

## Drug-related hospital stays in Australia 1993-2013

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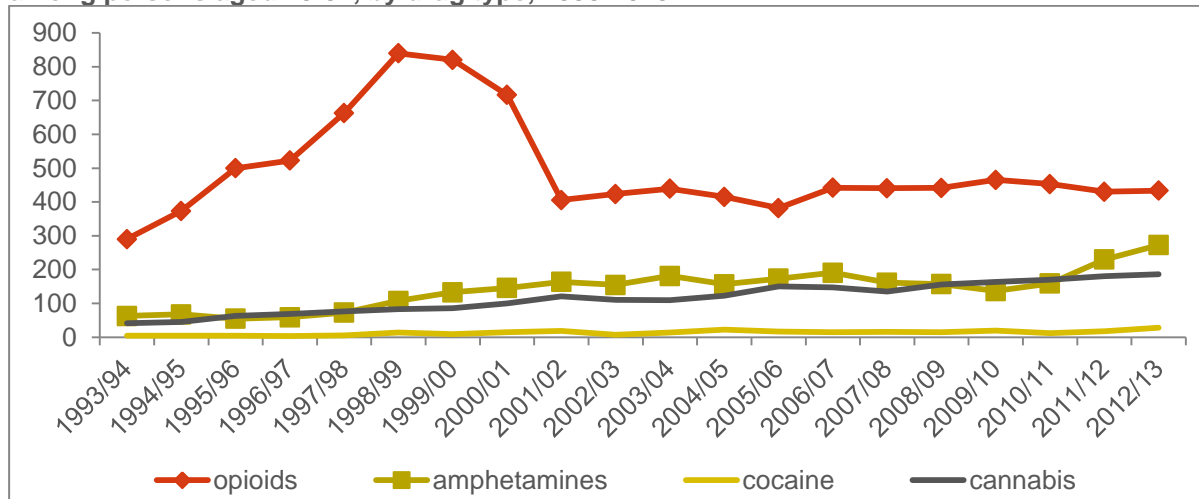
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*Funded by the Australian Government Department of Health*

### Introduction

- This bulletin presents data on drug-related hospital separations in Australia from 1993-2013 for the following drug types: opioids, cocaine, amphetamines and cannabis.
- A hospital separation is defined as an episode of care for an admitted patient, which may refer to a total hospital stay (from admission to discharge), or a portion of a hospital stay beginning or ending in a change of type of care, or transfer to another hospital.
- At the time of separation, a principal (main) diagnosis, and up to 40 secondary diagnoses may be made. The data presented in this bulletin include only hospital separations where opioids, cocaine, amphetamines or cannabis were determined to be the principal (i.e. main) reason for the hospital stay. The data presented will therefore be an under-estimate of the total number of drug-related hospital admissions.
- Hospital separations are coded according to the World Health Organization's (WHO) International Statistical Classification of Diseases (ICD) and Related Problems. The ICD 10th revision (ICD 10 AM) (National Centre for Classification in Health, 1998) was used to code data dating from 1999 to the present in South Australia (SA), Western Australia (WA), and Queensland (QLD). The remaining jurisdictions commenced using ICD 10 AM codes in 1998. Prior to this, the ICD 9th revision (ICD 9 CM) (National Coding Centre, 1996) was used to code hospital separations.
- Appendix A provides the ICD codes used for this analysis.
- As problems associated with drug use occur largely in youth to middle age, hospital separations are presented as numbers per million persons aged 15-54, calculated using the Australian Bureau of Statistics estimated resident population figures as at 30 June each year.
- All figures referred to in this bulletin are rates per million population.
- It should be noted that variations in coding practices may exist across jurisdictions.
- Figure 1 shows the rates of hospital separations per million persons for each of the four drug types over the 20 year time period (1993-2013). Rates were highest for opioids across the entire period, followed by amphetamines and cannabis, then cocaine.

**Figure 1: Rates per million persons of principal drug-related hospital separations in Australia among persons aged 15-54, by drug type, 1993-2013**



### Opioid-related hospital separations

For the purposes of this bulletin, opioid-related hospital separations are defined as those separations where opioids were recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis.

#### Trends over time

- Opioid-related hospital separations have slowly increased over time since the decline seen in 2001/02 (Figure 2). There were 433 separations per million persons recorded in 2012/13.
- In 2012/13, opioid dependence accounted for approximately half (53%) of all principal opioid-related separations in Australia. This represents a decline from approximately two-thirds of separations that were due to dependence through the 1990s.
- Over time there has been an increase in separations due to poisoning from opioids other than heroin (including morphine, oxycodone, and codeine) which accounted for 19% of all opioid-related separations in 2012/13 (these poisonings accounted for 7% of all opioid-related separations in 2000/01).
- Separations due to heroin poisoning comprised 9% of all opioid-related separations in 2012/13 among Australians aged 15 to 54.

