

Drug-related hospital stays in Australia 1993–2007

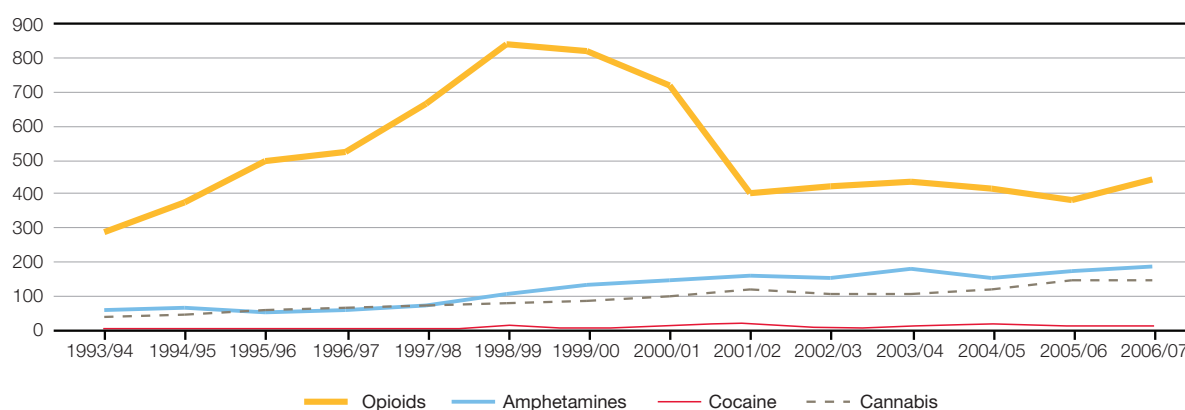


Prepared by Amanda Roxburgh and Lucy Burns, National Drug and Alcohol Research Centre
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Introduction

- + This bulletin presents data on drug-related hospital separations in Australia from 1993–2007 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.
- + Figure 1 shows the rates of hospital separations per million persons for each of the four drug types over the fourteen year time period (1993–2007). Rates were highest for opioids across the entire period, followed by amphetamines, cannabis and cocaine.

Figure 1: Rates per million persons of principal drug-related hospital separations in Australia among persons aged 15–54, by drug type, 1993–2007

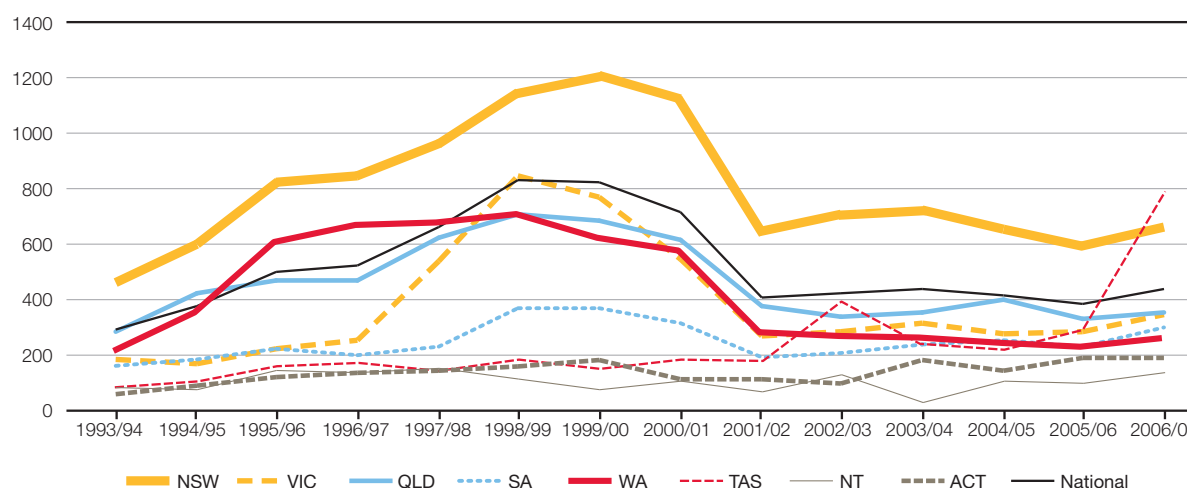


Opioid-related hospital separations

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.

