

NATIONAL LEADERSHIP FORUM ON ICE

14 December 2006
Radisson Hotel, Sydney

**INTERNATIONAL AND NATIONAL TRENDS, PREVALENCE AND IMPACTS
– WHO USES ICE – WHAT ARE ITS EFFECTS - THE EVIDENCE BASE**

ICE

(Crystal Methamphetamine)

December 2006

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1. SCOPE

This paper presents known trends, prevalence and impacts of methamphetamine use in Australia with a particular focus on 'ice' (crystal methamphetamine) where this information is available.

Although the focus of this Forum is on ice, current national and state data collections often do not distinguish between the different forms of methamphetamines. Furthermore, ice is often distinguished by its appearance alone, which is an unreliable indicator of the purity of the drug.

2. INTRODUCTION

2.1 What is ice?

Ice is a type of methamphetamine. Methamphetamine is available in a number of different forms, which are the result of different modes of production and levels of purity.

The three main forms are:

- powder ('speed') of around 10% purity, is usually adulterated with glucose and snorted;
- a waxy substance ('base', 'paste', 'wax') of around 21% purity, usually ingested or injected;
- crystals ('crystal meth', 'ice'), usually smoked or injected and varies in greatly in its purity (19%-80%).

Methamphetamine is also sometimes used in the production of pills and is sometimes used in liquid form ('oxblood') (Black, Degenhardt et al. 2005; McKetin, McLaren et al. 2005; National Drug and Alcohol Research Centre (NDARC) 2005).

The more potent forms of methamphetamine were identified by the *Illicit Drug Reporting System (IDRS)* in 2000 as becoming more widely available and used in all jurisdictions. Therefore, the term methamphetamine was used from 2001 to refer to the drugs available that were previously termed 'amphetamines' (Stafford, Degenhardt et al. 2006).

Methamphetamine is chemically similar to amphetamines. The distinction lies in that methamphetamines, especially the purer form, ice, is a more potent psychostimulant that has proportionally greater central stimulatory effect as well as stronger subjective effects (Degenhardt and Topp 2003).

2.2 How is it made?

Methamphetamine is manufactured from precursor substances commonly found in non prescription cold and flu medicines (Topp et al, 2002). Other ingredients commonly used include red phosphorous, hydrochloric acid, drain cleaner, battery acid and antifreeze.

The 'cooking' process required to manufacture methamphetamine creates a dangerous environment where ignitable, corrosive, reactive and toxic chemicals can cause explosions, toxic fumes and damage to the environment.

Due to the relatively uncomplicated process involved in manufacturing ice, laboratories can be established anywhere.

2.2 How is it used?

A typical “street deal” of methamphetamine is known as a ‘point’ or 0.1 grams. Among dependent (particularly injecting) methamphetamine users, this may be taken once or twice over a 12-hour period. Among those who smoke the drug, a point of ice may be smoked on numerous occasions over a period of 6-12 hours. If taken in powder form, a typical amount used in a session of use will generally be half a gram of powder (McKetin, McLaren et al. 2005; Stafford, Degenhardt et al. 2006; Stafford, Degenhardt et al. 2006).

Ice is commonly smoked but can be snorted, swallowed, smoked, injected or inserted anally. The use of ice pipes is becoming increasingly prevalent where ice is heated in the bulb of the pipe so that the crystal vaporises and is then inhaled (McKetin et al, 2005a). The health risks associated with each of these methods of use are discussed below.

2.3 Who uses it?

Research shows that methamphetamine users are a diverse group (Stafford, Degenhardt et al. 2006). There are several monitoring systems in Australia that document methamphetamine use and related harms among different groups, such as the *Illicit Drug Reporting System (IDRS)*, the *Ecstasy and Related Drugs Reporting System (EDRS)*, the *National Illicit Drug Indicators Project (NIDIP)* and the *National Drug Strategy Household Survey*. Recently, there have also been more specific studies into patterns of use and problems reported among regular methamphetamine users in Sydney (McKetin and McLaren 2004; McKetin, McLaren et al. 2005; McKetin, McLaren et al. 2005).

According to the *2004 National Drug Strategy Household Survey*, meth/amphetamines use is notably higher among young adults (20-29 years) (Australian Institute of Health and Welfare 2005).

Males were more likely than females to have used methamphetamines. The average age at which Australians first used meth/amphetamines was 20.8 years, with 10% of this age group reporting meth/amphetamine use in the preceding 12 months (Australian Institute of Health and Welfare 2005).

A study conducted among a group of regular methamphetamine users in Sydney found that these users were young adults and the majority were on government benefits or in a semi skilled non-specialised occupation. They earn less than the average young adult in Sydney, and had a one in five chance of being engaged in criminal activity to supplement their income (McKetin, McLaren et al. 2005).

There are four types of users that can be distinguished within this group:

- Methamphetamine injectors - who use the drug once to several times per week, have high rates of use of cannabis and alcohol, and who sporadically use other drugs;

- Heroin users - Long standing heroin users, for whom methamphetamine injection was a pattern of poly drug use;
- Non-injecting users - Younger, non-injecting drug users who take ecstasy and swallow, snort or smoke powder methamphetamine or smoke ice (McKetin, McLaren et al. 2005).
- Occupational users – for example, truck drivers who use methamphetamine to stay awake.

Australian studies have also shown that people who use crystal methamphetamines (ice), frequently inject this substance in conjunction with other drugs.

Degenhardt and Topp (2003) reported that a mean of 2.2 other drugs were typically used with ice, most often ecstasy, cannabis, GHB, alcohol, ketamine and MDA. Findings from the most recent population survey on drug use showed that alcohol was the most often used drug with methamphetamines (9 in 10), followed by cannabis (6 in 10) and ecstasy (5 in 10) (Australian Institute of Health and Welfare 2005).

