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The Difference is Research

Forms of methamphetamine used in SA and recent use over time: 2007-2016

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KEY FINDINGS

- Nine hundred and nighty-nine IDRS participants were interviewed in SA from 2007-2016. Demographics across the years have remained relatively stable.
- Over the last decade, recent use of 'any' form of methamphetamine has remained high and fairly consistent.
- A change was observed from 2007 to 2016 for crystal methamphetamine users, with an increase in the proportion of participants reporting recent use of crystal methamphetamine, from 41% in 2007 to 75% in 2016.
- Binary logistic regression analysis indicated that in 2016, participants were significantly less likely to have recently used powder or base, when compared to crystal methamphetamine ($p<0.01$).
- From 2007 to 2016 a significant increase occurred in the proportion of participants reporting crystal methamphetamine as the form most used, from 29% in 2007 to 86% in 2016 ($p<0.01$).
- Multinomial regression analysis indicated that in 2014, 2015 and 2016, participants were significantly less likely to report powder as the form most used, when compared to crystal methamphetamine ($p<0.01$).
- No significant difference was found between 2010 and 2016 in relation to stimulant dependence, although half of respondents in 2016 had scores indicative of stimulant dependence.

INTRODUCTION

The illicit use of methamphetamine has been the focus of increasing public health concern in Australia and internationally (McKetin et al., 2006). The Illicit Drug Reporting System (IDRS) reported the emergence of more potent forms of methamphetamine, i.e. crystalline methamphetamine, in the early 2000s in Australia (Topp et al., 2002).

Recently, crystal methamphetamine has received substantial attention by the Australian media due to the rising toll of methamphetamine-related harms, driven by the increased availability and high purity of crystal methamphetamine (Degenhardt et al., 2016). According to the 2013 National Drug Strategy Household Survey, it was found that although the prevalence of past year use of 'any' methamphetamine in Australia decreased from 3.2% in 2004 to 2.1% in 2013 (AIHW, 2015), there has been a change in the forms of methamphetamine used. Among past year users, the use of powder methamphetamine decreased from 51% to 29%, while the use of crystal methamphetamine more than doubled, from 22% in 2010 to 50% in 2013 (AIHW, 2014). More frequent use of the drug was also reported among methamphetamine users in 2013, with an increase in daily or weekly use from 9.3% to 15.5%. The number doubled among crystal methamphetamine users, from 12.4% to 25% in daily or weekly use (AIHW, 2014).

Similarly, rates of 'any' methamphetamine use have remained relatively stable in sentinel drug-using populations, although there has been a shift in the form of methamphetamine most commonly used, specifically an increase in the rate and frequency of crystal methamphetamine use (Stafford and Breen, 2017). Interestingly, in 2011, almost equal proportions of the national IDRS sample reported past six month use of methamphetamine powder and crystal methamphetamine (44% and 45% respectively), however in more recent years, greater proportions have reported using crystalline methamphetamine than any other form of

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methamphetamine (Stafford and Breen, 2017). This trend has remained consistent across jurisdictions.

Analysis of wastewater for drug metabolites in Adelaide has shown increases in methamphetamine use over time. Research confirmed that methamphetamine use has been steadily rising since 2011, with increased use reported on weekends (Tscharke et al., 2016). According to a recent article published on the ABC news website, an analysis of Adelaide's wastewater identified methamphetamine use increased by 25% in the past year, and tripled over five years. Specifically, there were more than 450 doses (one dose equated to 30 milligrams) of methamphetamine each week per 1,000 people in December 2016, a rise from a little over 150 doses per week in 2012 (Scopelianos, Campbell and Winter, 2017). However, wastewater analysis does not provide information to determine characteristics of people who use methamphetamine, nor the form of methamphetamine used.

This bulletin examines the use and changes in forms of methamphetamine, including powder, liquid, base and crystal methamphetamine in South Australia (SA) over a ten-year period. Specifically, the aims of this bulletin are three-fold:

1. To examine rates of powder, liquid, base and crystal methamphetamine use among a sample of people who inject drugs (PWID) in SA, from 2007-2016;
2. To determine if there have been changes in the 'main form' of methamphetamine used among PWID in SA, from 2007-2016; and
3. To examine rates of reported stimulant dependence among PWID in SA, from 2010-2016.

