Drug and Alcohol Office
Government of Western Australia

Delivering a Healthy WA

Confirmed Deaths Caused by Amphetamines Western Australia: 1997 - 2004

Introduction

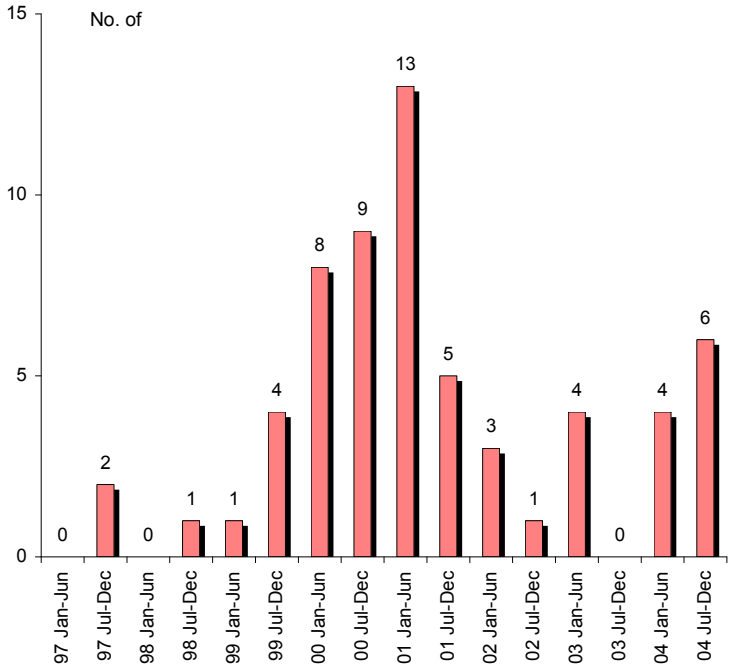
This report summarises annual and quarterly trends in the number of drug deaths that occurred in Western Australia (WA) between 1997 and 2004 where the underlying cause of death was due to amphetamine related drugs. The data summarised in this report is based on information from the Coronial Database, which contains detailed information about the circumstances of drug related deaths in WA.

The Coronial Database identifies amphetamine related deaths where a Coroner had determined death was due to an external cause, such as drug overdose, as well as those cases where the cause of death was due to medical complications associated with amphetamine use. *(For a description of the Coronial Database and the data systems used to classify causes of death see the Methods section in Statistical Bulletin No. 32.)*

In Brief

- There was a total of 61 amphetamine related deaths in WA between 1997 and 2004, of which 21 (34.4%) were females and 40 (65.6%) were males.
- Overall 60.7% of deaths occurred on a Friday, Saturday or Sunday.
- The average age of amphetamine related deaths typically involved those in their late 20s.
- Nearly two thirds (63.9%) of deaths were due to an external cause and 36.1% occurred as a consequence of medical complications attributable to amphetamine use.

Figure 1
Six monthly amphetamine related deaths, WA, 1997 - 2004



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Summary WA: 1997 - 2004

An anlysis of toxicological data in the Coronial Database was used to identify the circumstances of deaths between 1997 and 2004 which involved amphetamine and amphetamine related drugs such as PMA (paramethoxyamphetamine), ecstasy or MDMA (methylenedioxymetamphetamine) and MDA (3,4-methylenedioxymethylamphetamine).

Total deaths

From 1997 to 2004 there was a total of 61 deaths that were due to amphetamine related drugs, of which 54 (88.5%) involved amphetamine and 7 (11.5%) that were related to the use of PMA, MDMA or MDA.

Annual deaths

The greatest number of deaths occurred in 2000 and 2001, when there was a total of 17 and 18 deaths respectively (Table 1).

Amphetamine related deaths peaked in the January to June 2001 period (13 deaths) and then declined to nil deaths in the July to December 2003 period. Since 2003 there has been a small increase in deaths, with 6 recorded in the second half of 2004 (Figure 1, page 1).

Age & sex

Over the eight year period the mean age of amphetamine related deaths typically involved persons aged in their late 20s (Table 2).

Out of the 61 deaths, 21 (34.4%) invovled females and 40 (65.6%) involved males (Table 3, page 4).

Day of incident

A total of 28 (45.9%) amphetamine related deaths occurred on a Saturday or Sunday. The next most common day of death was Friday, when (14.8%) of deaths occurred (Table 3, page 4).

The majority (60.7%) of deaths occurred between Friday and Sunday. This may reflect a pattern of high risk recreational use by many of those who had used amphetamines.

There were somewhat higher proportions of female deaths on Monday, Tuesday and Friday, whereas on the other days a higher proportion of deaths involved males than females (Figure 2, page 3).

Type of cause

Detailed information in the Coronial Database in relation to circumstance meant that it was possible to differentiate deaths which arose from a medical condition occurring as a consequence of use of an amphetamine related drug, compared to external causes, such as an overdose.

Out of the 61 deaths between 1997 and 2004 it was found that 39 (63.9%) were due to an external cause and the remaining 22 (36.1%) were due to medical complications (Table 4, page 4).