2.4 Where is it typically used?

Studies of regular methamphetamine users and regular ecstasy users report that ice is commonly used at home and often before going out to socialise (McKetin et al, 2005a (Stafford, Degenhardt et al. 2006).

2.5 What are the effects?

The effect of ice depends on a range of factors including the amount taken, the purity of the drug, physiological factors including age and general health as well as the individual's tolerance to the drug (ACON, 2006).

Ice is commonly associated with a range of positive effects:

- euphoria;
- increased libido;
- alertness;
- diminished appetite;
- enhanced reflexes;
- feelings of confidence and physical strength.

(ACON, 2006).

Ice is also associated with negative effects including:

- increased heart rate and irregular heart beat;
- abdominal pain;
- sweating;
- dilated pupils;
- fatigue;
- parasitosis (picking and scratching skin);
- agitation, anxiety and paranoia;

- confusion, disorientation and hallucinations;
- psychosis;
- violent and aggressive behaviour.

(ACON, 2006).

It should be noted however, that some of these negative side effects are relatively uncommon.

2.6 Are all ice users dependent?

Not all users of crystal methamphetamine are dependent upon the drug. Many users do use methamphetamine on a very irregular basis.

A minority of users *do* use it frequently. It is likely that health and law enforcement services are seeing methamphetamine users who have developed very regular, if not dependent, patterns of use.

Dependence upon a drug occurs after a person has been using the drug on a regular basis for some period of time. Broadly speaking, drug dependence can be thought of as impaired control over the use of a drug, whereby a person continues to drug despite the fact that they know it is causing them considerable problems (for example, physical or psychological problems). The definition is outlined below.

According to the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* dependence is characterised by a person experiencing at least three of the following symptoms:

- tolerance, defined as either a need to use larger amounts to achieve desired effect, or decreased effect with continued use of the same amount of substance;
- withdrawal;
- increased dosage and duration of the substance use;
- unsuccessful attempts to cut down or control substance use;
- increased time spent to obtain the substance, use the drug or come down from the drug;
- giving up social, occupational and recreational activities because of substance use; and
- continued substance use despite knowledge of having an awareness of negative consequences (eg. physical or psychological problems).

(American Psychiatric Association 2000)

3. MANUFACTURE AND SUPPLY

3.1 International context

For many countries, the problem of methamphetamine is relatively new, growing quickly and unlikely to go away (Maxwell 2006). Methamphetamine was first synthesised in Japan in 1919 (Morefield, Ali et al. 2004). Today, the drug has broadened to other nations in the region including China, Indonesia, Malaysia, Myanmar, the Philippines, Singapore and Thailand (Farrell and Marsden 1997). Sixty percent of methamphetamine users live in Asia (Maxwell 2006). There is a trend towards a major epidemic of methamphetamine use in Thailand that appears to be spreading across the entire Asia Pacific region (World Health Organization n.d).

In the United States, methamphetamine production and use have increased dramatically during the past decade. There has been a 500% increase in methamphetamine and amphetamine abuse and dependence treatment admissions from 1992 to 2002 (Lineberry and Bostwick 2006). Supply for the US methamphetamine market typically comes from California and northern Mexico 'super labs' (Lineberry and Bostwick 2006).

Recent data has shown a decline in amphetamine type stimulants (ATS) use in the regions of the Americas and Europe, while the highest levels of use worldwide have emerged in East Asia and Oceania (World Health Organization n.d). Japan, Korea and the Philippines all register 5-7 times the rate of ATS use compared with heroin and cocaine use (World Health Organization n.d).

According to the World Health Organisation, smoking, sniffing and inhaling are the most popular methods of ATS use around the world (World Health Organization n.d). However, in Australia, over 90% of those who report using ATS (mostly methamphetamine) choose to inject (World Health Organization n.d).

3.2 Australian context

The majority of methamphetamine available in Australia is produced domestically (Mcketin et al, 2005a). This methamphetamine is often marketed as 'speed' or 'base' (Mcketin et al, 2005a).

Ice is more likely to be imported into Australia (Mcketin et al, 2005a). Large shipments of ice were first detected at the Australian border in 2000 (Mcketin et al, 2005a). Most shipments originate from China or, to a lesser extent, other countries in the Asia Pacific region (Mcketin et al, 2005a). They are usually concealed in cargo, and bound for the East Coast of Australia (Mcketin et al, 2005a).

It is not clear to what extent ice is being produced in Australia. This issue will be further investigated by the paper on 'Local Clandestine Manufacture'. Several modes of production have been detected in Australia and these include:

- Hypophosphorous method: use of hypophosphorous acid and iodine;
- Red phosphorous method: use of hydriodic acid and red phosphorous;
- 'Nazi' method: using lithium or sodium with anhydrous ammonia; and
- P2P or Leuckart method: using phenylacetone or benzyl methyl ketone with formic acid or aluminium amalgam.

(NDARC 2005).

3.1.2 Price and availability

According to findings from the *Illicit Drug Reporting System*, ice is typically sold by the 'point' (0.1 gram). Injecting drug users in Australia have reported that the price for a point of ice has remained relatively stable over the last six months, with the lowest reported price in SA (\$30) and most expensive price in the NT (\$65). In the other jurisdictions the price was \$50 (Stafford, Degenhardt et al. 2006).

The majority of respondents to the *Illicit Drug Reporting System (IDRS)* in all jurisdictions reported that speed and base were 'easy' or 'very easy' to obtain, whereas crystal was 'easy' (Stafford, Degenhardt et al. 2006).

According to the *2004 National Drug Strategy Household Survey*, around 70% of users typically obtained meth/amphetamines from a friend or acquaintance and around 23% obtained meth/amphetamines from a dealer (Australian Institute of Health and Welfare 2005).