METHOD

The Illicit Drug Reporting System (IDRS) is an annual monitoring system that has been conducted in every capital city across Australia since 2000. The IDRS is supported by funding from the Australian Government under the Substance Misuse Prevention and Service Improvements Grants Fund. The study uses a triangulation of three data sources including: a survey of people who regularly inject drugs (PWID), a survey of key experts who come into contact with PWID, whether it be in the medical, health or judicial field, and therefore have knowledge of drug trends and related issues, and analysis of indicator data from health and law enforcement sectors.

All participants in the PWID survey were asked about their 'recent' (past six month) use of 'any' methamphetamine, as well as the four forms of methamphetamine: powder methamphetamine, base methamphetamine, liquid amphetamine and crystal methamphetamine. Powder methamphetamine (also known as 'speed' or 'speed powder') is typically a fine-grained powder, generally white or off-white in colour, but may range from white through to beige or pink due to differences in the chemicals used to produce it. 'Base' (which can also be known as 'pure', 'wax' or 'point') is the paste methamphetamine that is 'moist', 'oily' or 'waxy' and is often brownish in colour. 'Crystal' methamphetamine (referred to as 'ice' on the street) comes in crystalline form, in either translucent or white crystals (sometimes with a pink, green or blue hue) that vary in size. A fourth form, liquid amphetamine or 'oxblood', has also been identified, and is typically red/brown in colour. Participants who reported recent use of methamphetamine were then asked about the *main* form of methamphetamine used in that time frame. From 2010 onwards, participants also completed the 5-item Severity of Dependence Scale (SDS) (Gossop et al., 1995), whereby a cut-off score of ≥4 was considered indicative of stimulant dependence (Topp and Mattick, 1997).

Binary logistic regressions were used to examine trends in past six month methamphetamine use from 2007-2016, and a multinominal regression model was used to examine trends in the main form of methamphetamine used (with crystal methamphetamine as the reference category). A statistically significant difference was assumed between responses when the p value is less than or equal to 0.01 (a conservative alpha level (α) was chosen in order to account for multiple comparisons within the data). Chi square analysis was undertaken in order to assess any changes in stimulant dependence among participants in 2010 and 2016. All analyses were conducted using SPSS Version 24 (IBM Corp, 2016).

RESULTS

Demographic characteristics

Nine hundred and nighty-nine IDRS participants were interviewed in SA from 2007-2016. Demographics across the years have remained relatively stable (Table 1). The mean age of the sample was 41 years (range: 17-62 years). Over three-fifths of the sample was male (61%), the majority were unemployed (72%) and just under half had a history of previous imprisonment (48%). Ninety-six percent of the sample was from an English speaking background, and 8% identified as being Aboriginal and/or Torres Strait Islander. The median number of years spent at school was 10 (range: 3-12 years). Fifty-nine percent resided in rental accommodation. The majority of participants (88%) identified as heterosexual and over half of the

Table 1. Participant Demographics, 2007-2016.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	N=100	N=100	N=100	N=97	N=100	N=93	N=100	N=106	N=102	N=101
Mean age (years)	36	39	40	38	39	40	42	42	45	44
Male (%)	66	65	66	56	59	59	56	59	66	61
English speaking (%)	95	93	99	97	96	97	94	96	96	97
ATSI (%)	9	6	3	4	10	11	9	9	14	7
Single (%)*	-	57	60	53	46	52	50	56	49	68
Median years at school	11	10	11	11	11	11	10	10	10	10
Heterosexual (%)	85	92	89	88	83	85	90	92	91	86
Unemployed (%)	66	76	67	63	67	61	75	80	81	86
Prison History (%)	38	52	40	43	48	50	52	51	48	54
Rental accom (%)**	-	-	80	58	74	71	74	82	72	79
Currently in drug tx (%)	46	44	45	38	40	32	31	27	31	33

