

# Drug-related hospital stays in Australia 1993–2011

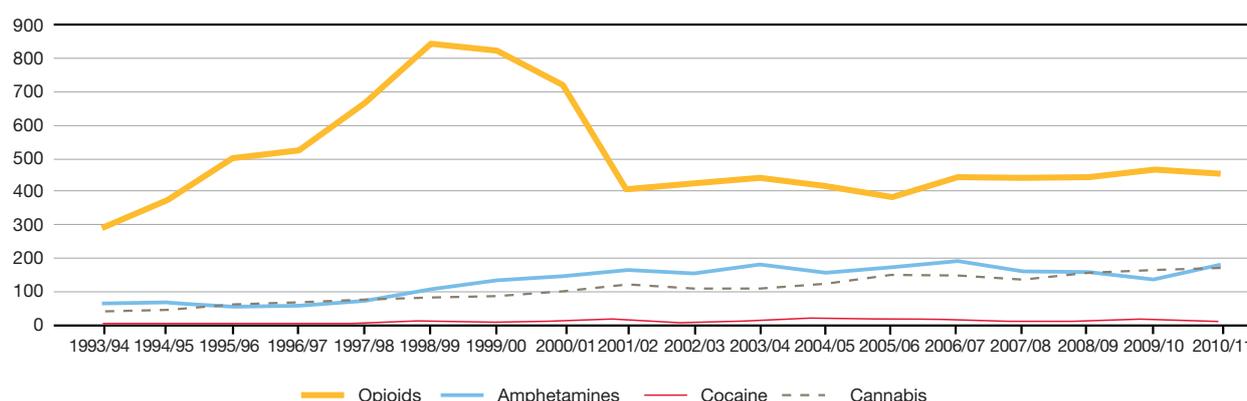


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## Introduction

- + This bulletin presents data on drug-related hospital separations in Australia from 1993–2011 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.
- + Figure 1 shows the rates of hospital separations per million persons for each of the four drug types over the 18 year time period (1993–2011). 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, 1993–2011



## 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 remained relatively stable at the national level between 2001/02 and 2005/06 (Figure 2), after a dramatic decline in 2000/01. Separations have started increasing since this time, from 381 separations per million persons to 452 per million in 2010/11.
- + In 2010/11, opioid dependence accounted for more than half (55%) of all principal opioid-related separations in Australia. This proportion is starting to increase again after dropping to less than half of all opioid separations in 2007/08.
- + Over time there has been an increase in presentations due to poisoning from other opioids (including morphine, oxycodone, and codeine) which accounted for approximately one-quarter (23%) of all opioid-related separations in 2010/11 (these poisonings accounted for 7% of all opioid-related separations in 2000/01).

### Age analysis

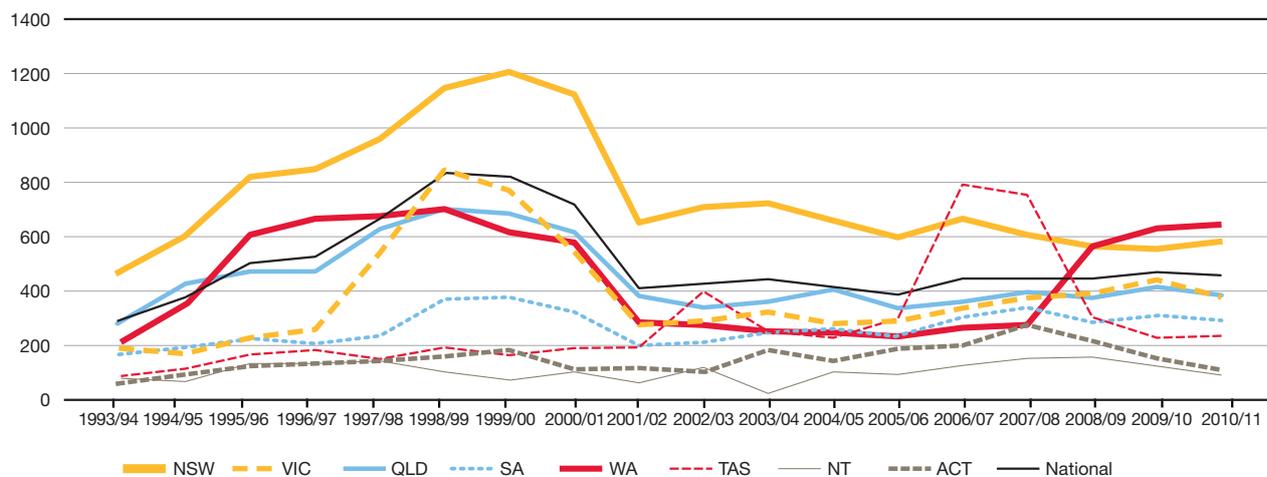
- + Over time, there are different trends apparent across different age groups. The dramatic decline recorded in 2000/01 occurred primarily among the younger age groups (10 to 19, 20 to 29, and 30 to 39 year olds). Separations among the 30 to 39 year age group have started increasing again since 2001/02, while they've remained relatively stable at much lower numbers among Australians aged 10 to 19 years over the past 4 years. Separations among older Australians (aged to 40 to 59) have showed continued increases over the entire period (data not shown).
- + In 2010/11, the 30 to 39 year age group accounted for the largest proportion (35%) of opioid-related separations.