4. PATTERNS OF USE IN AUSTRALIA

4.1 Use in the general population

Results of the *2004 National Drug Strategy Household Survey* indicated that 0.4% or 63,000 people use methamphetamine on a daily or at least weekly basis, however, this was likely an underestimate owing to the exclusion of people who were not residing in a household, and who were more likely to be heavy illicit drug users (McKetin, McLaren et al. 2005).

Research undertaken by the *National Drug and Alcohol Research Centre* has identified the total number of users to be closer to 102,600 of whom around 72,700 are dependent users (McKetin, McLaren et al. 2005). It should be noted however, that this figure is an estimate. It is difficult to quantify the size of illicit drug using populations accurately, given the illegal nature of such use.

Since the 2001 shortage of heroin supply in Australia, Australian drug use patterns among regular injecting drug users have changed dramatically. The heroin shortage had the most significant effect in NSW, as historically, NSW had the greatest supply and use of heroin in Australia (Degenhardt, Day et al. 2005). According to Degenhardt et al (2005), Victoria and South Australia showed an increase in the use of methamphetamine since the heroin shortage.

4.2 Use of ice by specific population groups

4.2.1 Injecting drug users

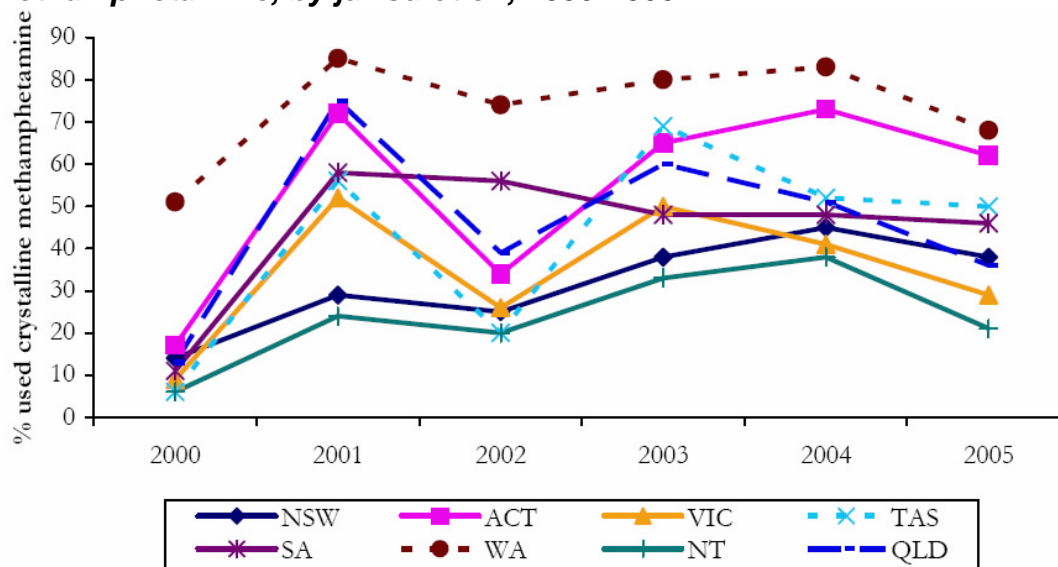
Methamphetamine use among regular injecting drug users surveyed in the *Illicit Drug Reporting System (IDRS)* is high, with 58% reporting use in the last six months. Dealing is also a common practice among users, with one in five having sold the drug at least monthly in the past year (Stafford, Degenhardt et al. 2006).

Second to heroin, methamphetamine was nominated as the drug of choice by regular injecting drug users (IDU) in Australia by the *2005 Illicit Drug Reporting System (IDRS)* (Stafford, J. et al. 2006). QLD (36%) had the highest proportion of IDU who nominated methamphetamine as their drug of choice, followed by TAS (34%) and SA and the NT (both 27%). NSW recorded the lowest proportion of IDU reporting methamphetamine as the drug last injected.

WA had the largest proportion of IDU reporting recent use of ice (however, this reduced from 85% in 2004 to 68% in 2005). Ice was also the form most used in the last six months in the ACT and WA. The recent use of base was common in TAS (79%) and SA (62%). In TAS and SA substantial proportions of IDU reported that base was the form of methamphetamine they had used most in the preceding six months. NSW reported equal proportions of recent use for speed (38%), base (38%) and ice (38%). Ice and base were the forms used most in the last six months in NSW (Stafford, Degenhardt et al. 2006).

Nationally, 60% of the IDU sample had recently used speed, 39% base and 43% ice. In 2005, the recent use of ice decreased in most jurisdictions except TAS and SA where it remained stable. WA reported the largest drop from 83% in 2004 to 68% in 2005. Refer to **Figure 2** for a graph showing recent use of ice by jurisdiction.

Figure 2: Proportion of IDU that reported recent use of crystalline methamphetamine, by jurisdiction, 2000-2005



(Stafford, Degenhardt et al. 2006)

4.2.2 Regular Ecstasy Users

Findings from the 2006 Ecstasy and Related Drug Reporting System (EDRS) on methamphetamine use amongst surveyed ecstasy users include:

- not all ecstasy users who use methamphetamine use ice, the more potent and purer crystal form;
- use of speed and base methamphetamine was dramatically down in NSW from 2005 at better than the national trend with the drop being from 76% to 55% for speed and 43% to 24% for base;
- use of ice was generally higher in all jurisdictions than it was in 2005 with highest usage reported in WA at 77% followed by South Australia at 61%;
- for NSW - use of ice increased from 40% in 2005 to 56% in 2006 and was higher than the national trend of 38% to 49%;
- nationally, the group is much more likely to use speed than ice (64% compared to 49%) but in NSW ice is the most common form used by this group (56%);

- ice is not replacing ecstasy among ecstasy users - 45% of ecstasy users preferred to stay with that drug only 6% preferred ice.

