Drug-related hospital stays in Australia 1993–2012

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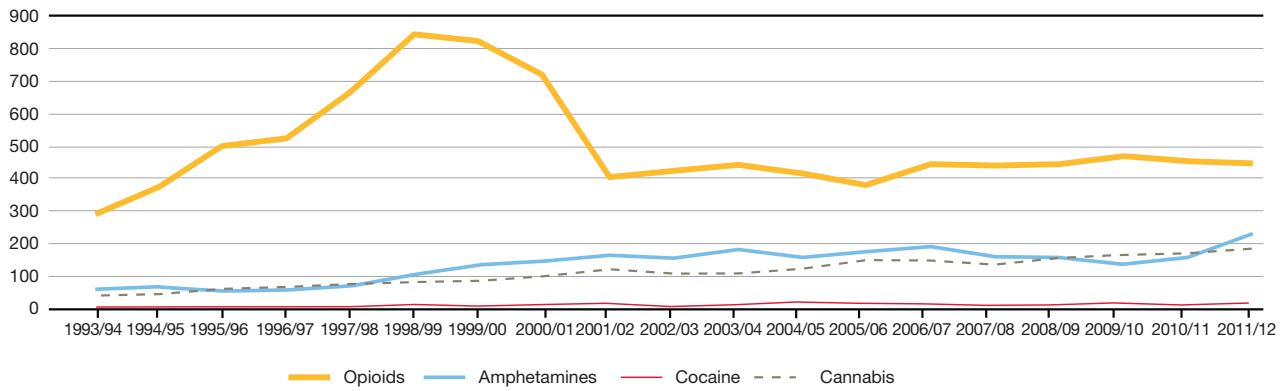
Funded by the Australian Government Department of Health and Ageing

Recommended citation Roxburgh, A. and Burns, L (2013). *Drug-related hospital stays in Australia, 1993-2012*. Sydney: National Drug and Alcohol Research Centre

Introduction

- This bulletin presents data on drug-related hospital separations in Australia from 1993–2012 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 19 year time period (1993–2012). 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, 1993–2012



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 446 separations per million persons recorded in 2011/12.
- In 2011/12, opioid dependence accounted for approximately half (52%) of all principal opioid-related separations in Australia. This represents a decline from two-thirds of separations that were due to dependence through the 1990s.
- Over time there has been an increase in presentations due to poisoning from other opioids (including morphine, oxycodone, and codeine) which accounted for 19% of all opioid-related separations in 2011/12 (these poisonings accounted for 7% of all opioid-related separations in 2000/01).

Age analysis

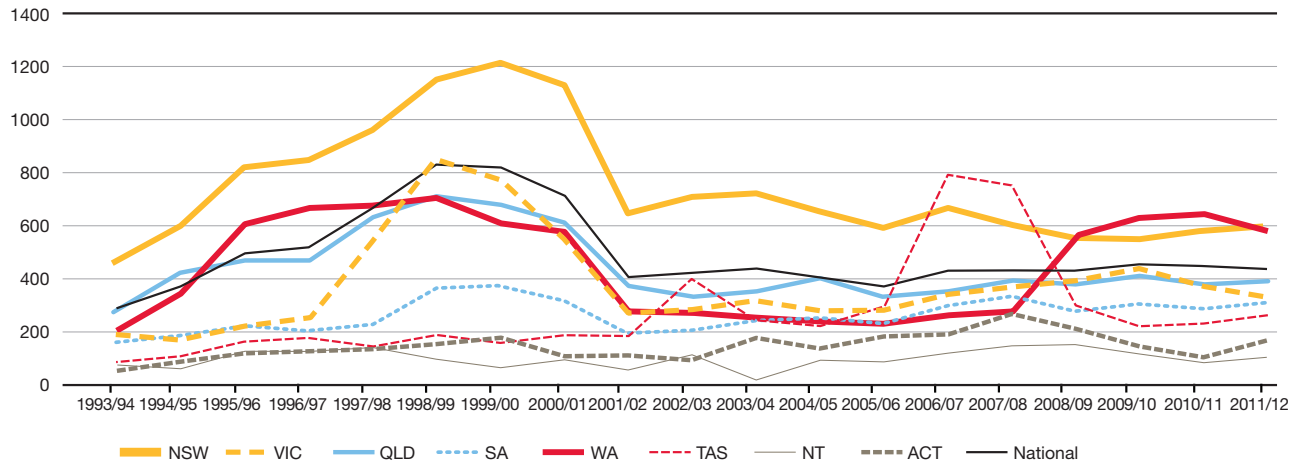
- Over time, there are different trends apparent across different age groups. The dramatic decline recorded in 2000/01 occurred primarily among the younger age groups (10 to 19, 20 to 29, and 30 to 39 year olds). Separations among older Australians (30 to 39, 40 to 49 and 50 to 59 year olds) have started increasing again since 2001/02, while they've remained relatively stable among Australians aged 10 to 29 years. Opioid-related separations are lowest among Australians aged 10 to 19 years (data not shown).
- In 2011/12, the 30 to 39 year age group accounted for the largest proportion (34%) of opioid-related separations.

