



STATE OF THE KNOWLEDGE

Methamphetamine

Introduction

Methamphetamine is a dangerous drug, and using it can have very negative consequences. It has also become the most demonized drug in recent years, with the media regularly reporting heart-wrenching stories and experts quoting alarming statistics. It is extremely difficult in this context to develop evidence-informed policies and programs. This document seeks to summarize the state of the knowledge on methamphetamine use and its consequences. The international literature is utilized, but special attention is given to the situation in British Columbia.

What is Methamphetamine?

Methamphetamine is a drug that stimulates central systems in the brain, similar in function to cocaine and caffeine. Methamphetamine is a synthetic (man-made) chemical that is classified as an amphetamine-type stimulant (ATS). There are two major subgroups of ATS:

- Amphetamines: amphetamine, dexamphetamine, methamphetamine
- Ecstasy-type substances: MDMA, MDA, MDE

Methamphetamine Street names:

- crystal meth
- speed
- meth
- jib
- poor man's cocaine
- ice
- crystal
- crank
- glass
- chalk

There is considerable confusion in the popular, and even official, literature about this class of drugs. According to a 2003 United Nations global survey, the term “ecstasy” is often used to refer to any type of ATS marketed in tablet form. Additionally, the term “amphetamine” is often used to refer to methamphetamine (the N-methyl derivative of amphetamine) or to the broader category of ATS. The situation is further complicated by the frequently complex composition of substances sold as ATS, the many fake or counterfeit products available, and the lack of distinction between products that have different active ingredients. This is especially the case for tablets sold as ecstasy. 17

A white, odourless, bitter-tasting crystalline powder, methamphetamine dissolves easily in water or alcohol. It is also commonly available in a clear chunky form that looks like ice crystals, and can be found in pill form. It can be snorted, injected, smoked, or ingested orally. It is usually manufactured in small operations in private homes, using relatively inexpensive over-the-counter precursor ingredients. 5

A Brief History

Amphetamine was first produced in 1887, and methamphetamine was first synthesized in 1893 in Japan. Amphetamines were not released as legitimate medications until the 1930s. They were soon being prescribed for a wide range of conditions, including asthma, epilepsy, obesity, schizophrenia, narcolepsy, and hyperactivity disorders in children. ATSs were commonly utilized by military and support personnel during World War II to enhance fighting spirit, maintain wakefulness, and increase

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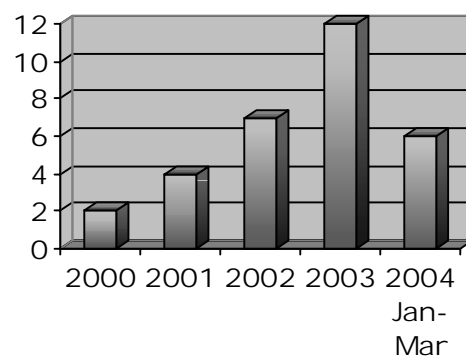
productivity. Non-medical use became common in some countries (including the US) where amphetamines were used, for example, by night-shift workers, long-haul truck drivers, students preparing for examinations, and individuals seeking to lose weight.

In Japan, amphetamine and methamphetamine use reached epidemic proportions immediately after World War II when supplies stored for military use became available on the black market and pharmaceutical companies promoted their products containing methamphetamine. When the legal supply was severely tightened in the 1950s, users turned to illicit methamphetamine manufactured in clandestine laboratories. This led to the first real awareness of the dependence-producing property of amphetamines. 18

The World Health Organization became aware of problem use in the early 1950s. Increasing availability of injectible methamphetamine in the 1960s led to dramatic increases in its use, and severe restrictions were placed on its legal production in the early 1970s. This provided the impetus for an illicit market fed by theft, diversion, and the clandestine manufacture of ATS. 20

There are few accepted medical uses for these drugs today, mainly the treatment of narcolepsy, attention deficit disorder, and – for short-term use – obesity.

Methamphetamine Deaths in BC



How Widespread is Methamphetamine Use?