#### Age analysis

- In 2012/13, the 30 to 39 year age group accounted for the largest proportion (32%) of opioid-related separations.
- Over time, there were different trends apparent across different age groups. Separations among older Australians (30 to 39, and 40 to 49 year olds) have increased since 2001/02, while remaining relatively stable among those aged 10 to 29 years. Opioid-related separations were lowest among Australians aged 10 to 19 years (data not shown).

#### Jurisdictional analysis

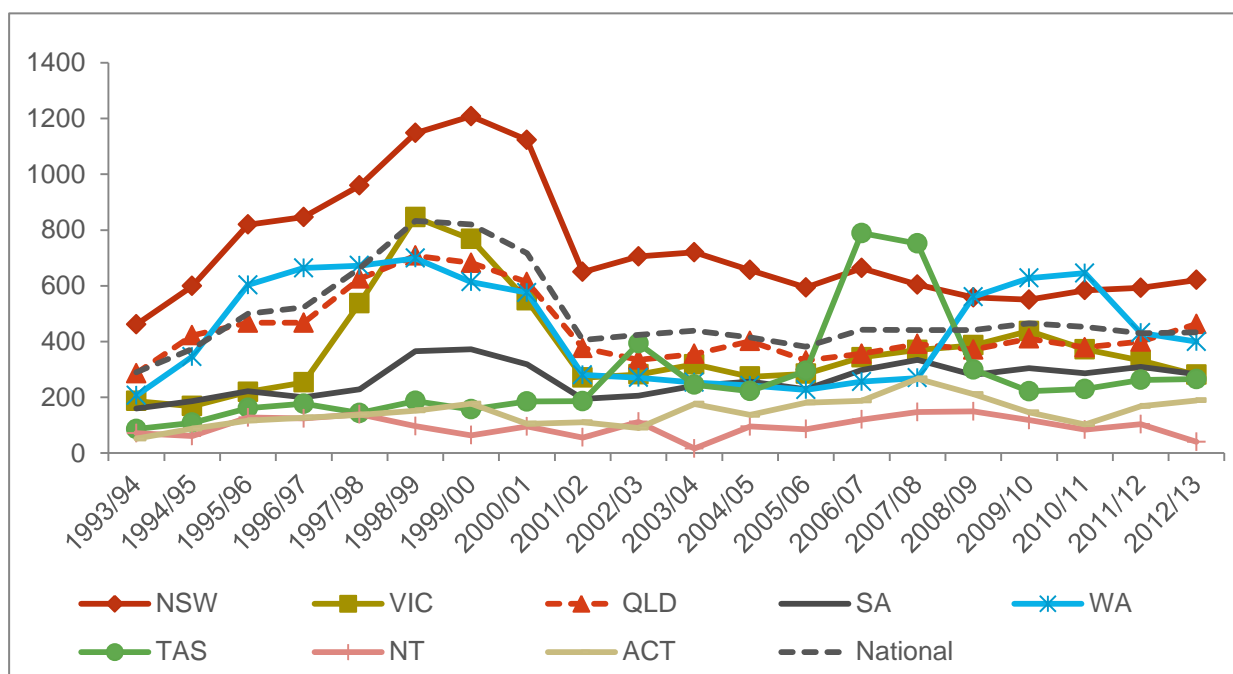
- Opioid-related separations for the most part have been highest in New South Wales (NSW) over the 20 year period (620 separations per million persons were recorded in 2012/13). Separations in NSW trended downwards between 2006/07 and 2009/10, with an upward trend evident over the past 3 years (Figure 2).

- Separations in Queensland (QLD) were the next highest and show an upward trend over the past 3 years (462 separations per million persons were recorded in 2012/13).
- Western Australia (WA) also recorded relatively high rates of opioid-related separations (399 separations per million persons in 2012/13), and these separations have declined over the past two years.
- Victoria (VIC) and South Australia (SA) have recorded declines in opioid-related separations in the past year (280 and 283 per million persons respectively in 2012/13).
- Separations in Tasmania (TAS) have stabilised at 265 per million persons in the past year, while trends in the Northern Territory (NT) and the Australian Capital Territory (ACT) have fluctuated at lower levels (Figure 2).

