survey for identifying MA use.

9.6 HMRCS (Her Majesty's Revenue & Customs Service) seizures of MA are very low. If the prevalence of MA was to increase this should in turn be reflected in HMRCS seizures. The ACMD recommends HMRCS forward all potential seizures of AMP that otherwise would not be analysed to the Forensic Science Service for further analysis. This should be done for an initial six months period and extended if required.

9.7 The ACMD recommends that attention is given to monitoring the heroin supply route from South East Asia to Europe. If this supply route became popular there would be the danger that MA would be brought into Europe along with heroin.

Precursors

9.8 Whilst not a firm ACMD recommendation, the Council feel it appropriate that policy makers are aware of the following development. There are inhibitors to prevent the extraction of precursors to produce MA, for example, the 'Pfizer Lock Technology'. There is also a product called 'Glowtell' that can be added to liquid ammonia. This has the effect of turning MA tablets pink if this ammonia is used as a precursor. The ACMD feels it would be wise to keep these developments under review before making recommendations on how they could be used in the UK, as they are in early stages of development.

9.9 The ACMD recommends that the precursor chemicals; red phosphorus and hydroiodic acid are added to the European Precursor Legislation.

9.10 The ACMD recommends the removal of the exemption on ephedrine tablets under the European Precursor Legislation.

Health

9.11 The ACMD recommends that St. George's Medical School have provisions in place for differentiating and collecting data on MA when recording drug-related deaths.

9.12 Discuss with the Office of National Statistics on the monitoring of drug specific deaths through routine mortality data and drug related death database and potential implications of changes in coronial system, use of toxicology and verdicts on the monitoring of MA.

9.13 The ACMD recommends more investigation take place into AMP positive screenings amongst psychotic inpatient admissions to determine if any are due to MA.

Pharmacology

9.14 The ACMD recommends that closer links are forged with the National Institute of Drug Abuse (NIDA), as thy have undertaken research on MA in terms of its toxicity and addictiveness. Closer ties would ensure that not only was information shared but duplication of work was avoided. It was also felt that greater collaborative work with NIDA could take place in order to build a solid data base on amphetamines and MA.

9.15 The ACMD identified a number of specific areas regarding MA that required further research to be undertaken and wishes to bring this to the attention of research commissioners and policy makers. These were:

i) More research to be undertaken to determine why MA was different to AMP.
ii) MA seemed to have different effects to AMP on glutamate release in the brain. There was not much evidence as to why this was.
iii) Differential affects on cardiovascular symptoms to explain why users can take considerable amounts of MA in a short period without feeling any cardiovascular problem.
iv) Research should be encouraged to be undertaken on the neurotoxicity of MA as this would allow more thought to be given to effective treatment interventions.
v) Research should be encouraged to be undertaken on the differential brain entry/exit for MA compared with AMP.

Other Considerations:

9.16 The ACMD will look to forward its findings where appropriate to the DTI Foresight Project to see if they would be willing to undertake further work on the topic.

9.17 The ACMD recommends that closer links are forged with The National Drug and Alcohol Centre, Sydney, Australia. They have an extensive MA using population and are undertaking an assessment on the harms associated with MA use.

9.18 The ACMD recommends that the Home Office and the Department of Health consider adding MA to any stimulant research that they may be undertaking in the future.

9.19 The ACMD recommends that in an effort is made to improve the knowledge base on the cognitive harms of stimulant use in general. There maybe merit in undertaking research on the longer-term cognitive effects of stimulants such as cocaine and AMP sulphate. This would not only help firm up the knowledge base on stimulants the UK was currently experiencing problems with but it would also mean having the skills and expertise already in place when dealing with MA if it was to increase in prevalence in the UK.

9.20 The ACMD recommends that MA be a standing agenda item at its own Technical Committee meetings.

ACMD Methylamphetamine Working Group Members

- **Professor David Nutt**, Chair, ACMD Member
- **Dr. John Marsden**, ACMD Member
- **Dr. Richard Pates**, ACMD Member
- **Kay Roberts**, ACMD Member

Co-opted Members:

- **Dr. Mike Farrell**, Institute of Psychiatry
- **Dr. Leslie Iversen**, University of Oxford
- **Dr. Les King**, Adviser to the Home Office
- **Professor Geoff Phillips**, Adviser to the Home Office
- **Garry Stillwell**, Institute of Psychiatry

Officials:

- **Tony Burgess / Lisa Strittmatter**, National Crime Intelligence Service
- **Mary Lawrence**, Office of Science and Technology
- **Joe Onofrio**, HM Customs & Excise
- **Dr. Mark Prunty**, Department of Health
- **Jeremy Sare**, Drugs Strategy Directorate, Home Office
- **Dr. Mike White**, The Forensic Science Service

Guest Speakers

The following experts were invited to present their opinions on methylamphetamine to the ACMD Methylamphetamine Working Group.