- + Opioid-related hospital separations have remained relatively stable at a national level since 2001/02 (Figure 2).
- + As a subset of opioid-related separations, opioid dependence accounted for half of all principal opioid-related separations in Australia in 2006/07, representing a decrease from approximately two-thirds of these separations in earlier years.
- + In 2006/07 there was a concomitant increase nationally in presentations due to poisoning from other opioids, including morphine and oxycodone, which accounted for one-quarter (25%) of all opioid-related separations (other opioid poisonings accounted for 17% of opioid-related separations in 2005/06).
- + At the jurisdictional level opioid-related separations were continually highest in New South Wales (NSW) for the period 1993/94 to 2005/06, with separations in TAS in 2006/07 surpassing numbers recorded in NSW.
- + The increase recorded in TAS in 2006/07 was largely due to an increase in presentations for poisoning due to other opioids (including morphine, codeine and oxycodone). These accounted for a third (33%) of all opioid-related separations in TAS. Likewise, there was an increase in presentations for opioid dependence in TAS.
- + Since 2003/04, NSW has recorded a decrease in opioid-related separations for dependence, while numbers of separations for poisoning due to other opioids (morphine and oxycodone) have increased in the past two years.
- + Trends in opioid-related separations in QLD, VIC, SA and WA reflected those at the national level, while trends in the NT, and the ACT were more variable, and generally much lower in number.
- + These data are consistent with findings from the 2008 Illicit Drug Reporting System (IDRS) (Stafford et al., 2009) that show increasing diversification in drug use among opioid injectors in Australia, including the use of prescription opioids such as morphine and oxycodone. In particular, since 2001 an increasing proportion of IDRS participants in both NSW (Phillips and Burns, 2009) and TAS (de Graaf and Bruno, 2009) have reported injecting morphine in the past six months.

Figure 2: Rates per million persons of principal opioid-related hospital separations in Australia among persons aged 15–54, 1993–2007



Amphetamine-related hospital separations

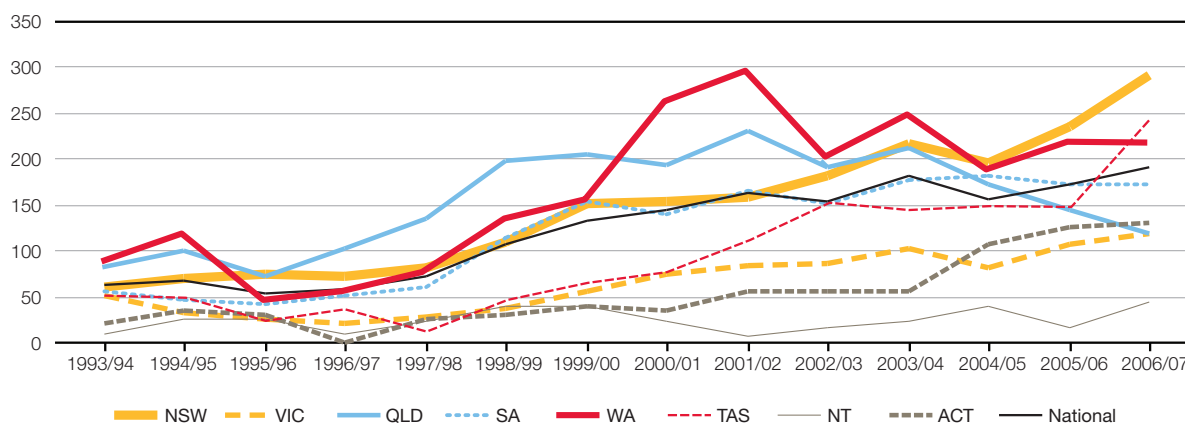
For the purposes of this bulletin, amphetamine-related hospital separations are defined as those separations where amphetamines were recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis.