### Trends in other data

- At the national level, the proportion of participants from the Illicit Drug Reporting System (IDRS) across Australia reporting having recently injected morphine has declined (Stafford and Burns in press). With the exception of the NT, where daily morphine injection was common, and QLD and TAS (use was approximately twice weekly), patterns of morphine injecting was sporadic across Australia (Stafford and Burns in press).
- The prevalence of oxycodone injection among people who inject drugs has stabilised over the past few years (this figure was 31% in 2013 and 28% in 2014), and patterns of use are much more sporadic than those for morphine. NSW participants reported the most frequent injection of oxycodone over the past 6 months at just under once per week on average, while the national average was reported as fortnightly injection (Stafford and Burns in press).

**Figure 2: Rates per million persons of principal opioid-related hospital separations in Australia among persons aged 15-54, 1993-2013**



## **Amphetamine-related hospital separations**

For the purposes of this bulletin, amphetamine-related hospital separations are defined as those separations where amphetamines were recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis. Amphetamine-related hospital separations include separations for ecstasy.

### ***Trends over time***

- The 2012/13 amphetamine-related separations represented the highest number recorded at 3,481 separations.
- Separations steadily increased since the mid 90's, and peaked at 180 per million persons in 2003/04 and again at 190 in 2006/07. Over the past 4 years amphetamine-related separations have trended upwards. There were 272 separations per million persons recorded in 2012/13.
- Over time, separations for amphetamine dependence have accounted for an increasing proportion of all amphetamine-related separations in Australia, (from 30% in 1999/00 to 50% in 2012/13).
- Separations for amphetamine-related psychosis steadily increased to 2005/06 and have increased again since 2009/10 across all jurisdictions (Figure 4).

### ***Age analysis***

- Over time, amphetamine-related separations have been highest among the 20 to 29 year age group, followed by the 30 to 39 year age group. However, separations among the older age groups (20 to 29, 30 to 39 and 40 to 49 year olds) have increased over the last three years (data not shown).
- Separations among the 10 to 19 year olds in 2012/13 (at 442) were highest over the 20 year period.
- In 2012/13 amphetamine-related psychosis separations were highest among the 20 to 29 and 30 to 39 year age groups.

### ***Jurisdictional analysis***

- Over the past three years amphetamine-related separations were at the highest level to date in WA, NSW and VIC (at 360, 333, and 245 per million persons respectively – Figure 3).
- TAS and the ACT recorded the lowest rates of amphetamine-related separations relative to the other jurisdictions (at 57 and 136 separations per million persons respectively – Figure 3).
- In 2012/13 amphetamine-related psychosis separations were highest in WA, SA and NSW (at 297, 230 and 184 separations per million persons respectively – Figure 4).