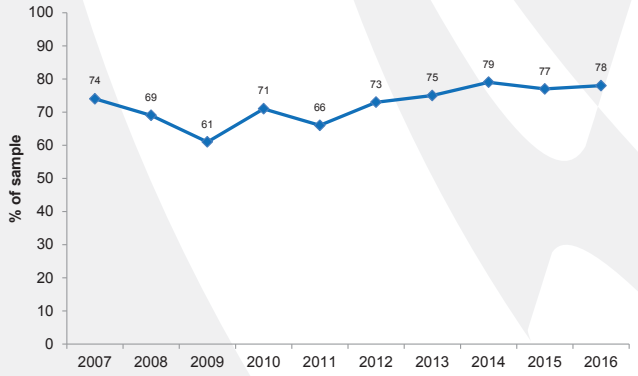
Source: IDRS participant interviews, 2007-2016.
*Data on relationship status was not collected in 2007.
**Rental accommodation in 2007 and 2008 was grouped with own house/flat. Unable to report.

sample (55%) was single at the time of interview. Over one-third of the sample (36%) was in drug treatment at the time of interview.

'Any' recent methamphetamine use

Figure 1 shows the proportion of participants who reported using any form of methamphetamine (i.e. powder, base, liquid or crystal methamphetamine) in the six months preceding interview. Over the last decade, recent use of any form of methamphetamine has remained high and fairly consistent, apart from a slight decrease in 2009.

Figure 1. Recent use of 'any form' of methamphetamine among PWID, 2007-2016

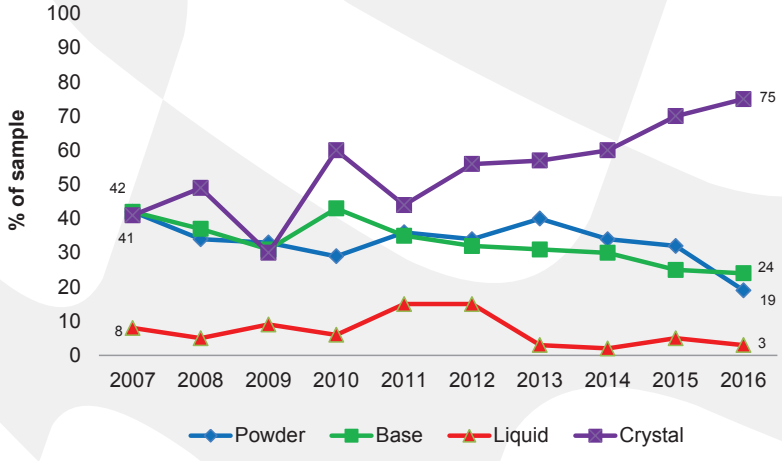


Source: IDRS participant interviews, 2007-2016

Recent use

In 2007, the highest proportion of methamphetamine users reported recent use of powder and base methamphetamine at 42%, respectively. Both forms declined steadily over the 10 year period, with 24% of participants reporting recent use of base in 2016, and 19% reporting recent use of powder in 2016. Recent use of liquid methamphetamine remained low and steady apart from a slight increase from 6% in 2010 to 15% in the following two years. An evident change was observed from 2007 to 2016 for crystal methamphetamine users, with an increase in the proportion of participants reporting recent use of crystal methamphetamine, from 41% in 2007 to 75% in 2016 (Figure 2).

Figure 2: Recent use of Methamphetamine forms among PWID, 2007-2016



Source: IDRS participant interviews, 2007-2016

Binary logistic regression analysis indicated that in 2015, participants were significantly less likely to have recently used base when compared to crystal methamphetamine. Furthermore, analysis revealed that in 2016, participants were significantly less likely to have recently used powder or base, when compared to crystal methamphetamine (Table 2).

Table 2. Binary Logistic regression for recent use of methamphetamine by form, 2008-2016.