### JURISDICTIONAL ANALYSIS

- + Opioid-related separations were continually highest in New South Wales (NSW) for the period 1993/94 to 2005/06, with separations in Western Australia (WA) surpassing numbers in NSW between 2008/09 and 2010/11.
- + WA has continued to record increases in opioid-related separations over the past 3 years to a peak of 641 per million persons in 2010/11. Opioid dependence accounted for nearly two-thirds (62%) of all opioid-related separations in WA in 2010/11, representing an increase from 34% in 2007/08.
- + Victoria (VIC) recorded relatively steady increases in opioid-related separations between 2001/02 (at 270 separations per million) and 2010/11 (to 372 per million). In 2010/11 there were increases in the proportion of opioid-related separations for acute intoxication (from 5% in 2009/10 to 7% in 2010/11), poisoning due to heroin and due to other opioids (from 17% to 22% for each), while there was a slight decline in opioid dependence separations (from 45% to 37%).
- + The other trend of note is the decline in opioid-related separations in TAS from 751 per million persons in 2007/08 to 299 in 2008/09 and again to 229 in 2010/11. The dramatic decline in 2008/09 was largely due to a decline in presentations due to other opioid poisonings (for drugs including codeine, oxycodone, and morphine).
- + Trends in opioid-related separations in other jurisdictions have remained relatively stable since 2007/08.

## Opioid-related hospital separations continued...

Figure 2: Rates per million persons of principal opioid-related hospital separations in Australia among persons aged 15–54, 1993–2011



### TRENDS IN OTHER DATA

- + At the national level, proportions of IDRS participants across Australia reporting injecting morphine have declined (Stafford and Burns, 2012). With the exception of the Northern Territory (NT), where daily morphine injection is common, and Tasmania (TAS), where use is approximately twice weekly, patterns of morphine injecting is sporadic across Australia (Stafford and Burns, 2012).
- + Prevalence of oxycodone injection among these opioid injectors has increased over time, however, patterns of use are much more sporadic than those for morphine (Stafford and Burns, 2012).

## 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.

### TRENDS OVER TIME

- + Amphetamine-related hospital separations were second highest among the drug types examined (Figure 3), and 2010/11 figures represented the highest recorded at 2,271 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. The population rate for 2010/11 was slightly lower at 182 separations per million persons.
- + 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 a peak of 42% in 2006/07. Forty percent of amphetamine separations in 2010/11 were for amphetamine dependence.
- + Numbers of amphetamine-related separations in 2010/11 (2,271) represent only one-quarter (25%) of the highest number of opioid-related separations recorded (in 1998/99 at 9,117 nationally) since 1993/94.