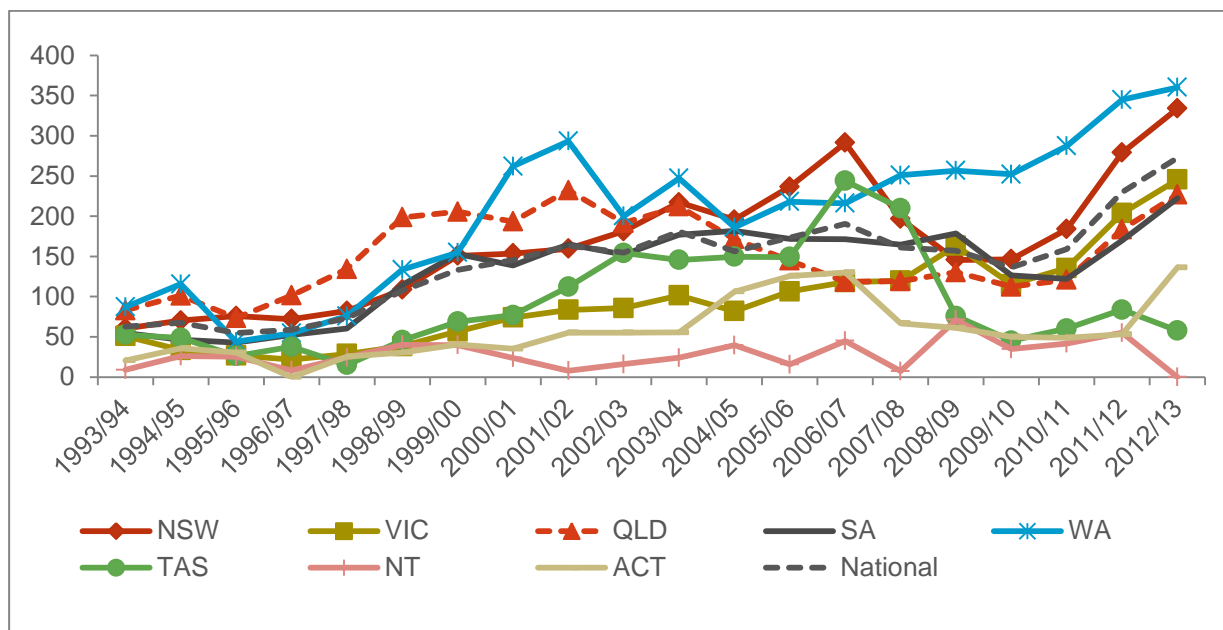
### ***Trends in other data***

- Law enforcement data are consistent with the noted increase in amphetamine-related hospital separations. The Australian Customs and Border Protection Service detected a record number (2,001) of amphetamine-type-stimulant seizures, with a record weight, in 2012/13 (Australian Customs and Border Protection Service, 2014).
- The Australian Crime Commission documented a high number of clandestine laboratories detected (757) in 2012/13, with the majority manufacturing methamphetamine (Australian

Crime Commission, 2014).

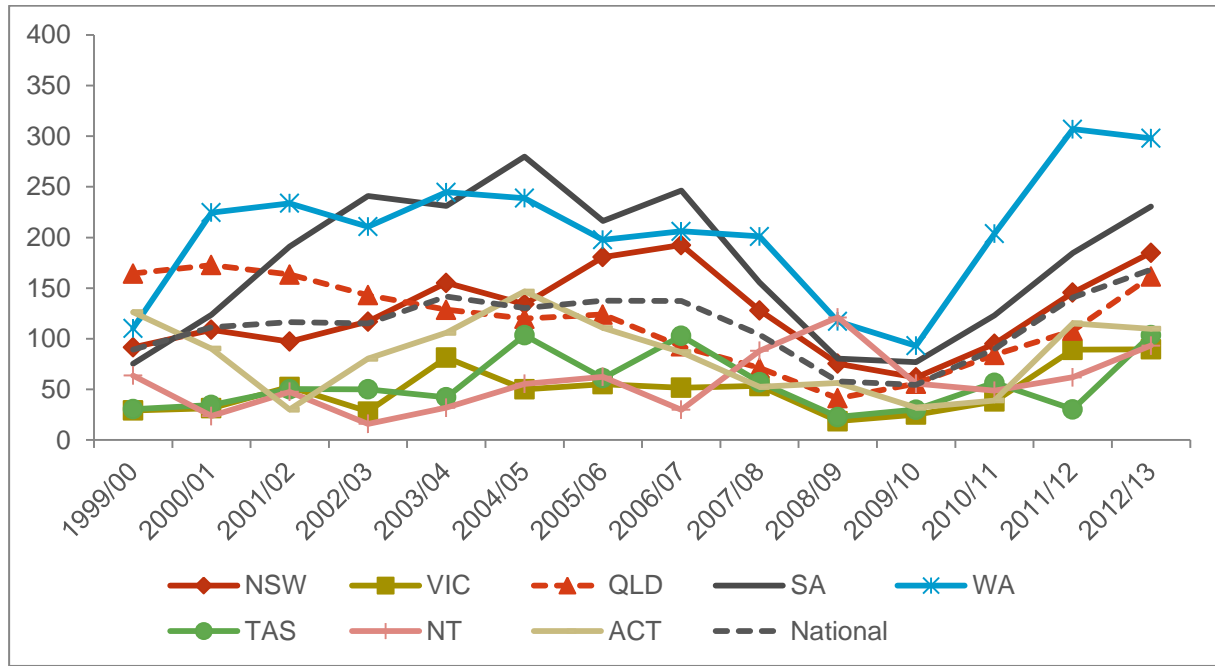
- Trends among a sentinel group of people who inject drugs (surveyed for the Illicit Drug Reporting System – IDRS) showed an increase in the prevalence of crystal methamphetamine use in the past 6 months (Sindicich and Burns in press).
- Data from the 2013 National Drug Strategy Household Survey (NDSHS) showed that although the prevalence of past year methamphetamine use remained stable at 2.1% in the general population, there was a change in the main form used from powder to crystalline (51% in 2010 reported mostly using powder methamphetamine compared to 29% in 2013, and 22% in 2010 reported mostly using crystal methamphetamine compared to 50% in 2013). There has also been a significant increase in the proportion of methamphetamine users reporting weekly or more often methamphetamine use (from 9.3% in 2010 to 15.5% in 2013) (<http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/2013/illicit-drug-use/#illicit>).

**Figure 3: Rates per million persons of principal amphetamine-related hospital separations in Australia among persons aged 15-54, 1993-2013**



NB: These figures do not include amphetamine-psychosis separations. These are reported separately in Figure 4.