	2008# OR (95% CI; p value)	2009	2010	2011	2012	2013	2014	2015	2016
Recent use of methamphetamine by form									
Recent use of Powder^	0.71 (040-1.26; p=0.11)	0.21 (0.69-0.39; p=0.21)	0.57 (0.31-1.03; p=0.06)	0.78 (0.44-1.37; p=0.39)	0.72 (0.40-1.30; p=0.28)	0.92 (0.52-1.62; p=0.77)	0.71 (0.40-1.25; p=0.24)	0.66 (0.37-1.17; p=0.16)	**0.32 (0.17-0.61; p<0.01)***
Recent use of Base^	0.81 (0.46-1.43; p=0.47)	0.62 (0.35-1.11; p=0.12)	1.03 (0.58-1.81; p=0.92)	0.74 (0.42-1.32; p=0.31)	0.66 (0.37-1.19; p=0.16)	0.62 (0.35-1.11; p=0.11)	0.60 (0.34-1.06; p=0.08)	**0.47 (0.26-0.86; p<0.01)***	**0.43 (0.24-0.79; p<0.01)***
Recent use of Liquid^	0.61 (0.19-1.92; p=0.39)	1.14 (0.42-3.08; p=0.80)	0.77 (0.26-2.30; p=0.64)	2.03 (0.82-5.03; p=0.13)	2.04 (0.81-5.11; p=0.13)	0.36 (0.09-1.38; p=0.14)	0.22 (0.05-1.07; p=0.06)	0.59 (0.19-1.88; p=0.37)	0.35 (0.09-1.37; p=0.13)

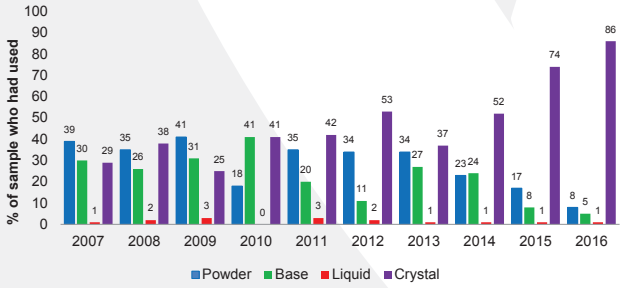
Source: IDRS participant interviews, 2008-2016.
^Crystal methamphetamine is reference category for 'recent use'
#2007 is reference category for year

Form most used

In 2007, of those who had used methamphetamine in the six months prior to interview, 39% of the sample reported powder as the form of methamphetamine most used. This was in contrast to 2016, in which 8% reported powder as the form most used, the lowest it has been in the past 10 years (Figure 3). Base has fluctuated over the years, with the highest proportion of methamphetamine users (41%) reporting it as the form most used in 2010. In 2016, 5% reported base as the form most used. Liquid methamphetamine remained low with no more than three percent reporting it as the form most used in the ten year period. The most noticeable change from 2007 to 2016 was the increased proportion of participants reporting crystal methamphetamine as the form most used, from 29% in 2007 to 86% in 2016 (p<0.01; 95% CI: -0.69, -0.42).

Multinomial regression analysis indicated that in 2014, 2015 and 2016, participants were significantly less likely to report powder as the form most used, when compared to crystal methamphetamine. Refer to Table 3 for more detailed results.

Figure 3. Form of methamphetamine most used (among those who had used methamphetamine recently), 2007-2016.



Source: IDRS participant interviews, 2007-2016

Stimulant Dependence

In 2010, of those who had recently used a stimulant, the median SDS score was three, with 44% scoring four or above. Of those who had recently used a stimulant in 2016, the median SDS score was four, with 51% scoring four or above, indicative of stimulant dependence. There was no significant difference between 2010 and 2016, indicating no change in the proportions of PWID indicating stimulant dependence, though this may be due to the small number of participants who answered the SDS (n=68, 2010; n=80, 2016). The vast majority of participants who answered the SDS attributed their responses to methamphetamine (91%, 2010; 98%, 2016).

CONCLUSION

Among the IDRS sample of PWID in SA, a large proportion of participants report recent use of 'any' methamphetamine, which has remained stable over the last decade. Data from the SA IDRS participant survey supports evidence that in Australia, use of methamphetamine has shifted from powder to crystal methamphetamine (Degenhardt et al., 2016). The proportion of participants who reported recent use of crystal methamphetamine increased from 41% in 2007 to 75% in 2016. Specifically, participants were significantly less likely to have recently used powder methamphetamine when compared to crystal methamphetamine in 2016 than in 2010. The proportion of participants reporting crystal methamphetamine as the form most used increased from 29% in 2007 to 86% in 2016. Results also indicated that in 2014, 2015 and 2016, participants were significantly less likely to report powder as the form most used, when compared to crystal methamphetamine.