### AGE ANALYSIS

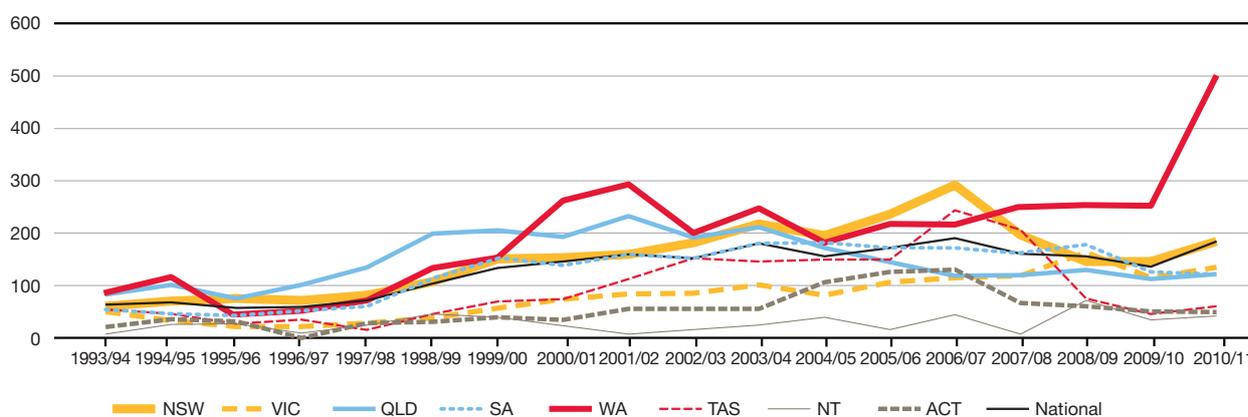
- + Over time, amphetamine-related separations have been highest among the 20 to 29 year age group, followed by the 30 to 39 year age group. Separations among the 20 to 29 year age group have stabilised at a higher level over the past eight years after steady increases in the late 90's. Separations among the 10 to 19 year olds have declined over the past 2 years after peaking in 2008/09, while separations among the 40 to 49 year olds have steadily increased over time (data not shown).
- + In 2010/11 the 20 to 29 year age group accounted for 42% of amphetamine-related separations.

### JURISDICTIONAL ANALYSIS

- + Amphetamine-related separations have been highest in WA, NSW and South Australia (SA).
- + WA recorded a dramatic increase in amphetamine-related separations in 2010/11, with separations peaking at 500 per million persons. This figure is double that from 2009/10 (252 per million persons).
- + The increase in WA is largely due to separations for amphetamine dependence, which accounted for nearly half (46%) of all amphetamine-related separations in 2010/11 compared to one-third (32%) in 2009/10.
- + Separations in NSW have been declining since 2006/07, from a peak of 291 per million persons to 183 in 2010/11.
- + Separations in SA have declined over the past two years.
- + Queensland (QLD) and VIC have also recorded relatively high rates of amphetamine-related separations, with numbers stabilising over the past few years.

## Amphetamine-related hospital separations continued...

Figure 3: Rates per million persons of principal amphetamine-related hospital separations in Australia among persons aged 15–54, 1993–2011



### TRENDS IN OTHER DATA

- + Declining trends seen in amphetamine-related separations in NSW are consistent with other indicators. Findings from both the NSW IDRS and Ecstasy and related Drugs Reporting System (EDRS) show a marked decrease in the proportion of participants reporting methamphetamine use in the preceding six months between 2008 and 2011 (Stafford and Burns, 2012, Sindicich and Burns, 2012). The WA EDRS findings reflected an increase in proportions reporting methamphetamine use, while proportions have fluctuated in SA, QLD and VIC.

## 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 were the third highest in number across the four drug types (following opioids and amphetamines). Cannabis-related separations have steadily increased since 1993/94, with figures recorded in 2010/11 representing the highest over the entire period at 169 per million persons.
- + Separations for cannabis dependence have accounted for an increasing proportion of all cannabis-related separations in Australia, from 55% in 1999/00 to 75% in 2010/11.