Globally, ATS use is dramatically on the upswing. A recent report documents a 40% increase in amphetamine and methamphetamine users between 1995/97 and 2000/01. ATS use is estimated to affect

about 1% of the world's population. While this figure is nowhere near the number of cannabis or alcohol users, it exceeds the number of cocaine and heroin users combined. 20

Unlike cocaine, opiates, and cannabis, which are plant-based drugs, ATS can be produced wherever there is access to precursor chemicals, a strong market, and low risk involved. On a global scale, Europe is the major producer of amphetamine, while Asia and North America are the primary methamphetamine producers. Ecstasy is now produced all over the world. In North America, methamphetamine is the most commonly used drug in the ATS class. 17

The evidence regarding methamphetamine use in British Columbia is confusing. While service providers around the province report increased methamphetamine use - particularly by youth - youth survey results are less clear. School-based surveys in Squamish (3) and the East Kootenay 6 in 2002 showed lifetime use at 1.4% and 3.3% respectively. A Lower Mainland 16 survey conducted the same year in non-school settings, reported a lifetime prevalence of 19%; and a survey of street youth in Vancouver in 2000 indicated lifetime prevalence of 71%. 2 The latest province-wide report based on school survey data indicates that lifetime use of amphetamines, including methamphetamine, has dropped from 5% in 1998 to 4% in 2003. 6 Though the differences in sample groups and survey tools do not allow for comparison between the results, it seems reasonable to conclude that methamphetamine use among the general youth population is stable or declining slightly. However, use among certain high-risk populations is much higher and may be increasing significantly. This is consistent with the BC Coroner's Service report that shows methamphetamine-related deaths have been increasing each year since 2000, and that deaths related to methamphetamine (see bar graph, left) in the first quarter of 2004 were almost equal to the entire year in 2002. 1 While the numbers are small in both real and relative terms, the trend is indeed worrisome.

Who uses methamphetamine?

In the North American context, the people who historically used this drug were white, male, blue-collar workers who used it for its stimulant effects. Current trends, how-

ever, indicate a broadening of usage. The drug has become increasingly popular in the youth party scene where it provides seemingly endless energy for all-night dancing. Teenage girls in particular are vulnerable to the use of methamphetamine as a weight control measure. Homeless and runaway youth are another population attracted to methamphetamine. For this group, the drug's characteristics of suppressing appetite and the need for sleep resolves two pressing problems: lack of food and the lack of shelter. Methamphetamine has also become popular among sex trade workers because it suppresses the need to sleep, but also because it is comparatively cheap next to cocaine.¹⁴ Finally, some segments of the gay community appear to have higher rates of methamphetamine use. Due to its aphrodisiac characteristics, the drug is often associated with particular environments where sexual contact among gay men is promoted, such as sex clubs and large-scale dance parties.⁷

What is the methamphetamine user's experience?

Methamphetamine has a dramatic stimulant effect on the central nervous system. Both the effect and the time required for the drug to take effect depend on the method of ingestion. Injection and smoking produce very rapid effects, consisting of an initial pleasurable 'rush' or 'flash' that lasts just a few moments, followed by prolonged euphoria. After the initial rush subsides, the user continues to experience increased levels of self-confidence, energy, wakefulness, libido (sex drive), alertness and well-being. This state is a very positive one for the user (and may be in stark contrast to the user's experience of life once the drug has worn off). At the same time, the user experiences an extended state of high agitation: increased heart rate, blood pressure and breathing rate, sweating, restlessness, tooth grinding, incessant talking, and reduced appetite. Snorting produces effects within 3 to 5 minutes, and oral ingestion takes 15 to 30 minutes to produce effects. These methods produce a euphoric effect, but not the intense rush of the rapid-onset methods. The duration of the effect can vary and depends on the quantity ingested, but can last up to 12 hours. By contrast, the body processes cocaine much more quickly, with 50% of the substance removed in the first hour after consumption.

Users can develop tolerance to the pleasurable effects of methamphetamine quickly, even while they continue to experience the physical stimulant effects. Thus, some users may take the drug successively in a 'binging' pattern, injecting (the most frequent method) every 2 to 3 hours over several days until the supply of the drug is exhausted or the user becomes too disorganized to continue.