4.2.3 Young people

According to the *Australian Secondary School Students' Use of Over-the-Counter and Illicit Substances in 2005* survey data, 95% of secondary school students had never used amphetamines, including methamphetamines and ice (White and Hayman 2006).

Amongst all students surveyed around 1% indicated that they had used amphetamines regularly in the year prior to the survey. Although the data shows a low usage rate in school students, with increasing age, the proportion of students to have ever used amphetamines increases (3% of 12-year-olds; 8% of 16-year-olds and 7% of 15- and 17-year-olds). The pattern of amphetamine type substance use in young people suggests that there was a low level of experimentation with the drug and with very few reporting recent use (White and Hayman 2006).

However, illicit and licit drug use among young people may be associated with serious road accidents, the development of problems with substance and dependence and future polydrug use (Nicholas and Shoobridge 2005).

4.2.4 Aboriginal and Torres Strait Islander community

According to the Australian Institute of Health and Welfare (2006), Indigenous populations of Australia tend to start using drugs from early to mid-teens, at an age that is generally younger than other Australians. Substance use tends to vary with geographical location, with amphetamine-type substance more commonly used among Aboriginals living in urban areas (Australian Institute of Health and Welfare 2006) .

There is evidence that methamphetamine use is on the rise in Aboriginal communities (Nicholas and Shoobridge 2005). Preliminary evidence suggests that Indigenous injecting drug users may prefer methamphetamine over heroin (Nicholas and Shoobridge 2005).

The *2004-05 National Aboriginal and Torres Strait Islander Health Survey* reported that among Aboriginal males, the percentage of amphetamine use in the last 12-months in non-remote areas has risen from 5% in 2002 to 10% in 2004-05. The percentage of Aboriginal females reporting use in the last 12-months in non-remote areas remained at 5% for both 2002 and 2004-05 period (Trewin 2006).

4.2.5 Gay, lesbian, transgender community

The *Sydney Gay Community Periodic Survey 1996-2005* reported that 20% of gay men in Sydney has used ice in the past six months (Hull, Rawstorne et al. 2006), compared to 3.2% in the general population reporting recent use of

meth/amphetamine (Australian Institute of Health and Welfare 2005). In QLD, Melbourne and Perth, the rate among gay men is lower, at between 12-16% (Hull, Brown et al. 2005; Hull, Prestage et al. 2006; Hull, Rawstorne et al. 2006).

5. IMPACT OF ICE USE

5.1 Health Impacts

5.1.1 Physical health

Methamphetamine causes a massive release of dopamine, serotonin and noradrenaline in the brain which may be related to the subjected 'high' similar to that observed in cocaine administration (Ernst, Chang et al. 2000; Morefield, Ali et al. 2004).

Methamphetamine use in the short term can lead to increases in heart rate, hypertension, irregular body temperature and rates of breathing, constriction of blood vessels and cardiac arrhythmia (Lineberry and Bostwick 2006; Maxwell 2006).

Long-term users of the drug typically appear older than their chronological age and may have:

- Damaged and discoloured teeth from dry mouth, heavy sugar intake, tooth grinding associated with nervous system;
- appear older than their chronological age;
- overstimulation, and poor dental hygiene (Lineberry and Bostwick 2006);
- Skin lesions – excoriations and ulcers from users' compulsive picking at 'meth bugs'; and
- Greater risk of stroke, cardiac valve sclerosis, decreases in lung function, pulmonary hypertension and poorer cognitive function.
(Maxwell 2006)

The method of ingesting ice has varying impacts on health and specific risks. For example, smoking or injecting ice may be more likely to result in a user becoming dependent than those who 'snort' or swallow it (McKetin, McLaren et al. 2005).

- Nasally - snorting effects occur approximately five minutes after administration, giving a delayed effect. Hepatitis C can be passed on from tiny, often invisible, amounts of blood on shared snorting equipment.
- Orally – swallowing the crystals may cause irritation as they travel to the stomach.
- Anally – may damage the lining of the anus and can increase the chances of HIV and hepatitis C being transmitted.
- Smoking – many ice users view smoking as less harmful than injecting, but smoking is a highly addictive method of administration. Like injecting, smoking ice results in an almost immediate effect. Smoking equipment may become very hot and cause burns to mouth or gums, or have sharp edges if they are damaged. Injuries resulting from smoking increase hepatitis C risk if the equipment is shared.
- Intravenously – people who inject ice are five times more likely to become dependent than users who swallow or snort the drug. The risk of contracting blood borne viruses such as HIV and Hep C through injecting

is increased. Injection of ice in the same location can lead to vein inflammation, scarring, abscesses, blood clots and vein collapse. People who inject ice often dissolve the crystals with unsterile solutions (eg. tap water), which put users at a risk of infections. (McKetin, McLaren et al. 2005; ACON 2006; National Drug and Alcohol Research Centre n.d).

Multiple studies have shown that methamphetamine use is associated with neurological and psychiatric conditions, such as ruptured blood vessels, stroke, memory loss and psychosis (Ernst, Chang et al. 2000; Maxwell 2006).

5.1.2 Mental health

The rate of psychosis observed in the methamphetamine users in Sydney was 11 times of that seen in the general population (McKetin, McLaren et al. 2005). One in five regular users had experienced clinically significant psychosis in the past year. The range of psychotic symptoms includes paranoia, hallucinations, delusions, anxiety and compulsive behaviour.

There is evidence to suggest that users with a personal and/or family history of mental illnesses are more vulnerable to methamphetamine-induced psychosis (Maxwell 2006). However, the prevalence of psychosis was also high among users with no known history of schizophrenia or other psychosis (McKetin, McLaren et al. 2006).