- + Amphetamine-related hospital separations were second highest among the drug types examined (Figure 3 shows the numbers per million persons). At a national level, these separations have steadily increased throughout the entire fourteen-year period of data collection, although the rate at which they've increased has slowed somewhat over the past few years.
- + 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 2006/07.
- + Separations for amphetamine poisoning have accounted for a decreasing proportion of amphetamine-related separations at a national level (from 35% in 2004/05 to 29% in 2006/07).
- + At the jurisdictional level, in 2006/07 amphetamine-related separations were highest in NSW, with relatively dramatic increases occurring in the past two years. Separations for amphetamine dependence have comprised an increasing proportion (from approximately one-third — 33% — in 2000/01 to just over half — 54% — in 2006/07) of all amphetamine-related separations in NSW.
- + TAS also recorded a dramatic increase in 2006/07, which was due to increases in separations for amphetamine poisoning as well as harmful use.
- + Numbers were also relatively high in WA and SA, although WA recorded a downward trend in amphetamine-related separations since numbers peaked at 293 per million persons in 2001/02. Likewise, QLD has also recorded decreases since 2001/02.
- + Separations in SA have plateaued in the last few years after steadily increasing since the late 1990s.
- + Amphetamine-related separations have remained relatively low in the ACT and the NT, although there have been steady increases in these separations in the ACT since 2003/04.
- + VIC has also recorded steady increases since 2001/02.
- + Trends seen in NSW and TAS are consistent with other indicators for those jurisdictions. Findings from the NSW 2008 IDRS show there have been steady increases in participants using methamphetamine (particularly crystal methamphetamine) in the past six months, as well as increases in the frequency of use (Phillips and Burns, 2009). Likewise, findings from the TAS IDRS (de Graaf and Bruno, 2009), and the Australian NSP Survey (National Centre in HIV Epidemiology and Clinical Research, 2008) both show relatively high prevalence of methamphetamine use among participants/clients in TAS in 2006 and 2007.
- + The more sporadic patterns of use evidenced among participants from the TAS IDRS (de Graaf and Bruno, 2009) would appear to be consistent with increases in hospital separations recorded in TAS for amphetamine poisoning and harmful use, rather than presentations for amphetamine dependence (which is more indicative of long term use).
- + The downward trend seen in both QLD and WA are also consistent with declines among IDRS participants reporting methamphetamine use in these jurisdictions (George et al., 2009, Cogger and Kinner, 2009), and the decline in the number of police detections of clandestine laboratories in these jurisdictions (Australian Crime Commission, 2008).

Amphetamine-related hospital separations continued...

- During the period 2001/02 to 2004/05, laboratories detected in QLD comprised over half (between 52% and 54%) of all laboratories detected across Australia. In 2006/07, labs detected in QLD accounted for just over one-third (37%) of detections across Australia. This drop may in part be attributable to the rescheduling and restriction of the purchase of pseudoephedrine (a precursor used in the manufacture of methamphetamine) products across Australia, in particular Project STOP, that commenced in QLD (Australian Crime Commission, 2008).
- At their peak at 2,258 in 2006/07, amphetamine-related separations represent only one-quarter (25%) of the highest number of opioid-related separations recorded (in 1998/99 at 9,117 nationally) during the fourteen-year period.
- While lower in number than opioid-related separations, the proportion of amphetamine-related separations that are attributable to amphetamine dependence (42% in 2006/07) is nearing equivalence to the proportion of opioid-related separations that are attributable to opioid dependence (49% in 2006/07). These figures most likely reflect a steady increase in regular patterns of methamphetamine use among users, as these use patterns are more likely to be associated with dependence.

Figure 3: Rates per million persons of principal amphetamine-related hospital separations in Australia among persons aged 15–54, 1993–2007