That just over a third of these deaths resulted from medical compliations confirms research in other jurisdictions which has highlighted some of the higher risk that arises from the use of these types drugs when a person has an underlying medical condition. The use of amphetamine related drugs means that the medical conditon becomes life threatening as a consequence of using one or more of these types of drugs.

Medical conditions that were identified in this study included cardiovascular events such as cardiac arrest, cardiac arrhythmia, cardiac dysrhythmia, myocardial infarction or coronary arteriosclerosis.

The Coroner also identified other medical conditions which were a cause of premature death, such as asthma, cerebral haemorrhage and epileptiform seizure.

Table 1
Quarterly amphetamine related deaths, WA, 1997 - 2004

	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
1997	-	-	2	-	2
1998	-	-	-	1	1
1999	1	-	-	4	5
2000	4	4	4	5	17
2001	6	7	3	2	18
2002	2	1	1	-	4
2003	1	3	-	-	4
2004	1	3	2	4	10

Table 2
Mean age of amphetamine related deaths WA, 1997 - 2004

	Females	Males	Persons
1997	24.0	36.0	30.0
1998	-	25.0	25.0
1999	34.5	26.0	29.4
2000	23.3	30.9	29.1
2001	27.0	32.0	29.8
2002	30.0	26.5	28.3
2003	-	28.3	28.3
2004	30.8	28.7	29.5

Narrative of circumstances

The following extracts from a number of the Coroner's findings and a narrative of the circumstances provide an understanding of the circumstances of some of these deaths.

"Coronary arteriosclerosis associated with recent use of methylamphetamine" (male 36 years). Witness statements noted that about 24 hours after injecting amphetamines this man complained of hot flushes, sweating and shivering. These were symptoms he had experienced a number of times in the preceding six months following amphetamine use and each time he had refused medical assistance.

"Coronary arteriosclerosis with thrombosis and methylamphetamine effect (open finding)" (male 37 years). This death occurred as a result of a heart attack due to coronary arteriosclerosis and that using methylamphetamines was considered to have contributed to the heart attack.

"Intracerebral haemorrhage (massive) in association with arteriovenous malformation (natural causes)" (female 20 years). This death occurred on the day following recreational use of amphetamine tablets at a party. This woman collapsed in the shower, became unconscious and died four days later in an intensive care unit.

It was found that she had vascular abnormalities which may have burst due to very high blood pressure (systemic hypertension) that occurred following amphetamine use.

"Consistent with acute cardiac dysrhythmia in a woman with focal coronary artery atherosclerotic and methylamphetamine/amphetamine effect (accident)." (female 24 years). This woman had a pattern of injecting amphetamines with her partner on weekends. Toxicology tests confirmed the presence of methylamphetamine/amphetamine.

However, the Coroner noted while the levels were not directly fatal, they had potential to create vulnerability to acute cardiac dysrhythmia in a person already cardiologically vulnerable on account of having focal coronary artery disease.

The following Coroner's findings are examples of the toxic effects of amphetamine resulting in an overdose.

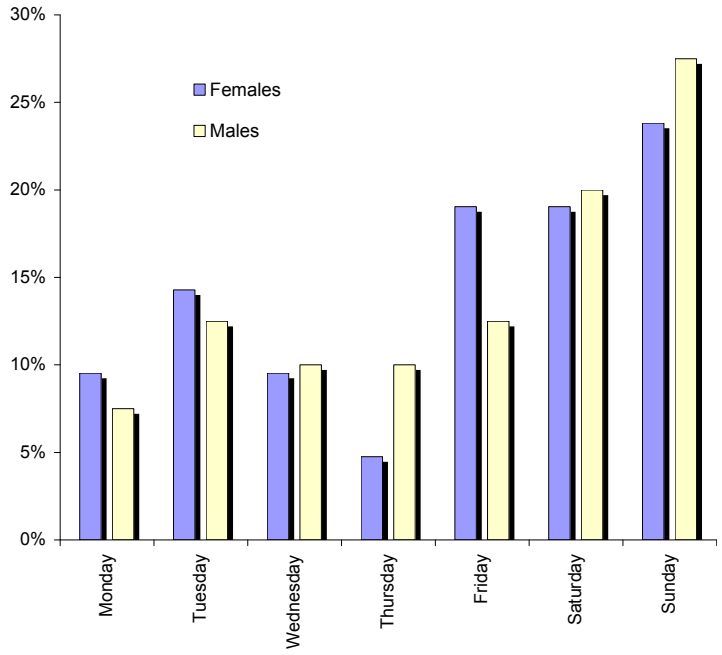
- *"Amphetamine effect (accident)."*
- *"Acute amphetamine toxicity (accident)"*
- *"Combined drug toxicity (accident).*
- *"Acute combined drug effect (amphetamines, methadone, cannabis, benzodiazepines) (accident)."*

In a number of other cases verdicts referred to the effect of amphetamines in association with other substances.

- *"Aspiration of vomitus in association with alcohol and amphetamine effect (accident)."*
- *"Combined drug toxicity (accident)."*
- *"Combined drug effect (accident)."*

The role of PMA (paramethyoxyamphetamine) as a contributing cause of death was specifically noted in the verdicts of 3 (4.9%) cases. All these deaths involved

Figure 2
Frequency (%) of amphetamine related deaths by day of incident & sex, 1997 - 2004



combinations of amphetamine type drugs and ecstasy which also contained PMA.