JURISDICTIONAL ANALYSIS

- Opioid-related separations for the most part have been highest in New South Wales (NSW) over the 19 year period (592 separations per million persons were recorded in 2011/12). Separations in NSW have trended downwards over the past 10 years (Figure 2).
- Western Australia (WA) recorded the next highest number of opioid-related separations (577 separations per million persons in 2011/12), and these separations have increased since 2007/08.
- Queensland (QLD) recorded 399 separations per million persons in 2011/12, and these separations have remained relatively stable since 2001/02.
- Victoria (VIC) and South Australia (SA) have also recorded an upward trend in opioid-related separations over a 10 year period (331 and 309 per million persons respectively in 2011/12).
- The other trend of note is the decline in opioid-related separations in Tasmania (TAS) from 751 per million persons in 2007/08 to 262 per million persons in 2011/12.
- Trends in the Northern Territory (NT) and the Australian Capital Territory (ACT) have fluctuated at lower levels.

Opioid-related hospital separations continued...

Figure 2: Rates per million persons of principal opioid-related hospital separations in Australia among persons aged 15–54, 1993–2012



TRENDS IN OTHER DATA

- At the national level, proportions of participants from the Illicit Drug Reporting System (IDRS) across Australia reporting injecting morphine have declined (Stafford and Burns, 2013).
- With the exception of the NT, where daily morphine injection is common, QLD where use is approximately every third day, and TAS (use is approximately twice weekly), patterns of morphine injecting is sporadic across Australia (Stafford and Burns, 2013)
- Prevalence of oxycodone injection among people who inject opioids has increased over time, however, patterns of use are much more sporadic than those for morphine (Stafford and Burns, 2013).

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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

- Amphetamine-related hospital separations were second highest among the drug types examined (Figure 3), and 2011/12 figures represented the highest recorded at 2,895 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 3 years amphetamine-related separations have increased. There were 229 separations per million persons recorded in 2011/12.
- 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 42% in 2011/12.
- Numbers of amphetamine-related separations in 2011/12 (2,895) represent only one-third (31%) of the highest number of opioid-related separations recorded (in 1998/99 at 9,117 nationally) since 1993/94.

AGE ANALYSIS

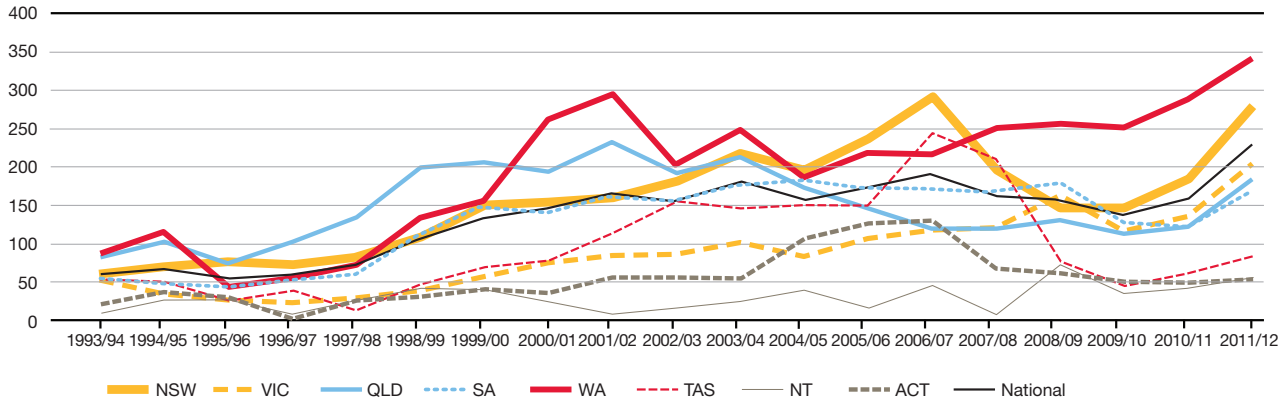
- Over time, amphetamine-related separations have been highest among the 20 to 29 year age group, followed by the 30 to 39 year age group. Separations among the older age groups (20 to 29, 30 to 39 and 40 to 49 year olds) have increased over the last 2 years (data not shown).
- Separations among the 10 to 19 year olds in 2011/12 were highest in number (at 398) over the 19 year period.
- In 2011/12 the 20 to 29 year age group accounted for 40% of amphetamine-related separations.