**Figure 4: Rates per million persons of amphetamine-psychosis hospital separations in Australia among persons aged 15-54, 1999-2013**



NB: Amphetamine-psychosis separations in WA may be overestimated due to a new facility joining the collection in 2010, and different coding practices employed. However, other amphetamine separations reported in Figure 3 show an increasing trend in WA.

### Cannabis-related hospital separations

For the purposes of this bulletin, cannabis-related hospital separations are defined as those separations where cannabis was recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis.

#### Trends over time

- Cannabis-related separations have steadily increased since 1993/94, with figures recorded in 2012/13 representing the highest over the entire period (at 186 separations per million persons - Figure 5).
- Separations for cannabis dependence accounted for an increasing proportion of all cannabis-related separations in Australia, from 55% in 1999/00 to 72% in 2012/13.
- Separations for cannabis-related psychosis increased across most jurisdictions to 2005/06. While they have since declined in most jurisdictions, they have stabilised at a higher rate in NSW and SA (Figure 6).

#### Age analysis

- In 2012/13, the 20 to 29 year age group accounted for the largest proportion (39%) of all cannabis-related separations, and these were primarily for dependence (71%) (data not shown).
- Steady increases in cannabis-related separations have been recorded among older Australians (aged 30 to 49 years) over the past ten years.
- Cannabis-related separations among the 10 to 19 year olds remain lower, although

separations have started to increase over the past 5 years (data not shown).

- In 2012/13 cannabis-related psychosis separations were highest among the 20 to 29 year age group.

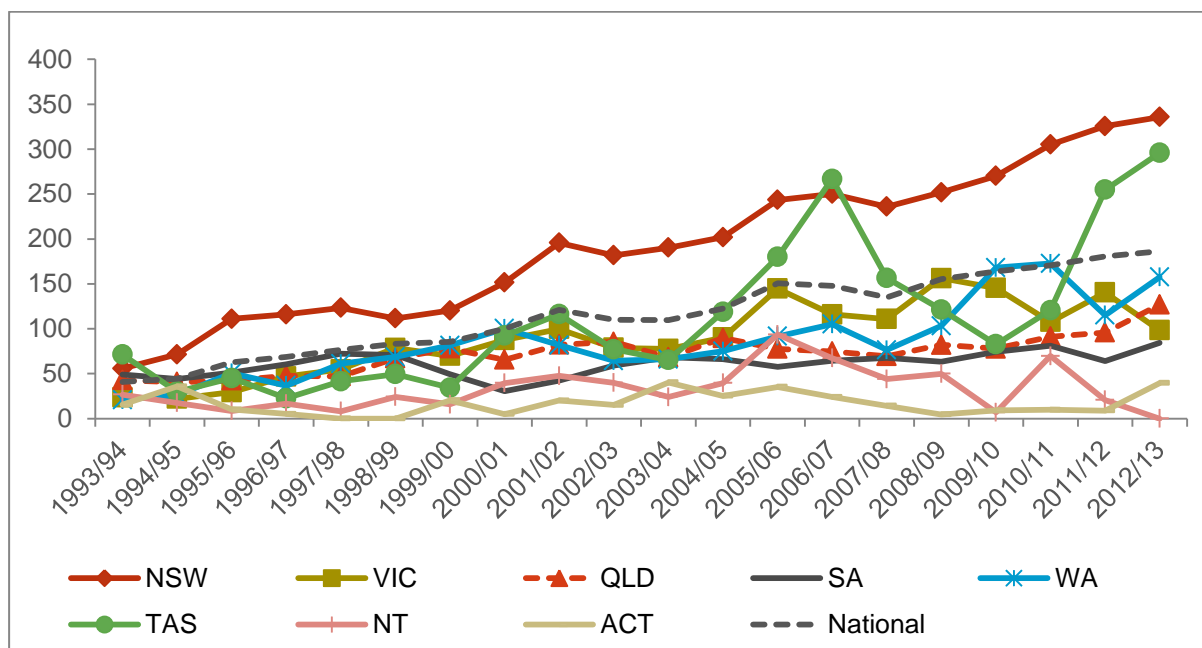
### Jurisdictional analysis

- Cannabis-related separations have remained consistently highest in NSW. Steady increases have been recorded in NSW since 1993/94 (from 55 per million persons in 1993/94 to 335 separations per million persons in 2012/13) (Figure 5). This increase has largely been driven by cannabis dependence, (83% of cannabis-related separations in NSW in 2012/13).
- TAS recorded the second highest rates of cannabis-related separations. The increase to 2012/13 was driven by separations for harmful cannabis use (accounting for 58% of the separations).
- QLD, SA and WA recorded increases in cannabis-related separations over the past six years, while trends have fluctuated in the remaining jurisdictions (Figure 5).
- NT recorded the highest rate of cannabis-related psychosis separations across the time period, however these separations have declined dramatically since 2005/06 (Figure 6). The NT figures should be interpreted with caution. It appears that most cannabis separations in the NT are coded under the psychosis code, so the high rates may reflect differences in coding practices across jurisdictions. There are virtually no non-psychosis cannabis related separations recorded in the NT.