Professor Charles Marsden

Professor Charles Marsden is a Professor of Neuropharmacology at the University of Nottingham.

Date Attended:	16 June 2004
Presentation :	'Pharmacology of Methylamphetamine' – Professor Marsden's presentation focused on the effects of methylamphetamine, particularly on the brain.
Accompanying papers:	None

Professor Val Curran

Professor Val Curran is a Professor of Psychopharmacology at University College London.

Date Attended:	21 July 2004
Presentation:	'Methylamphetamine' – Professor Curran's presentation focused on the neurotoxic effects of methylamphetamine as well as its impact on cognitive functions.
Accompanying papers:	None

Professor Robin Murray

Professor Robin Murray is a Professor of Psychiatry at King's College London and also a member of Institute of Psychiatry. He has a specific interest in schizophrenia.

Date attended:	21 July 2004
Presentation:	Professor Murray's presentation focused on the links between amphetamine / methylamphetamine use and psychosis.

Accompanying papers: None

Ronald Geer:

Ronald Geer is an official at the American Drugs Enforcement Administration based in London.

Date attended: 21 July 2004
Presentation: Ronald Geer's presentation focused on the increase in prevalence of methylamphetamine in America and the authorities attempts at tackling the problem.
Accompanying papers: None

Dr. Judith Myles

Dr. Judith Myles is a Consultant in Psychiatry and also the Clinical Director at The Department of Addictive Behaviour, St. George's Hospital.

Date attended: 28 September 2004
Presentation: Dr. Myles presentation focused on the neurotoxic effects of methylamphetamine use.

Accompanying papers: '*The Amphetamines and Lysergic Acid Diethylamide'*, Report by the Advisory Committee on Drug Dependence, 1970.

Glossary

Adulterants	Psychoactive drugs deliberately added to mimic the effects of the drug being offered. This would include the stimulants caffeine and ephedrine that make up much of what is passed off as amphetamine. Invariably this is done to increase profits.
Amphetamines	All forms of amphetamine and methylamphetamine
Impurities	Substance or substances present in the drug as a natural result of the manufacturing process rather than deliberately added, e.g., opiate alkaloids from the process of refining opium into heroin or the by-products of manufacturing amphetamine.

Abbreviations

ABCI	Australian Bureau of Criminal Intelligence
ACMD	Advisory Council on the Misuse of Drugs
ACDD	Advisory Committee on Drug dependency
ADHD	Attention Deficit Hyperactivity Disorder
AMP	Amphetamine
ATS	Amphetamine Type Stimulants e.g. amphetamines and MDMA (Ecstasy).
AIOHW	Australian Institute of Health and Welfare.
ABCI	Australian Bureau of Criminal Intelligence
BCS	British Crime Survey
CNS	Central Nervous System
CDCP	Centre for Disease Control and Prevention
DAWN	Drug Awareness Warning Network
DA	Dopamine
DEA	US Drug Enforcement Administration
DoH	Department of Health
DIGS	Diagnostic Interview for Genetic Studies
GP	General Practitioner
PET	Positron emission tomography
PSST	Premorbid Schizoid and Schizotypal Traits
PSA	Premorbid Social Adjustment
ED	Emergency Departments
EACD	Expert Advisory Committee on Drugs
EU	European Union
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
FSS	Forensic Science Service
fMRI	Functional Magnetic Resonance Imaging
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human Immunodeficiency Virus
MA	Methylamphetamine
MMWR	Morality and Morbidity Weekly Report
NTORS	National Treatment Outcome Research Study
ISDD	Institute for the Study of Drug Dependence
JAMA	Journal of the American Medical Association
MDMA	3,4-methylenedioxy-methamphetamine, or ‘ecstasy’
NDTMS	National Drug Treatment Monitoring System
NDARC	National Drug Assessment & Research Centre
NCIS	National Criminal Intelligence Service
MAGD	Ministerial Action Group on Drugs

NHTSA	National Highway Traffic Safety Administration
MDIC	National Drug Intelligence Centre
OSAMH	Ohio Substance Abuse Monitoring Network
OTC	Over the Counter
P-2-P	1-Phenyl-2-propanone (BMK)
POM	Prescription Only Medicine
SAMHSA	Substance Abuse and Mental Health Services Administration
UK	United Kingdom
UNOCD	Untied Nation Office on Drugs and Crime
UN	United Nations
USA	United States of America