JURISDICTIONAL ANALYSIS

- Amphetamine-related separations have been highest in WA, NSW and VIC over the past three years.
- All three jurisdictions have recorded steady increases over this time, with figures in 2011/12 recorded at the highest level (WA — 341, NSW — 279, and VIC — 203 per million persons) over the entire 19 year period.
- SA and QLD have also recorded increases in amphetamine-related separations over the past 3 years.
- TAS, NT and the ACT all recorded lower rates of amphetamine-related separations relative to the other jurisdictions.

Amphetamine-related hospital separations continued...

Figure 3: Rates per million persons of principal amphetamine-related hospital separations in Australia among persons aged 15–54, 1993–2012



TRENDS IN OTHER DATA

- Law enforcement data are consistent with increasing amphetamine-related hospital separations, with the Australian Customs and Border Protection Service detecting a record number (1078) of amphetamine-type-stimulant seizures at the Australian border in 2011/12 (Australian Customs and Border Protection Service, 2012). Data from the Australian Crime Commission also documented a record number of clandestine laboratories detected (809) in 2011/12, and the majority were manufacturing methamphetamine (Australian Crime Commission, 2013).
- In contrast to the trend seen in amphetamine-related hospital separations, trends in methamphetamine use among sentinel groups surveyed about their drug use (including the Illicit Drug Reporting System (IDRS) and Ecstasy and related Drugs Reporting System (EDRS) show a stabilisation in prevalence of methamphetamine use and a decline in frequency of use (Stafford and Burns, 2013, Sindicich and Burns, 2013).
- Early release data from the 2013 National Drug Strategy Household Survey (NDSHS) shows that although the prevalence of past year methamphetamine use remains stable at 2.1% in the general population, there has been a change in the main form of methamphetamine used from powder methamphetamine to crystal methamphetamine (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 proportions of past year 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).

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 2011/12 representing the highest over the entire period at 184 separations 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 74% in 2011/12.

AGE ANALYSIS

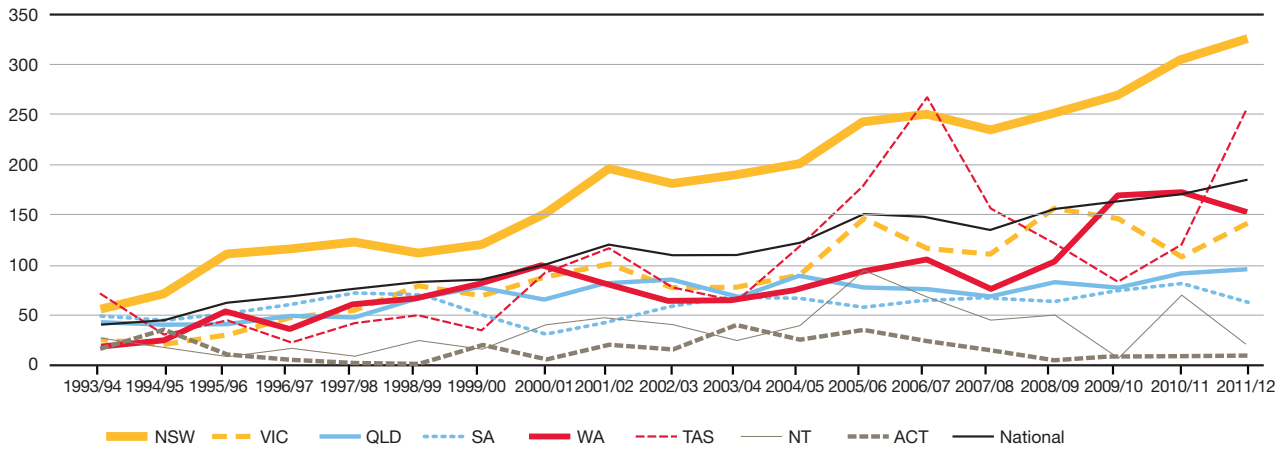
- In 2011/12, the 20 to 29 year age group accounted for the largest proportion (40%) of cannabis-related separations, and these were primarily for dependence (74%) (data not shown).
- Steady increases in cannabis-related separations have been recorded among older Australians (aged 30 to 49 years) over the past ten years.
- Cannabis-related separations among the 10 to 19 year olds remain lower, with separations starting to increase over the past 5 years (data not shown).