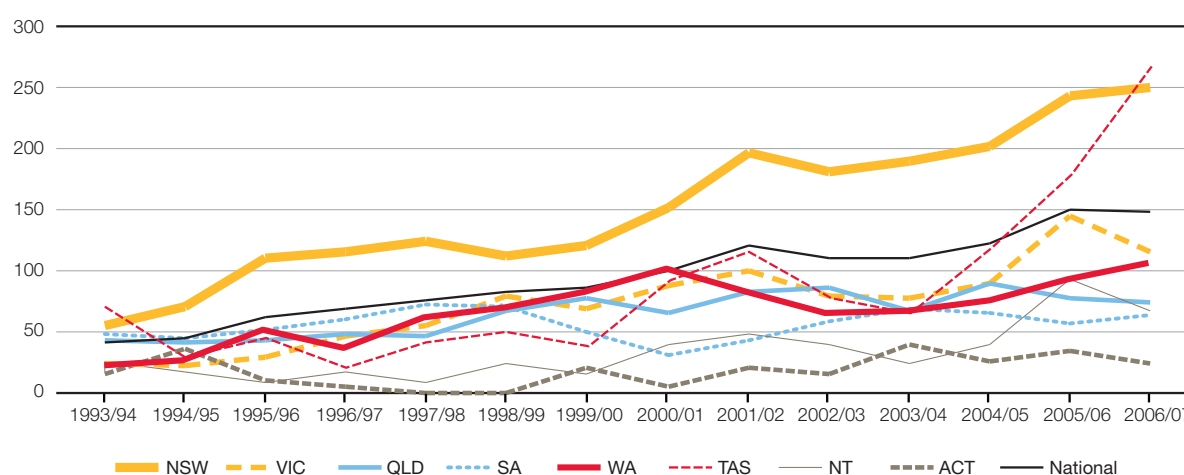


Cannabis-related hospital separations

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.

- + Cannabis-related separations were the third highest in number across the four drug types (following opioids and amphetamines) (Figure 4). At a national level these separations have steadily increased over the fourteen-year period.
- + Separations for cannabis dependence have accounted for an increasing proportion of all cannabis-related separations in Australia, from 55% in 1999/00 to 73% in 2006/07.
- + At the jurisdictional level cannabis-related separations were continually highest in New South Wales (NSW) for the period 1994/95 to 2005/06, with separations in TAS in 2006/07 surpassing numbers recorded in NSW. Separations in VIC and WA have also increased over time. Separations in the other jurisdictions showed more variability during the fourteen-year period.
- + The dramatic increases over the past 3 years in TAS have primarily been due to increases in separations for harmful use and cannabis dependence. Separations for dependence are predominantly occurring among the 20 to 39 year age group.
- + Steady increases in NSW have largely been driven by cannabis dependence, and these separations accounted for the majority (81%) of cannabis-related separations in NSW in 2006/07. Separations for dependence in NSW are also occurring predominantly among the 20 to 39 year age group.
- + Despite cannabis dependence separations increasing steadily since 1999/00, there is a declining trend in cannabis use being reported among the general population in Australia (Australian Institute of Health and Welfare, 2008), suggesting that those individuals who continue to use cannabis are most likely using in problematic ways, leading to the development of dependence.
- + The increase in separations for cannabis dependence may also reflect delayed effects of dependence among cannabis users who were initiating use at a relatively young age in Australia in the 1990s (Degenhardt et al., 2000).

Figure 4: Rates per million persons of principal cannabis-related hospital separations in Australia among persons aged 15–54, 1993–2007

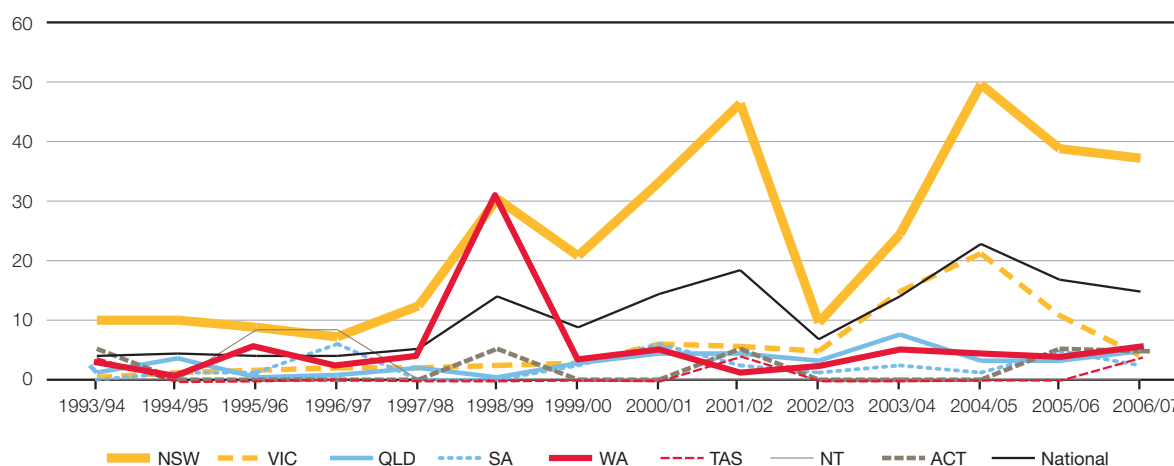


Cocaine-related hospital separations

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.