### AGE ANALYSIS

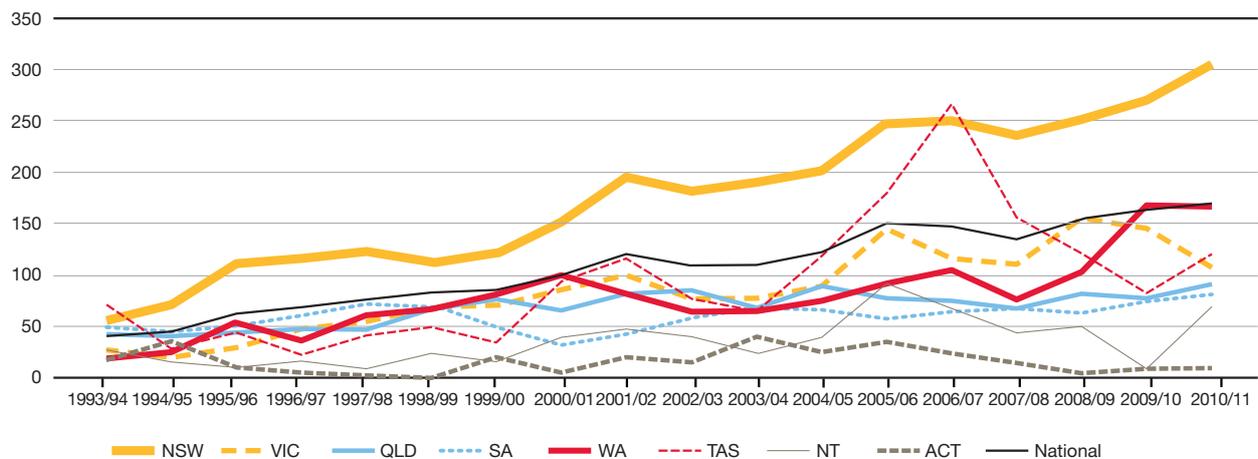
- + In 2010/11, the 20 to 29 year age group accounted for the largest proportion (40%) of cannabis-related separations, and these were primarily for dependence (75%) (data not shown).
- + Steady increases in cannabis-related separations have been recorded among the 30 to 39 and 40 to 49 year olds, while separations among the 10 to 19 year olds have remained relatively stable at a lower rate.

### 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 304 per million persons in 2010/11). This increase has largely been driven by cannabis dependence, and these separations accounted for the majority (82%) of cannabis-related separations in NSW in 2010/11.
- + After increases in cannabis-related separations in TAS between 2003/04 and 2006/07 (which were predominantly due to dependence and harmful use), these separations declined sharply in 2007/08, and again in 2008/09. This drop was due to a decline in presentations for both harmful use and dependence. They have stabilised over the last 2 years.
- + WA has recorded dramatic increases over the past 3 years from 76 cannabis-related separations per million persons in 2007/08 to 166 in 2010/11. In 2010/11 nearly two-thirds (61%) of these separations were due to cannabis dependence.
- + QLD and SA have both recorded steady increases in numbers of cannabis-related separations over the past four years.

## Cannabis-related hospital separations continued...

Figure 4: Rates per million persons of principal cannabis-related hospital separations in Australia among persons aged 15–54, 1993–2011



### TRENDS IN OTHER DATA

- + These findings are consistent with general population trends. The 2010 National Drug Strategy Household Survey showed that a higher proportion of older Australians, aged over 40 reported daily cannabis use (Australian Institute of Health and Welfare, 2011).

## 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 eighteen-year period (Figure 5). Separations increased between 1993/94 and 2004/05 (peaking at 22 per million persons), and peaked again in 2009/10 at 19 per million persons. They have since decreased to 11 per million persons in 2010/11.