### Trends in other data

- The 2013 National Drug Strategy Household Survey reported a stable trend in past year prevalence of cannabis use among Australians at 10.2% (Australian Institute of Health and Welfare, 2014).

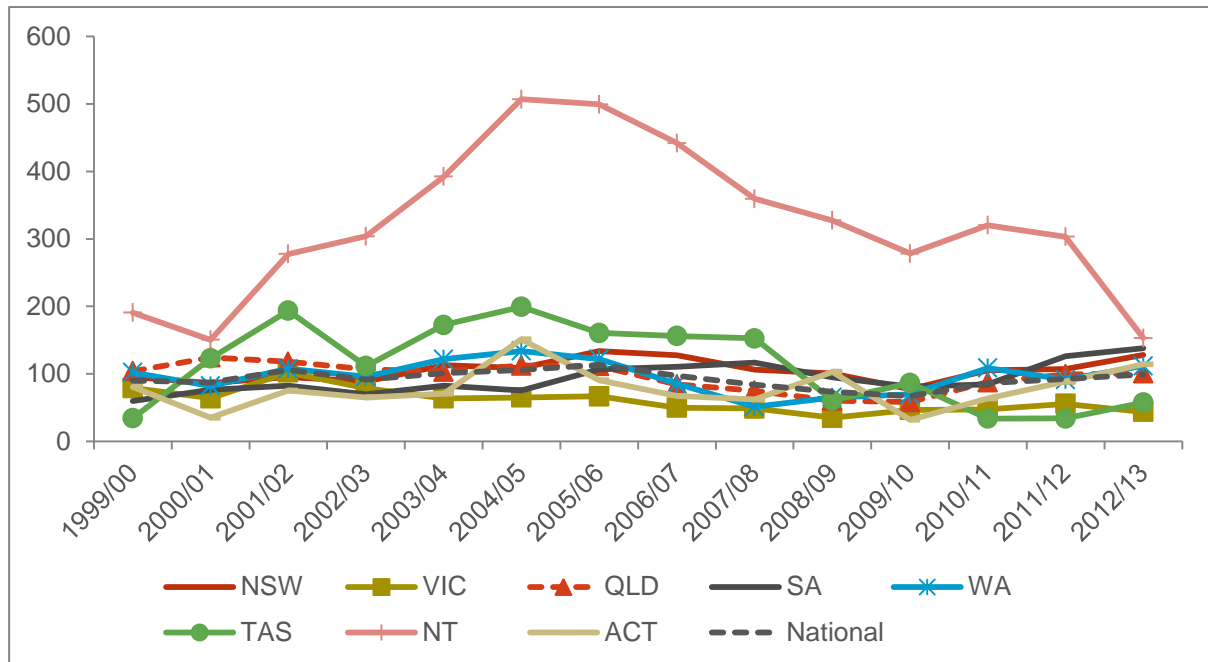
**Figure 5: Rates per million persons of principal cannabis-related hospital separations in Australia among persons aged 15-54, 1993-2013**



NB: These figures do not include cannabis-psychosis separations. These are reported separately in Figure 6.



**Figure 6: Rates per million persons of principal cannabis-psychosis hospital separations in Australia among persons aged 15-54, 1999-2013**



**NB:** High rates of cannabis-psychosis in the NT may be due to different coding practices. There are virtually no non-psychosis cannabis related separations recorded in the NT, suggesting most cannabis separations may be recorded as cannabis-psychosis.

### Cocaine-related hospital separations

For the purposes of this bulletin, cocaine-related hospital separations are defined as those separations where cocaine was recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis.

#### Trends over time

- Cocaine-related separations were the lowest across the four drug types during the twenty-year period (Figure 7). Separations increased between 1993/94 and 2004/05 (peaking at 22 per million persons). Separations were the highest on record in 2012/13 at 28 separations per million persons.

#### Age analysis

- The 30 to 39 year age group continued to account for the largest proportion of cocaine-related separations (36% in 2012/13) followed by the 20 to 29 year olds (27%).