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 325 separations per million persons in 2011/12) (Figure 4). This increase has largely been driven by cannabis dependence, and these separations accounted for the majority (82%) of cannabis-related separations in NSW in 2011/12.
- TAS recorded the second highest rates of cannabis-related separations in 2011/12. After a declining trend between 2006/07 and 2009/10, these separations have increased in the past two years. Increases are being driven by separations for cannabis dependence (85% of TAS cannabis separations were due to cannabis dependence in 2011/12).
- QLD and SA have also recorded increases in cannabis-related separations over the past five years, while trends have fluctuated in the remaining jurisdictions (Figure 4).

Cannabis-related hospital separations continued...

Figure 4: Rates per million persons of principal cannabis-related hospital separations in Australia among persons aged 15–54, 1993–2012



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 nineteen-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. In 2011/12, cocaine-related separations were recorded at 18 per million persons.

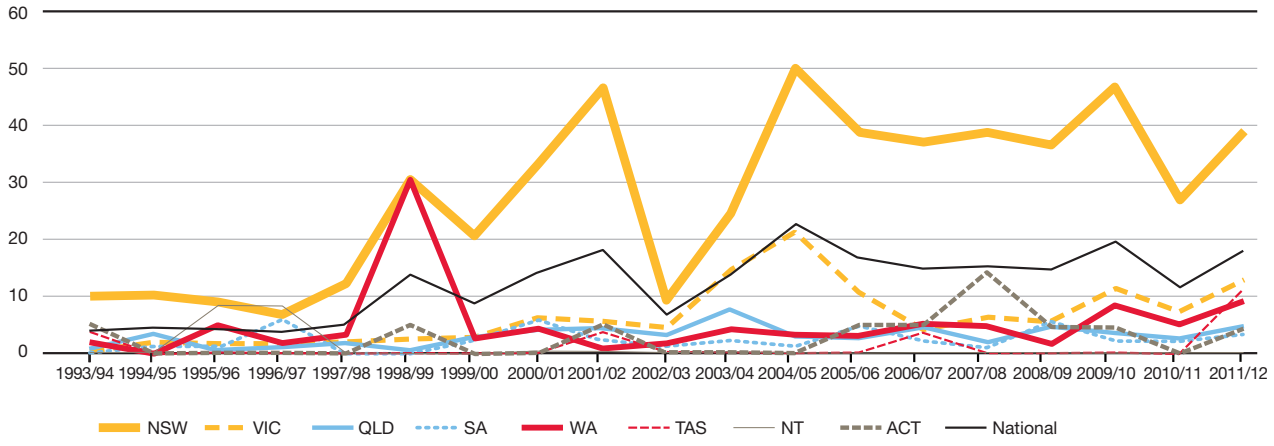
AGE ANALYSIS

- The 30 to 39 year age group continue to account for the largest proportion of cocaine-related separations (35% in 2011/12) followed by the 20 to 29 year olds (30%) 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 in NSW have remained relatively high over the past 8 years.
- Separations in NSW continue to account for the majority (69% in 2011/12) of cocaine-related separations in Australia. In 2011/12 almost two-thirds (63%) 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, 1993–2012



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, 2013, Stafford and Burns, 2013), 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). Early findings from the 2013 Survey show that prevalence of past year cocaine use among the general population remained unchanged at 2.1% (http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/2013/illicit-drug-use/#illicit).
- 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 been steadily increasing since 2005/06, with increases in presentations for other opioid poisoning (for substances including morphine, codeine and oxycodone) and for opioid dependence. These findings indicate the continued need to monitor prescription opioids and associated harms.
- The number of amphetamine-related hospital separations recorded in 2011/12 (2,895) is the highest since 1993/94. These separations have steadily increased over the past 3 years.
- 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.
- Amphetamine-related separations among the 10 to 19 year olds were the highest on record in 2011/12, and were predominantly for acute effects related to amphetamine use, such as poisonings and acute intoxication.
- Cannabis-related separations recorded in 2011/12 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 73% in 2011/12).
- 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.
- 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 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 (NDSHS) in 2007 (from 1% in 2004 to 1.6%), and again in 2010 to 2.1% (2013 data show prevalence remained stable at 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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ISSN: 1834-1918