With this pattern of use, severe loss of sleep and the build up of toxic levels of methamphetamine can produce the more extreme symptoms. These may include paranoia, auditory hallucinations, hysteria, mood disturbances, violence, and delusions such as having the sensation of insects crawling under the skin.¹⁵

Why do people use methamphetamine?

Surveys of users indicate that people begin using methamphetamine for a variety of reasons. One of the most common is energy and performance enhancement. This is what drove the wave of use during the 1950s and is a significant factor for many working-class users employed in occupations requiring intensive or prolonged labour. Over-stressed single mothers may find it provides the energy to cope and deal with the never-ending demands on their time.

For others, methamphetamine eliminates the boredom associated with tedious or mundane jobs. Unfortunately, increased and prolonged use has the opposite effect for many users. They become increasingly dysfunctional and find it more difficult to function appropriately.

Another common reason for beginning to use is to enhance social interaction. Users report that methamphetamine makes it easier for them to bond with their social network. Again, the paradox is that what for many begins as a social drug can lead to solitude (in which users may stay isolated for prolonged periods) and paranoia. For males in particular, the paranoia can progressively lead to irritability, anger and violence.

Methamphetamine's reputation in enhancing sexuality and sexual performance attracts many users. Users report that the drug provides the ability to release inhibitions. For some, the euphoria enhances sexual climax while others are attracted by the

ability to engage in prolonged sexual activity. Eventually, prolonged and heavy use tends to eliminate or impede sexual desire. Males especially are vulnerable to inhibition of orgasm and erectile difficulties.

A significant minority of users report histories of either asthma or hyperactivity, and find methamphetamine has a calming or centring effect on their mood and behaviour. These users uniformly report feeling greater clarity and less 'speediness' with methamphetamine than with other stimulants. Some users with histories of depression also report a therapeutic benefit, at least during the period of initial use. Many users say that methamphetamine helped them to feel emotionally detached from the pain and struggle of their daily existence. However, a large percentage of users indicate that depression is a serious consequence of prolonged, heavy use.

The paradoxical effects that frame the experience of many users, particularly those who come into contact with treatment programs, is not uniform or universal. A substantial proportion of methamphetamine users eventually manage to stabilize their use to maximize benefits and minimize problems. Users employ a range of strategies and rules designed to protect those areas of their lives they individually regard as important. Women are more likely to maintain control over their lives and use than men, but are also more likely to hold on to the illusion of control long after they have lost it. ¹²

What are the health concerns related to using methamphetamine?

Methamphetamine is not a safe drug in terms of acute toxicity. Overdose deaths are rare but do occur when users chase euphoria by repeatedly injecting or because of discrepancy in purity levels. Symptoms of acute intoxication include nervousness, anxiety, hypersensitivity to light and sound stimuli, irritability, and aggressiveness. Acute psychotic reactions – such as hallucinations, paranoid reactions, or confusion and delirium – may occur. In extreme cases, coma may develop and lead to cardiovascular shock, with a fall in blood pressure. On the other hand, elevated blood pressure may cause cerebral hemorrhage. ¹⁹ Danger also stems

from evidence that suggests that methamphetamine is a highly addictive substance. So even though there are no known serious health effects from methamphetamine use at a low dose, use can quickly increase and lead to serious consequences. Past waves of use have made it clear that drug dependence is one of the major problems associated with chronic use of methamphetamine. This has also been confirmed in laboratory tests. Dependence develops more rapidly with intravenous injection because of quicker onset of action and effects that are more intensive.

Another serious consequence of chronic use is what is often labelled methamphetamine psychosis. This is characterized by schizophrenia-like hallucinations (mainly visual and auditory) and paranoid delusions which can lead to sudden aggressive behaviour. Hallucinations and paranoid delusions usually disappear within a month of discontinuing drug use. However, there are cases of residual psychotic symptoms lasting more than six months. For those who have experienced a psychosis, it may recur more easily, even after a long period of abstinence, if they return to using, use other psychoactive substances, or even when exposed to non-specific stimuli. ²¹

Many concerns are a product of the illicit nature of the drug and the contexts in which it is manufactured, distributed and used. The purity and quality of the drug ingested fluctuate when obtained from illicit markets. The seriousness of health consequences is impacted by this inconsistent source and by individual variations in terms of reactions to psychoactive substances. The illicit context of drug use contributes to issues like needle sharing and crime, which in turn have major health consequences. More recently, the dangers posed by the manufacturing process have been recognized. Methamphetamine is most commonly manufactured in small in-home settings where the occupants (including children) are exposed to toxic chemicals. These clandestine labs are usually designed for ease of concealment and not for safety. Often the individuals involved have little or no formal education in chemistry. These factors combine to present very real hazards to both health and safety. However, it should be noted that many of the media reports are overly dramatic in discussing these dangers.