#### Jurisdictional analysis

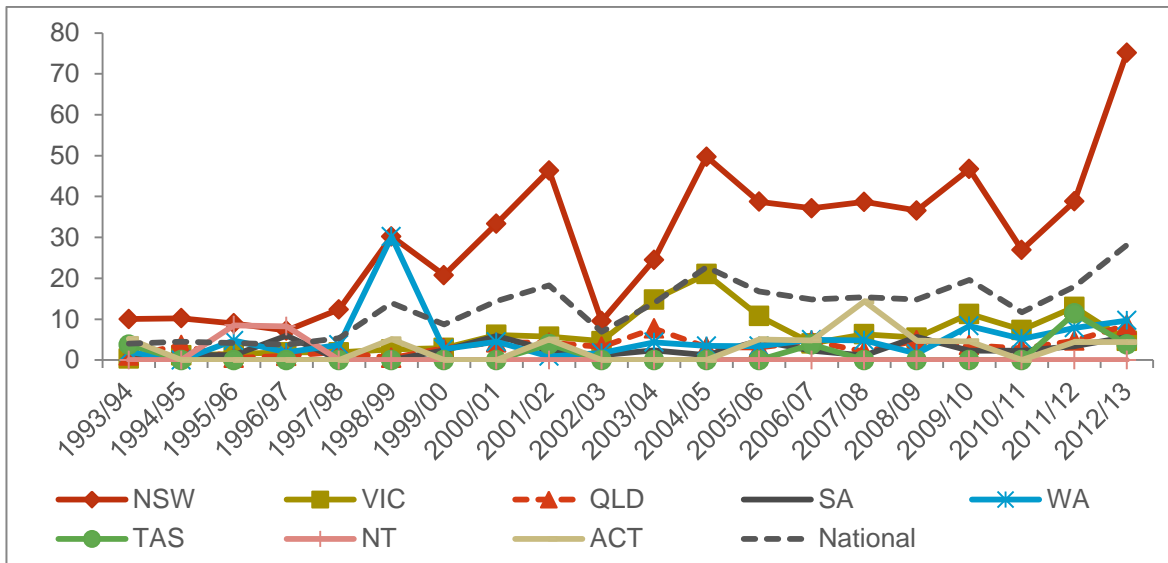
- NSW recorded the highest number of cocaine-related separations (75 per million persons in 2012/13) during the entire period. Separations in NSW almost doubled between 2011/12 and 2012/13 (from 38 to 75 separations per million persons respectively).
- In 2012/13 approximately two-thirds (68%) of NSW cocaine-related separations were for dependence.
- The remaining jurisdictions recorded much lower numbers of cocaine-related separations throughout the time period.



**Trends in other data**

- The trends seen in cocaine-related hospital separations in NSW are consistent with trends in cocaine use among people surveyed for both the IDRS and EDRS (Sindicich and Burns, 2013, Stafford and Burns, 2013), with use being most prevalent in NSW.
- Trends in cocaine-related separations should be interpreted with caution due to relatively small numbers in many jurisdictions.

**Figure 7: Rates per million persons of principal cocaine-related hospital separations in Australia among persons aged 15-54, 1993-2013**



## Summary and Implications

- Opioid-related separations have been steadily increasing since 2005/06, with increases noted both in presentations for other opioid poisoning (for substances including morphine, codeine and oxycodone) and for opioid dependence.
- The number of amphetamine-related hospital separations recorded in 2012/13 (3,481) is the highest since 1993/94. These separations have steadily increased over the past 3 years.
- An increasing proportion of amphetamine-related separations have been for amphetamine dependence (50% in 2012/13), indicative of more chronic and problematic use among those who are presenting.
- Amphetamine-related separations among the 10 to 19 year olds were the highest on record in 2012/13, and were predominantly for acute effects related to amphetamine use, such as poisonings and acute intoxication.
- Cannabis-related separations in 2012/13 were the highest on record since 1993/94.
- Presentations for cannabis dependence accounted for an increasingly large proportion of cannabis-related separations (from 55% in 1999/00 to 72% in 2012/13).
- Cannabis-related separations were most prevalent among the 20 to 29 year age group, most commonly for cannabis dependence, suggesting heavy cannabis use and associated harms among the younger age groups.
- Cocaine-related separations in NSW continue to account for the majority of separations nationally and have remained relatively high over the past eight years. This trend is consistent with significant increases in past year cocaine use recorded in the National Drug Strategy Household Survey (Australian Institute of Health and Welfare, 2011).
- Information contained in this bulletin comes from the National Hospital Morbidity Database. This database is fundamental to the monitoring capacity of the National Illicit Drug Indicators Project. These data provide invaluable information about trends in drug-related harms in Australia, as well as the context within which these trends can be understood. Each additional year of data adds further value to the project and, in conjunction with other available data sources, provides a reliable framework within which to inform evidence-based drug policy in Australia.