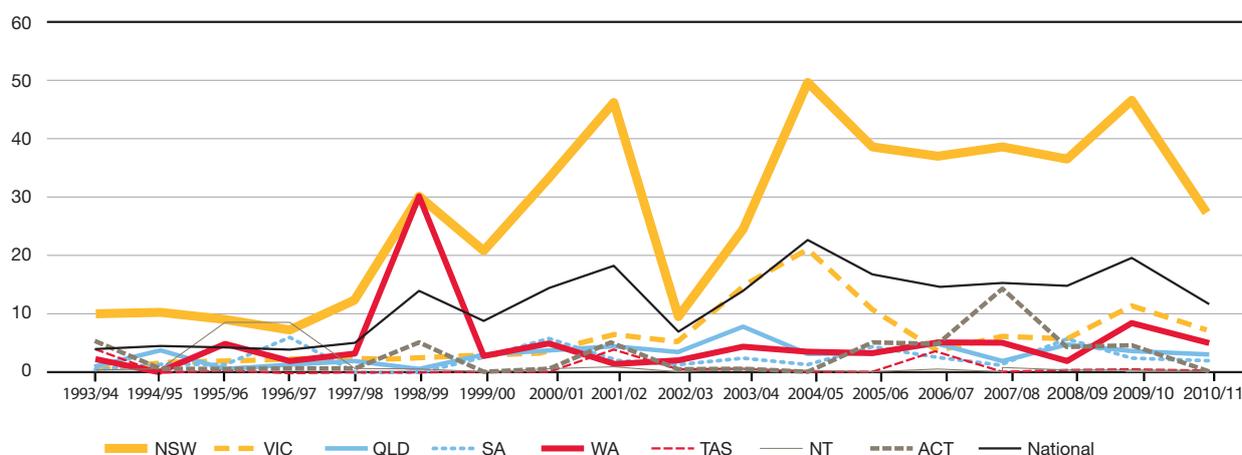
### AGE ANALYSIS

- + The 30 to 39 year age group continue to account for the largest proportion of cocaine-related separations (43% in 2010/11) followed by the 20 to 29 year olds (25%) and the 40 to 49 year olds (20%) (data not shown).

### JURISDICTIONAL ANALYSIS

- + NSW recorded the highest number of cocaine-related separations per million persons during the entire period. Separations peaked in NSW in 2001/02 (at 46.3 per million persons) and again in 2004/05 (at 49.7 per million persons) and 2009/10 (47 per million persons). They have since declined, although they remain higher than figures recorded earlier in the period.
- + Separations in NSW continue to account for the majority (75% in 2010/11) of cocaine-related separations in Australia. In 2010/11 three-quarter (75%) of NSW cocaine-related separations were for dependence.
- + The remaining jurisdictions recorded much lower numbers of cocaine-related separations throughout the time period.

Figure 5: Rates per million persons of principal cocaine-related hospital separations in Australia among persons aged 15–54, 1993–2011



## Cocaine-related hospital separations continued...

### 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, 2012, Stafford and Burns, 2012), with use being most prevalent in NSW. Findings are also consistent with general population patterns of cocaine use, with the 2010 National Drug Strategy Household Survey recording an increase in use in Australia at this time (Australian Institute of Health and Welfare, 2011).
- + Trends in cocaine-related separations should be interpreted with caution due to relatively small numbers in many jurisdictions.

## Summary and Implications

- + Opioid-related separations have started to increase for the first time again since 2005/06, with an increase in presentations for other opioid poisoning (for substances including morphine, codeine and oxycodone) and for opioid dependence. These findings indicate the need to monitor prescription opioids and associated harms.
- + The number of amphetamine-related hospital separations recorded in 2010/11 (2,271) is the highest since 1993/94.
- + The prominence of amphetamine-related separations (for dependence and intoxication) among the 20 to 29 year age group suggests this age group is encountering both acute and chronic harms related to their amphetamine use.
- + Patterns of amphetamine-related separations differ across jurisdictions, suggesting the need for local responses.
- + Cannabis-related separations recorded in 2010/11 were also the highest on record since 1993/94.
- + Presentations for cannabis dependence have accounted for an increasingly large proportion of cannabis-related separations (from 55% in 1999/00 to 75% in 2010/11).
- + Cannabis-related separations are most prevalent among the 20 to 29 year age group, and these have been predominantly for cannabis dependence suggesting heavy cannabis use and associated harms among the younger age groups.
- + Although cannabis-related separations among the 40 to 49 year age group are lower than those for the younger age groups, these separations have also steadily increased, which mirrors recent general population findings that daily cannabis use is most prominent among this group (Australian Institute of Health and Welfare, 2011).
- + Cocaine-related hospital separations were the lowest across the drug types examined, and separations in NSW continue to account for the majority nationally. Separations in NSW have fluctuated over the past seven years, with a peak recorded in 2009/10 followed by a decrease in 2010/11. This trend is consistent with significant increases in past year cocaine use recorded in the National Drug Strategy Household Survey (NDSHS) in 2007 (from 1% in 2004 to 1.6%), and again in 2010 to 2.1% (Australian Institute of Health and Welfare, 2011).
- + The general finding across drug types that drug-related separations are more likely to be for dependence is indicative that much of the treatment that is sought is for chronic rather than acute drug-related harms. This suggests the need for early engagement in treatment.
- + 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 and 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

Note: 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.

## Appendix A continued...

### 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

Note: 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.

### COCAINE-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 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

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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