Interventions For Methamphetamine

Prevention

Interventions aimed at preventing or reducing use of methamphetamine are critical. Drug users appear to believe that methamphetamine is less dangerous than cocaine and heroin. The evidence suggests that methamphetamine can be just as dangerous as these other drugs. Prevention initiatives based on accurate, credible and neutral information that will empower individuals to make informed decisions are the recommended strategy.¹⁷ There appears to be a need for evidence-based corrective information about the effects and potential harms arising from methamphetamine use, delivered within a comprehensive health promotion strategy.

Supply Reduction Interventions

The primary supply reduction strategies available are restricting access to the precursor chemicals (mostly pseudoephedrine, ephedrine, and phenylpropanolamine) and disrupting production and distribution. Local supplies are usually produced in small home laboratories within Canada. Although Health Canada has proposed a framework to restrict such precursor chemicals, the plan is only being phased in gradually.

Withdrawal

The withdrawal from all drugs of dependence results in mood disturbance. Stimulant withdrawal has not been researched as much and is not as well understood as opioid withdrawal. Methamphetamine withdrawal appears to have symptoms similar to cocaine withdrawal. During the initial stages of withdrawal, the chronic user can experience intense cravings causing him or her to go to great lengths (such as committing impulsive crimes) to obtain more of the drug. Other symptoms include extreme irritability (sometimes aggression), loss of energy, extreme depression, boredom, inability to experience pleasure, fearfulness, sleep problems, shaking, nausea, palpitations, sweating, hyperventilation, and increased appetite. These symptoms can last for 10 days to two weeks, and the feeling of low energy, as well as cravings, may wax and wane for many weeks.¹³

Treatment Interventions

There are no readily available substitution therapies for stimulant dependence. As a result,

the withdrawal phase may be particularly difficult, and short-term use of medication to stabilize mood may be required. The currently available evidence about treatments for methamphetamine dependence comes mostly from studies with cocaine users. Both substances are stimulants, and cocaine and methamphetamine users appear to respond similarly to certain interventions.¹⁰

At this time, cognitive-behavioural approaches are considered the most promising strategy to address methamphetamine use. These encompass a range of interventions such as cognitive restructuring, contingency management, and motivational interviewing, which may be supplemented by strategies such as community reinforcement or support groups.^{8, 9} Generally, the aim is to help modify the client's thinking, expectancies and behaviours and to increase skills in coping with various stresses. Few programs give sufficient attention to the reasons an individual user may have started using methamphetamine. Effective cognitive-behavioural therapy will need to recognize these differences and seek appropriate solutions.

Conclusion

The current trend in methamphetamine deaths requires attention. Prevalence data indicates that BC is not facing a massive increase in use despite media stories to the contrary. Nonetheless, heavy and long-term use appears to be prevalent in certain high-risk populations. The harmful health impacts of such use are well documented. We need more data to fully understand the user populations and the risk factors that might indicate vulnerability to problem use. It is essential that public policy recognizes and reflects the diversity of influences that lead individuals to use. It is also essential that public policy be informed by solid evidence and not be driven by media trends.

An effective response to methamphetamine involves a comprehensive health promotion strategy that integrates targeted prevention programs, a range of treatment options, supply-reduction strategies, and measures to reduce the harms arising from methamphetamine use. **i**

The BC Partners for Mental Health and Addictions Information seek to provide people with reliable and practical information. Facts and findings from well-conducted studies have been summarized to present the best available material on topics of interest. Special attention is given to ensuring that sources are credible, accurate, current, and relevant. The information provided through the BC Partners is intended for educational use and general information and is not intended to provide, nor should it be considered to be a substitute for, professional medical advice or other professional services.

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