## Acknowledgements

We would like to acknowledge the Australian Institute of Health and Welfare, and all of the State and Territory Health Departments, for providing us with access to the National Hospital Morbidity Database.

## Appendix A:

### Opioid-related hospital separations

The following ICD-9-CM (from 1993/94 to 1998/99) and ICD-10-AM (from 1999/00 to 2007/08) codes were used to examine trends in opioid-related hospital separations:

ICD-9 diagnosis	ICD-10 diagnosis	ICD-9-CM	ICD-10-AM
Opium poisoning	Opium poisoning	96500	T400
Heroin poisoning	Heroin poisoning	96501	T401
Methadone poisoning	Methadone poisoning	96502	T403
Morphine/codeine/pethidine poisoning	Other opioids poisoning (including morphine, codeine, oxycodone)	96509	T402
Morphine/codeine/pethidine poisoning	Other synthetic narcotics poisoning (including pethidine)	96509	T404
Morphine/codeine/pethidine poisoning	Other and unspecified narcotics poisoning	96509	T406
Opioid type dependence (including heroin, methadone, morphine, opium)	Opioid dependence syndrome	3040	F112
Opioid and other drug dependence	No equivalent	3047	N/A
Opioid use disorder	Opioid acute intoxication	3055	F110
Opioid use disorder	Opioid harmful use	3055	F111

**Note:** Withdrawal codes for ICD-9-CM were not drug specific, and accordingly, for comparability purposes, these separations have been left out of the analysis.

### Amphetamine-related hospital separations

The following ICD-9-CM (from 1993/94 to 1998/99) and ICD-10-AM (from 1999/00 to 2007/08) codes were used to examine trends in amphetamine-related hospital separations:

ICD-9 diagnosis	ICD-10 diagnosis	ICD-9-CM	ICD-10-AM
Psychostimulant poisoning	Poisoning by psychostimulants (excluding cocaine)	9697	T436
Amphetamine & other psychostimulant dependence (methylphenidate, phenmetrazine)	Stimulant dependence syndrome	3044	F152
Amphetamine or related sympathomimetic use disorder	Stimulant acute intoxication	3057	F150
Amphetamine or related sympathomimetic use disorder	Stimulant harmful use	3057	F151
N/A	Psychotic disorder	N/A	F155

**Note:** Withdrawal codes for ICD-9-CM were not drug specific, and accordingly, for comparability purposes, these separations have been left out of the analysis.

## Cannabis-related hospital separations

The following ICD-9-CM (from 1993/94 to 1998/99) and ICD-10-AM (from 1999/00 to 2007/08) codes were used to examine trends in cannabis-related hospital separations:

ICD-9 diagnosis	ICD-10 diagnosis	ICD-9-CM	ICD-10-AM
Cannabis poisoning	Cannabis poisoning	9696	T407
Cannabis dependence	Cannabis dependence syndrome	3043	F122
Cannabis use disorder	Cannabinoids acute intoxication	3052	F120
Cannabis use disorder	Cannabinoids harmful use	3052	F121
N/A	Psychotic disorder	N/A	F155

**Note:** *Withdrawal codes for ICD-9-CM were not drug specific, and accordingly, for comparability purposes, these separations have been left out of the analysis.*

## Cocaine-related hospital separations

ICD-9 diagnosis	ICD-10 diagnosis	ICD-9-CM	ICD-10-AM
Cocaine dependence	Cocaine dependence syndrome	3042	F142
Cocaine use disorder	Cocaine acute intoxication	3056	F140
Cocaine use disorder	Cocaine harmful use	3056	F141

The following ICD-9-CM (from 1993/94 to 1998/99) and ICD-10-AM (from 1999/00 to 2007/08) codes were used to examine trends in cocaine-related hospital separations:

**Note:** *The ICD-9-CM cocaine poisoning code includes procaine, tetracaine and lignocaine poisoning and accordingly, cannot be translated to an ICD-10-AM poisoning code. Withdrawal and drug-induced psychosis codes for ICD-9-CM were not drug specific, and accordingly, for comparability purposes, these separations have been left out of the analysis.*

### Related links:

For more information on NDARC research, go to:

<http://ndarc.med.unsw.edu.au/>

For more information about the AIHW, go to:

<http://www.aihw.gov.au>

For more information on ICD-10, go to:

<http://www.who.int/whosis/icd10/>

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