The symptoms of psychosis tend to be brief, most lasting up to three hours. In Sydney, only 11% of regular methamphetamine users interviewed who suffered psychosis had attended hospital (McKetin, McLaren et al. 2005). One quarter of the users experiencing psychotic episodes exhibited hostile behaviour, including yelling at people, throwing furniture or hitting people (McKetin, McLaren et al. 2005).

5.1.3 Sexual health

Methamphetamine increases libido and reduces inhibition. Dependence on methamphetamine has been associated with unprotected sex however this relationship has not been directly linked to the pharmacological effects of methamphetamines (Degenhardt, McGuigan et al. 2005; McKetin, McLaren et al. 2005). McKetin et al (2005) proposed that the lifestyle associate with dependent methamphetamine users or the nature of sexual relationships among dependent users may contribute to unprotected sexual behaviour.

Several survey studies have pointed to higher levels of illicit drug use among gay men in Australia, particularly ecstasy and other related drugs, than in the general population (Degenhardt and Topp 2003; Slavin 2004; Degenhardt, McGuigan et al. 2005) Both Australian and American studies have reported the use of methamphetamine use to enhance sexual pleasure in gay men.

Risky sexual behaviour is not restricted to the gay community. Heterosexual users have also been reported to engage in more risky sexual behaviours, including multiple sexual partners, anonymous partners or unprotected sex (Lineberry and Bostwick 2006).

A US study examined the sexual behaviours of a group of American males (n = 1,011), with 15.6% of participants reporting recent or past methamphetamine use (Krawczyk, Molitor et al. March 17, 2006). The study found that recent methamphetamine users were more likely to have had:

- casual or anonymous female sex partners;
- multiple partners;
- partners who injected drugs; and
- received drugs or money for sex with a male or female partner.

Although many studies have examined HIV sexual risk, homosexuality and illicit drug use, few have specifically examined the use of ice in relation to these issues. While some studies have found an association between ice use and sexual risk taking, this does not imply causality, as there may be many other factors, such as lifestyle, that better account for the association.

5.1.4 Maternal and foetal health

Methamphetamine use in pregnancy has been associated with increased risk of miscarriage, prematurity and problems in the newborn period, including jitteriness and trouble sleeping and eating (OTIS 2005). Babies born to methamphetamine users (mothers) can exhibit signs of withdrawal (OTIS 2005).

As most methamphetamine users also use other drugs, alcohol and cigarettes, the effect on the foetus can be multi-fold (OTIS 2005). As there are limited studies in this new area, there is no known safe level of methamphetamine use during pregnancy and the magnitude of defects associated with methamphetamine use during pregnancy is unknown (March of Dimes 2004; OTIS 2005). Some studies have suggested that this drug may increase the risk of cleft palate and heart and limb defects (March of Dimes 2004).

5.2 Ice and associated injuries and fatalities

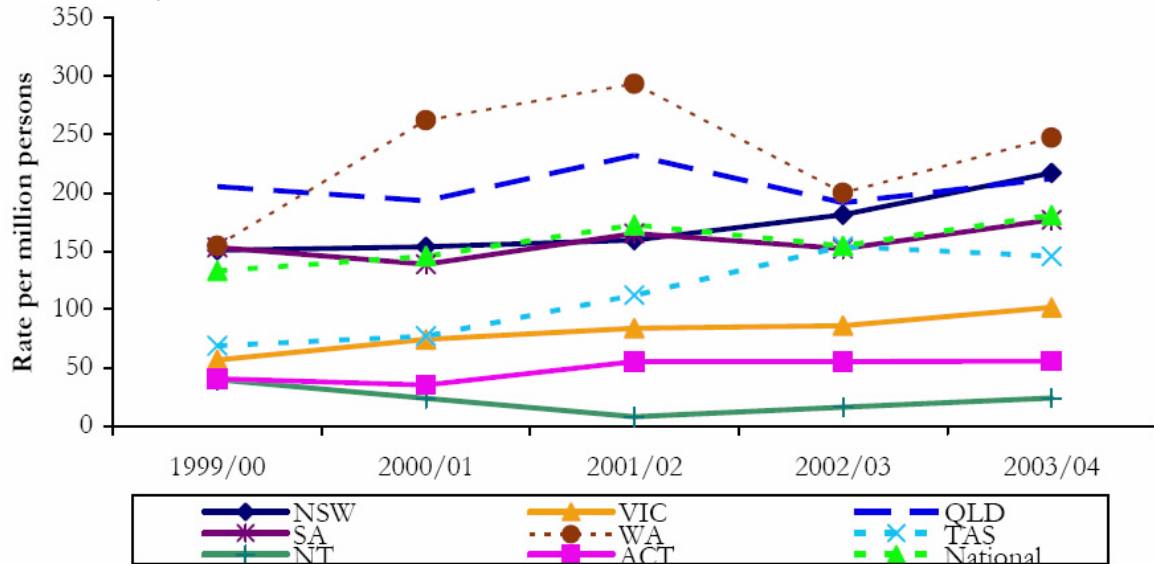
5.2.1 Hospital admissions associated with ice use

Nationally, the rate of inpatient hospital admissions where amphetamine was the principal diagnosis increased from 155 per million persons in 2002/03 to 181 per million persons in 2003/04, however this figure has since returned to 156 separations per million persons in 2004/05 (Degenhardt, Roxburgh et al. 2006; Stafford, Degenhardt et al. 2006)

Consistent with WA having the highest rate of reported injecting methamphetamine use, WA also has the highest rate of inpatient hospital admissions for amphetamines. Figure 1 shows the rate of inpatient hospital

admissions rate where amphetamine was the principal diagnosis by state/territories.