Table 3. Multinomial Logistic regression for form of methamphetamine most used, 2008-2016.

	2008# OR (95% CI; p value)	2009	2010	2011	2012	2013	2014	2015	2016
Form most used									
Powder^	0.68 (0.30-1.53; p=0.35)	1.24 (0.52-2.93; p=0.63)	0.33 (0.14-0.80; p=0.02)	0.63 (0.28-1.41; p=0.26)	0.48 (0.22-1.06; p=0.07)	0.69 (0.31-1.52; p=0.35)	**0.33 (0.15-0.72; p<0.01)***	**0.17 (0.07-0.29; p<0.01)***	**0.07 (0.02-0.18; p<0.01)***
Base^	0.65 (0.27-1.54; p=0.33)	1.21 (0.48-3.01; p=0.69)	0.95 (0.42-2.15; p=0.91)	0.46 (0.19-1.13; p=0.09)	0.20 (0.07-0.54; p<0.01)*	0.71 (0.30-2.64; p=0.42)	0.44 (0.20-1.00; p=0.05)	**0.10 (0.04-0.28; p<0.01)***	**0.06 (0.02-0.19; p<0.01)***
Liquid^	0.80 (0.05-13.60; p=0.88)	2.67 (0.22-32.23; p=0.44)	N/A	1.48 (0.13-17.50; p=0.76)	0.59 (0.04-9.93; p=0.71)	0.74 (0.44-12.57; p=0.84)	0.49 (0.03-8.21; p=0.62)	0.35 (0.02-5.88; p=0.47)	0.30 (0.02-5.00; p=0.40)

Source: IDRS participant interviews, 2008-2016

No significant difference was found between 2010 and 2016 among participants in relation to stimulant dependence although half of respondents in 2016 had scores indicative of stimulant dependence. There have been increases in various indicators of methamphetamine-related harms in South Australia, including drug and alcohol services, telephone helplines, hospital admissions and emergency department admissions (Karlsson and Breen, 2017).

In 2015/16, amphetamines (25.1%) continued to be the most commonly nominated illicit drug of concern by clients attending Drug and Alcohol Services SA (DASSA), which has been the case for well over a decade. Methamphetamine, including crystal methamphetamine, are included in the amphetamine classification, as is the case for other indicator datasets, and the majority of the amphetamine in Australia is methamphetamine (Australian Criminal Intelligence Commission, 2016). The number of clients attending inpatient detoxification services for amphetamines has steadily increased in SA from 2011/12 (n=111), with increases in 2014/15 (n=215) and 2015/16 (n=319). This has resulted in amphetamines being responsible for the highest number of clients entering into detoxification services for the past four years (excluding alcohol). The number of amphetamine-related telephone calls to the SA Alcohol and Drug Information Service (ADIS) continued to be higher than that of other illicit drugs, and has remained this way since mid-2013 (Karlsson and Breen, 2017). Key experts have commented that the increase in strength of crystal methamphetamine is associated with episodes of psychosis and other mental health issues (Hordern and Breen, 2016).

Amphetamine-related hospital admissions in SA increased from 197 per million in 2013/14 to 268 per million in 2014/15. Furthermore, amphetamines continued to dominate as the most common illicit drug-related attendance to Royal Adelaide Hospital with the number of amphetamine-related attendances increasing from 121 attendances in 2014/15 to 170 in 2015/16 (Karlsson and Breen, 2017).

Use of the stronger forms of methamphetamine has increased in South Australia over the past decade among regular PWID. Of all illicit drugs, the Australian Criminal Intelligence Commission (2016) has assessed that methamphetamine, particularly in crystalline form, presents the highest risk to the Australian community. The increase in the use of more potent forms of methamphetamine and corresponding harms highlights a need for services to address the physical and mental health-related harms and problems associated with use.

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