The importance of medical conditions, which were responsible for just over one third of all deaths between 1997 and 2004, confirms research (as noted below) that the risk of these conditions may not be sufficiently understood by those who use amphetamines.

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Table 3
Amphetamine related deaths by day of incident & sex, WA, 1997 - 2004

	Females		Males		Total	
	n	%	n	%	n	%
Monday	2	9.5	3	7.5	5	8.2
Tuesday	3	14.3	5	12.5	8	13.1
Wednesday	2	9.5	4	10.0	6	9.8
Thursday	1	4.8	4	10.0	5	8.2
Friday	4	19.0	5	12.5	9	14.8
Saturday	4	19.0	8	20.0	12	19.7
Sunday	5	23.8	11	27.5	16	26.2
Total	**21**	**100.0**	**40**	**100.0**	**61**	**100.0**

Table 4
Annual amphetamine related deaths by type of cause, WA, 1997 - 2004

	1997	1998	1999	2000	2001	2002	2003	2004	Total
External causes									
Drug overdose	1	1	4	10	10	2	2	5	35
Other external cause	-	-	-	2	2	-	-	-	4
Medical conditions									
Cardiovascular condition	1	-	1	4	3	-	-	3	12
Other medical condition	-	-	-	1	3	2	2	2	10
Total	**2**	**1**	**5**	**17**	**18**	**4**	**4**	**10**	**61**

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Appendix: Data Tables & Figures

Australian Trends: 1997 - 2005

The following summary of national data should not be compared to the WA data reported earlier, because of narrower definitions and coding constraints used by the Australian Bureau of Statistics when classifying causes of death.

Table A-1
Number of accidental cocaine or methamphetamine overdose deaths of persons aged 15-54 years, Australia, 1997 - 2005

	Cocaine	Methamphetamine
1997	-	4
1998	3	6
1999	4	15
2000	3	15
2001	2	13
2002	1	1
2003	5	17
2004	5	17
2005	10	26

It can be seen the trends amphetamine related deaths in WA, ie a peak in the years 2000 and 2001, followed by a decline in 2002 and then increased somewhat, broadly follows the national trend over this period in amphetamine related deaths.

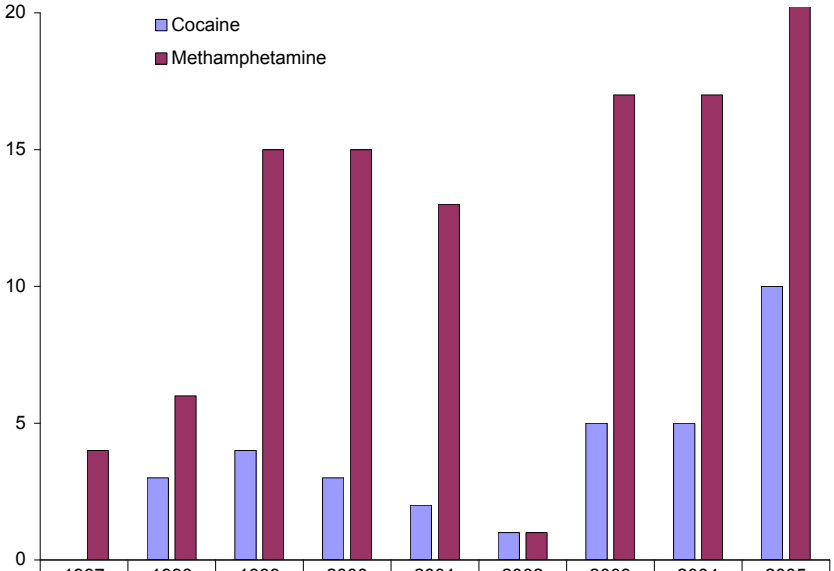
This pattern would suggest there is a close relationship between the national and WA market involving amphetamine related drugs.

The annual number of Australian deaths where cocaine was the underlying cause remained relatively constant between 1998 and 2004, with an increase to 10 deaths in 2005 (Figure A-1). (There were no cocaine related deaths in WA over this period.)

Whilst there were relatively few annual Australian deaths where methamphetamine was the underlying cause in 1997 and 1998 (average of 5 deaths per year), this was followed by a jump in deaths between 1999 and 2001, when there was an average of 14 deaths per year (Table A-1).

The number of amphetamine related deaths has remained stable or increased since 1999, with the exception of 2002, when only one amphetamine related death was recorded. Nationally, amphetamine related deaths peaked in 2005, the most recent year of published data.

Figure A-1
Number of accidental cocaine or methamphetamine overdose deaths of persons aged 15-54 years, Australia, 1997 - 2005



	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cocaine	0	3	4	3	2	1	5	5	10
Methamphetamine	4	6	15	15	13	1	17	17	26

Source: Degenhardt L & Roxburgh A. 2005 Cocaine and methamphetamine related drug induced deaths in Australia. Sydney, National Drug and Alcohol Research Centre, 2007.