Figure 1: Rate of inpatient hospital admissions where amphetamines were the principal diagnosis per million persons aged 15-54 years, by jurisdiction, 1999/00-2003/04



Source: (Stafford, Degenhardt et al. 2006)

5.2.2 Overdose

According to the *2005 Illicit Drug Reporting System (IDRS)* (Stafford, Degenhardt et al. 2006),

- there are fewer deaths attributable to methamphetamine than opioids.
- there is a limited understanding of the role of methamphetamine in death, and therefore mortality data may under-represent cases where methamphetamine contributes to the death, such as premature death related to cerebral vascular pathology (e.g. haemorrhage or thrombosis in the brain).

In 2004, there was a total of 75 drug induced deaths in which methamphetamine was mentioned among those aged 15 to 54 years. There were 50 deaths in 2003 (Degenhardt, Roxburgh et al. 2006).

The issue of overdose is particularly important among polydrug users. According to the *2004 National Drug Strategy Household Survey*, amphetamine users most often report using alcohol (87%) and cannabis (68%) in conjunction with methamphetamines. Cocaine (14%) and ecstasy (49%) was also commonly used with amphetamines. The use of depressant drugs such as heroin, prescription pain killers and sedatives (all less than 7%) was relatively low among this general population of amphetamine users (Australian Institute of Health and Welfare 2005).

5.2.3 Injury associated with Ice use and manufacture

Methamphetamine use has been linked to injury arising from violent behaviour, driving a vehicle while intoxicated and through contact with clandestine laboratory operations (Sheridan et al, 2006).

A 2004 study in New Zealand of drug enforcement officers' perceptions found that 85% reported noticing changes in the level of violence amongst methamphetamine users (Wilkins et al, 2004). Forty percent of the officers surveyed reported "more serious violence" and 26% reported "more domestic violence".

A joint NDARC and Bureau of Crime Statistics and Research (BOCSAR) bulletin, *The Relationship Between Methamphetamine Use and Violent Behaviour* was released on 19 October 2006. The report's lead author, Dr Rebecca McKetin, says that there "is no direct evidence that simply taking this drug makes people become more violent. Rather it's a case of chronic users of the drug, who are experiencing drug-induced paranoia, reacting in violent ways".

The bulletin suggests that even though methamphetamine users only comprise a small proportion of violent offenders, other research suggests links between the use of meth/amphetamines and violent behaviour including:

- increased aggression is most likely to occur following chronic exposure to methamphetamines;
- acute doses of the drug may enhance an aggressive response if a person is already provoked or may intensify violence associated with other conditions such as opioid withdrawal;
- acute methamphetamines intoxication could enhance an aggressive response by increasing a user's physical stamina and alertness and reducing fatigue;
- sizeable proportion of methamphetamine users engage in violent crime, although the prevalence of violent crime among the drug's users are similar to users of other drugs; and
- methamphetamine-related violence is often observed in the context of psychotic symptoms, although only about a quarter of people experiencing methamphetamine induced psychosis will show hostile behaviour.

The study found that between 1995 and 2005 the use of methamphetamine and assault rates both increased in NSW.

- stimulant psychosis admissions increased from 339 in 1999/00 to 437 in 2002/03;
- arrests for methamphetamine offences increased from 18 per 100,000 persons in 1995 to 46 per 100,000 persons in 2005;
- recorded assaults increased from 522 per 100,00 persons in 1995 to 936 per 100,000 in 2002, although it has remained stable between 2002 and 2005.

However, it is important to note that the bulletin concludes that methamphetamine use appears to only have had a relatively minor impact on the rise in the assaults in comparison with other factors, such as alcohol.

While there is insufficient evidence to conclude that methamphetamine impacts on driving ability, a 1999 study found that methamphetamine was more likely to be found in blood tests of fatally injured truck drivers than car drivers or motorcyclists (Hunter et al 1998). A 2002 Australian study also found that 20% of individuals detained for traffic offences tested positive to amphetamine (Poyser et al, 2002).

Significant injury can also be caused to those coming into contact with clandestine laboratory manufacture (Burgess et al 1996). This can include contamination and burns from contact with chemicals used in the manufacturing process and from explosions.

5.3 Frontline Services

Compared with alcohol and heroin, methamphetamine users appear to have relatively low contact with services related to their drug use (McKetin and McLaren 2004). The 2006 National Minimum Data Set (NMDS) showed that amphetamine represents the principal drug of concern for 11% of all clients that received treatment during 2004-05. This compares to 37% for alcohol and 17% for heroin.

Although only a small percentage of methamphetamine users will present in hospital with psychosis, the resources required to deal with methamphetamine psychosis can be immense and pose a risk to the safety of the police, ambulance and emergency staff who are required to apprehend or manage them (McKetin, McLaren et al. 2005). There are not only risks associated with physical assault of frontline service staff but also other patients.

Methamphetamine users can become aggressive and difficult to manage and may require 24-hour security, sedation and occupy psychiatric beds (McKetin, McLaren et al. 2005).

The emergency departments, police, ambulance officers and other clinicians are at the forefront of dealing with methamphetamine users. These methamphetamine users can present in public with psychosis and violent tendencies, which require police interception and ambulance transportation to emergency departments.

5.4 Children and Families

Some methamphetamine users will be the parents of small children. There is no evidence on the extent to which young children are living with parents who are dependent methamphetamine users.

Children living in methamphetamine-tainted environments are at high risk of passively absorbing, ingesting or inhaling methamphetamine (Lineberry and Bostwick 2006).

Furthermore, children living with parents / carers who have problematic ice use are at risk of abuse and neglect.

5.5 Use in the Workplace

The majority of Australians who use drugs are employed. It is unclear how prevalent illicit drug use is in the Australian workforce, as there are few studies targeting this area.