- + Cocaine-related separations were the lowest across the four drug types during the fourteen-year period (Figure 5). Nationally these separations have increased since 1993/94, although at a relatively low level.
- + NSW recorded the highest number of cocaine-related separations per million persons during the fourteen year 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). They have since declined, although they remain higher than figures recorded earlier in the period. In 2006/07, separations in NSW accounted for the majority (81%) of cocaine-related separations in Australia, and almost two-thirds (63%) of NSW cocaine-related separations were for dependence.
- + VIC recorded the next highest number of cocaine-related separations in Australia, with a marked decrease recorded since 2004/05.
- + The remaining jurisdictions recorded much lower numbers of cocaine-related separations throughout the time period.
- + The trends seen in cocaine-related hospital separations in NSW are consistent with trends in cocaine use among regular injecting drug users surveyed for the IDRS (Stafford et al., 2009).
- + Trends in cocaine-related separations should be interpreted with caution due to relatively small numbers in many jurisdictions.

Figure 5: Rates per million persons of principal cocaine-related hospital separations in Australia among persons aged 15–54, 1993–2007



Implications

- + Overall, the increasing proportion of drug-related separations that are attributed to drug dependence (particularly amphetamine dependence) is indicative of an ageing cohort of users who are increasingly experiencing problems associated with their use.
- + The increase over time in other opioid poisoning presentations also suggests the need for continued education about the increased risks of overdose in the context of polydrug use, particularly given the increasing diversification of drugs being used among sentinel groups of drug users in Australia (Stafford et al., 2009).
- + Amphetamine-related hospital separations remain the second highest of the four drug types examined, and there were increases recorded in NSW in separations for amphetamine dependence over the past few years. This is consistent with increased prevalence of methamphetamine use reported among sentinel groups of users (e.g. regular injecting drug users and regular ecstasy users) (Stafford et al., 2009, Sindicich and Burns, 2009). In contrast, methamphetamine use among the general population in Australia has declined (Australian Institute of Health and Welfare, 2008).
- + These findings, together, are consistent with other research showing that problematic methamphetamine use is occurring among specific sub-populations (Degenhardt et al., 2008), and it is these individuals who are most likely now seeking help for treatment for their dependence.
- + To date, however, there is no widely accepted pharmacotherapy treatment for stimulant dependence and the most promising treatment under investigation in Australia appears to be cognitive behavioural therapy (Baker et al., 2004). Clearly, ongoing efforts are required in the development of effective treatments for stimulant dependence, as well as strategies to engage this group, who are often reluctant to present for assistance (Kelly et al., 2005).
- + There has been an increase in separations for cannabis dependence. This is in contrast to a decline in cannabis use among the general population in Australia (Australian Institute of Health and Welfare, 2008). Again these findings most likely reflect a lag in people initiating cannabis use at a relatively young age (Degenhardt et al., 2000) and are now starting to experience problems with this use.
- + Only a minority of cannabis users seek treatment (Copeland, 2004), and research in the U.S. shows that treatment seeking among cannabis users is often driven by a mental health problem rather than problems associated with their cannabis use (Compton et al., 2007). Innovative ways to engage this group in earlier in treatment are required such as flexible service delivery models that make interventions more accessible (e.g. web-based interventions).
- + Cocaine-related hospital separations were the lowest across the drug types examined, indicating that the cocaine market in Australia, particularly outside of the metropolitan Sydney area, is relatively small.
- + 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; providing 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, in particular Katrina Burgess, 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 2006/07) 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 2006/07) 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.

CANNABIS-RELATED HOSPITAL SEPARATIONS

The following ICD-9-CM (from 1993/94 to 1998/99) and ICD-10-AM (from 1999/00 to 2006/07) 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 2006/07) 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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THE NATIONAL DRUG AND ALCOHOL RESEARCH CENTRE

University of New South Wales, Sydney NSW 2052

Phone: +61 2 9385 0333

Fax: +61 2 9385 0222

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