According to the *2004 National Drug Strategy Household Survey*, 17.3% of those with a paid job, had used illicit drugs in the previous 12 months, compared to 11.8% without a paid job. Almost 3% of the workforce reported to going to work under the influence of illicit drugs. This trend was more common in males and in younger people aged 18-29 years (5.9%) (Bywood, Pidd et al. 2006). The group with the highest reported amphetamine use was hospitality workers, followed by transport and construction workers (Bywood, Pidd et al. 2006).

It has been suggested that illicit drug use can have detrimental effects on workplace safety and productivity. Illicit drug use has also been associated with absenteeism from work, with a reported 1% of the workforce taking days off due to their drug use (Pidd 2005; Bywood, Pidd et al. 2006).

However, some workers use drugs in an attempt to improve performance. For example, there has been reports that long distance truck drivers are more likely to use amphetamines to stay alert compared to the general work population (Hensher, Battellino et al. 1991; Williamson, Colley et al. 2006).

The use of amphetamine-type substances, including methamphetamines, can lead to:

- overwhelming tiredness at the beginning of the working week;
 - otherwise unexplained irritability, agitation or mood swings;
 - difficulty concentrating, poor work or study performance;
 - mental health problems, such as paranoia, delusions, feeling generally flat or depressed;
 - apparent unconcern about otherwise serious matters; and
 - health problems, such as palpitations, infected injection sites or lesions.
- (NCETA 2006).

5.6 Crime and Law Enforcement

Proportions of regular or dependent methamphetamine users will be involved in criminal activity. In a study into the Sydney methamphetamine market, almost half of regular methamphetamine users had committed an offence in the past month, one quarter had been arrested in the past year and one third had served a prison sentence during their lifetime (McKetin, McLaren et al. 2005). The most common types of crime committed by methamphetamine users were dealing and property crime (McKetin, McLaren et al. 2005).

Nationally, it is estimated that between 25% and 50% of detainees or inmates are users of methamphetamine. Again, most do not come into contact with the criminal justice system for methamphetamine-related offences, but rather, because of miscellaneous or property offences (McKetin and McLaren 2004).

The *Sydney methamphetamine market study* found that the rate of violent crime among methamphetamine users was comparable to other psychostimulant drugs (McKetin, McLaren et al. 2005).

It should be noted that changes in patterns of arrest can reflect changes in the activity of police, as well as of the users or suppliers of illicit drugs. A number of jurisdictions do not differentiate between arrests connected with amphetamine-type stimulants and phenethylamines (the class of drugs to which ecstasy [MDMA] belongs). The number of amphetamine-type stimulant arrests increased in the majority of jurisdictions in 2003/04. In WA the number of arrests increased from 1,711 in 2003/04 to 2,045 in 2004/05. QLD also had an increase from 3,000 in 2003/04 to 3,337 in 2004/05. The arrest data for each state and territory include Australian Federal Police (AFP) data (Stafford, Degenhardt et al. 2006).

REFERENCES

- ACON (2006). Crystal - How crystal is taken. http://www.acon.org.au/health/index.cfm?cat_id=103 (Accessed 28/11/06), Aids Council of New South Wales.
- American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM IV-TR). Washington DC, American Psychiatric Association.
- Australian Institute of Health and Welfare (2005). 2004 National Drug Strategy Household Survey: Detailed Findings. Canberra, AIHW cat. no. PHE 66.(Drug Statistics Series No.16).
- Australian Institute of Health and Welfare (2006). Drug use among Aboriginal and Torres Strait Islander peoples: an assessment of data sources. Drug statistics series no. 17. Cat. no. PHE 76. Canberra, AIHW.
- Black, E., L. Degenhardt, et al. (2005). NSW Drug Trends 2005: Findings from the Illicit Drug Reporting System. National Drug and Alcohol Research Centre. Sydney, University of New South Wales.
- Bywood, P., K. Pidd, et al. (2006). Information & Data Sheet 5: Illicit drugs in the Australian workforce: Prevalence and patterns of use, National Centre for Education and Training on Addiction (NCETA), Flinders University.
- Degenhardt, L., C. Day, et al. (2005). "Effects of a sustained heroin shortage in three Australian States." Addiction **100**: 908-920.
- Degenhardt, L., D. McGuigan, et al. (2005). Rapid assessment of trends in crystal methamphetamine and GHB use in the gay, lesbian, bisexual and transgender community in New South Wales. NDARC Technical Report No. 235. Sydney, National Drug and Alcohol Research Centre, University of New South Wales.
- Degenhardt, L., A. Roxburgh, et al. (2006). Cocaine and methamphetamine mentions in accidental drug-induced deaths in Australia. Sydney, National Drug and Alcohol Research Centre, University of New South Wales.
- Degenhardt, L. and L. Topp (2003). "Crystal Methamphetamine use among polydrug users in Sydney's dance party subculture: characteristics, use patterns and associated harms." International Journal of Drug Policy **14**(1): 17.
- Ernst, T., C. Chang, et al. (2000). "Evidence for long-term neurotoxicity associated with methamphetamine abuse." Neurology **54**(6).

Farrell, M. and J. Marsden (1997). "Methamphetamines: drug use and psychoses becomes a major public health issue in the Asia Pacific region." Addiction **97**: 771-772.

Hensher, D., H. Battellino, et al. (1991). Long Distance Truck Drivers On-Road Performance and Economic Reward. Sydney, Australia, Institute of Transport Studies, University of Sydney.

Hull, P., G. Brown, et al. (2005). Gay community periodic survey Perth 2004. National Centre in HIV Social Research, National Centre in HIV Epidemiology and Clinical Research, Western Australian Centre for Health Promotion Research and Western Australia Aids Council, National Centre in HIV Social Research.

Hull, P., G. Prestage, et al. (2006). Gay Community Periodic Survey Melbourne 2005. National Centre in HIV Social Research, National Centre in HIV Epidemiology and Clinical Research and Victorian AIDS Council/Gay Men's Health Centre, National Centre in HIV Social Research.

Hull, P., P. Rawstorne, et al. (2006). Sydney Gay Community Periodic Survey February 1996 to August 2005. National Centre in HIV Social Research, National Centre in HIV Epidemiology and Clinical Research and The University of New South Wales, National Centre in HIV Social Research.

Hull, P., P. Rawstorne, et al. (2006). Gay Community Periodic Survey Queensland 2005. National Centre in HIV Social Research, National Centre in HIV Epidemiology and Clinical Research, Queensland AIDS Council and Queensland Positive People, National Centre in HIV Social Research.

Krawczyk, C., F. Molitor, et al. (March 17, 2006). "Methamphetamine Use and HIV Risk Behaviors Among Heterosexual Men - Preliminary Results from Five Northern California Counties, December 2001 -November 2003." Morbidity and Mortality Weekly Report **55**(10): 273-277.

Lineberry, T. and M. Bostwick (2006). "Methamphetamine abuse: A perfect storm of complications." Mayo Clinic Proceedings **81**(1): 77-84.

March of Dimes (2004). Quick Reference: Fact Sheets - Illicit Drug Use During Pregnancy. Professionals & Researchers. http://search.marchofdimes.com/cgi-bin/MsmGo.exe?grab_id=0&page_id=1052&query=methamphetamine&hiword=methamphetamine%20 (Accessed 17/11/06), March of Dimes.

Maxwell, J. (2006). "Emerging Research on Methamphetamine." International Drug Therapy Newsletter **41**(3): 17-24.

McKetin, R. and J. McLaren (2004). The methamphetamine situation in Australia: A review of routine data sources. Funded by the Nation Drug Law Enforcement Research Fund, Monograph Series No.1, Commonwealth of Australia.

McKetin, R., J. McLaren, et al. (2005). The Sydney Methamphetamine Market: Patterns supply, use personal harms and social consequences, National Drug Law Enforcement Research Fund. Monograph Series no. 13, Commonwealth of Australia.

McKetin, R., J. McLaren, et al. (2005). Estimating the number of regular and dependant methamphetamine users in Australia,. NDARC Technical Report no. 230. Sydney, National Drug and Alcohol Research Centre.

McKetin, R., J. McLaren, et al. (2006). "The prevalence of psychotic symptoms among methamphetamine users." Addiction **101**: 1473-1478.

Morefield, K., R. Ali, et al. (2004). Methamphetamine Psychosis in South Australia Stage 1 of Methamphetamine Psychosis Research Program. DASC Monograph No. 11, Drug & Alcohol Services Council South Australia.

National Drug and Alcohol Research Centre (n.d). On thin ice - A users' guide. [http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/Ice+Resource/\\$file/ICE+RESOURCE.pdf](http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/Ice+Resource/$file/ICE+RESOURCE.pdf) (Accessed 28/11/06).

National Drug and Alcohol Research Centre (NDARC) (2005). Methamphetamine: Forms and Use Patterns, [http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/NDLERF_Methamphetamine/\\$file/NDLERF+ICE+FORMS+AND+USE.pdf](http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/NDLERF_Methamphetamine/$file/NDLERF+ICE+FORMS+AND+USE.pdf).

NCETA (2006). Factsheet 3 - Amphetamines and work, National Centre for Education and Training on Addiction (NCETA), Flinders University.

NDARC (2005). Methamphetamine Supply in Australia'. [http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/NDLERF_Methamphetamine/\\$file/NDLERF+ICE+SUPPLY.pdf](http://ndarc.med.unsw.edu.au/NDARCWeb.nsf/resources/NDLERF_Methamphetamine/$file/NDLERF+ICE+SUPPLY.pdf), National Drug and Alcohol Research Centre.

Nicholas, R. and J. Shoobridge (2005). Alcohol and other drug issues facing policing in Australia. Adelaide: Australiasian Centre for Policing Research, Report produced on behalf of the Commissioners' Drugs Committee.

OTIS (2005). Dextroamphetamine/Methamphetamine and Pregnancy. <http://otispregnancy.org/pdf/methamphetamines.pdf> (Accessed 17/11/06), Organization of Teratology Information Services.

Pidd, K. (2005). Drugs and Alcohol "Abuse" and Testing of Workers for the Presence of Drugs and Alcohol. <http://www.nceta.flinders.edu.au/pdf/pidd-drugtesting-workplace.pdf> (Accessed 16/11/06), National Centre for Education and Training on Addiction (NCETA), Flinders University.

Slavin, S. (2004). "Crystal methamphetamine use among gay men in Sydney." Contemporary Drug Problems **31**(3): 425-465.

Stafford, J., L. Degenhardt, et al. (2006). Australian Drug Trends 2005: Findings from the Illicit Drug Reporting System (IDRS). NDARC Monograph No. 59. National Drug and Alcohol Research Centre. Sydney, University of New South Wales.

Stafford, J., L. Degenhardt, et al. (2006). Australian trends in ecstasy and related drug markets 2005: Findings from the Party Drug Initiative (PDI). Sydney, National Drug and Alcohol Research Centre, University of New South Wales.

Trewin, D. (2006). National Aboriginal and Torres Strait Islander Health Survey 2004-05. ABS Catalogue No. 4715.0, Australian Bureau of Statistics, Commonwealth of Australia, Canberra.

White, V. and J. Hayman (2006). Australian secondary school students' use of over-the-counter and illicit substances in 2005, Drug Strategy Branch, Australian Government Department of Health and Ageing.

Williamson, A., M. Colley, et al. (2006). Final report of stimulant use by long distance road transport drivers project, NSW Injury Risk Management Research Centre, University of New South Wales, IRMRC.

World Health Organization (n.d). Amphetamine-type stimulants. http://www.who.int/substance_abuse/facts/ATS/en/index.html (Accessed 15/11/06).