

Drug-related hospital stays in Australia 1993–2008

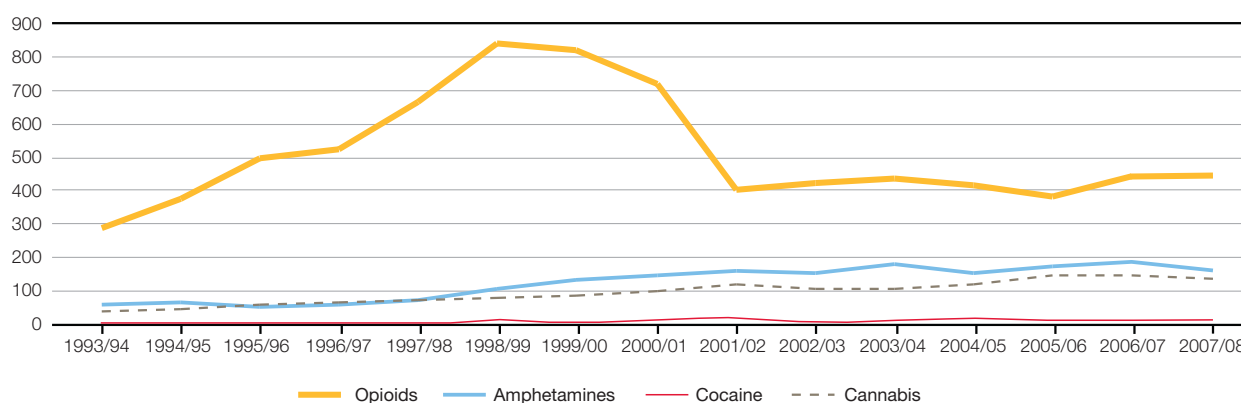


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Introduction

- + This bulletin presents data on drug-related hospital separations in Australia from 1993–2008 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 fifteen year time period (1993–2008). 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, 1993–2008

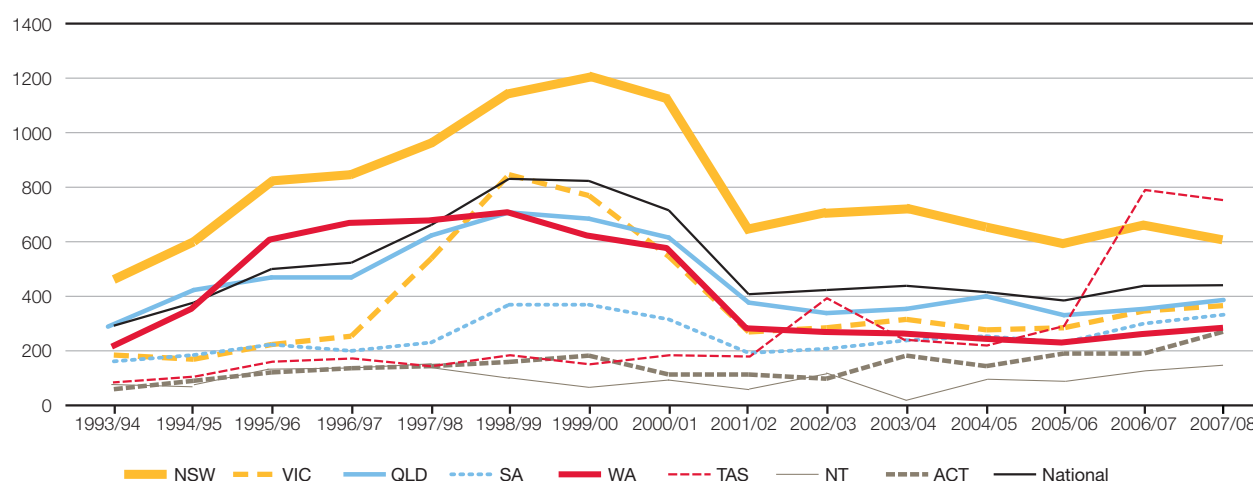


Opioid-related hospital separations

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 (49%) of all principal opioid-related separations in Australia in 2007/08, representing a decrease from approximately two-thirds of these separations in earlier years. The 30 to 39 year age group account for the largest proportion (35% in 2007/08) of separations for opioid dependence.
- + Over time there has been an increase nationally in presentations due to poisoning from other opioids (including morphine, oxycodone, and codeine) which accounted for approximately one-quarter (24%) of all opioid-related separations in 2007/08 (these poisonings accounted for 7% of all opioid-related separations in 2000/01).
- + 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 and 2007/08 surpassing numbers recorded in NSW.
- + The higher number recorded in TAS compared with NSW in 2007/08 was mostly due to an increase in presentations for opioid dependence in TAS. These presentations accounted for just under half (43%) of all opioid-related separations in TAS in 2007/08 (representing an increase from 26% in 2006/07).
- + Since 2003/04, a decreasing proportion of all opioid-related separations in NSW have been due to opioid dependence (declining from over three-quarters — 79% — to under two-thirds — 64% — of opioid-related separations in 2007/08).
- + There has been a concomitant increase in NSW in opioid-related separations that were for poisoning due to other opioids (e.g. morphine and oxycodone) between 2003/04 (when they represented 7% of all opioid-related separations) and 2007/08 (representing 16%). It should be noted however, that this increase may also be attributable to an increase in codeine poisoning presentations. It is not possible to separate these presentations out from oxycodone and morphine poisoning.
- + 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.

Figure 2: Rates per million persons of principal opioid-related hospital separations in Australia among persons aged 15–54, 1993–2008



Opioid-related hospital separations continued...

- + Although based on small numbers, the ACT has recorded steady increases in opioid-related presentations over the past 3 years, which is largely due to increases in poisoning due to other opioids.
- + These data are consistent with findings from the Illicit Drug Reporting System (IDRS) that show increasing diversification in drug use among opioid injectors in Australia, including the use of prescription opioids such as morphine and oxycodone (Stafford et al., 2009). In particular, since 2001 an increasing proportion of IDRS participants in TAS (de Graaf and Bruno, 2009) have reported injecting morphine in the past six months.
- + Proportions in NSW reporting injecting morphine have stabilised after initial increases recorded between 2001 and 2007 (Phillips and Burns, 2009). More recent hospital data are likely to reflect this trend when the data become available.
- + At a national level, proportions across Australia reporting injecting morphine have also stabilised (Stafford et al., 2009).
- + 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 et al., 2009).

Amphetamine-related hospital separations

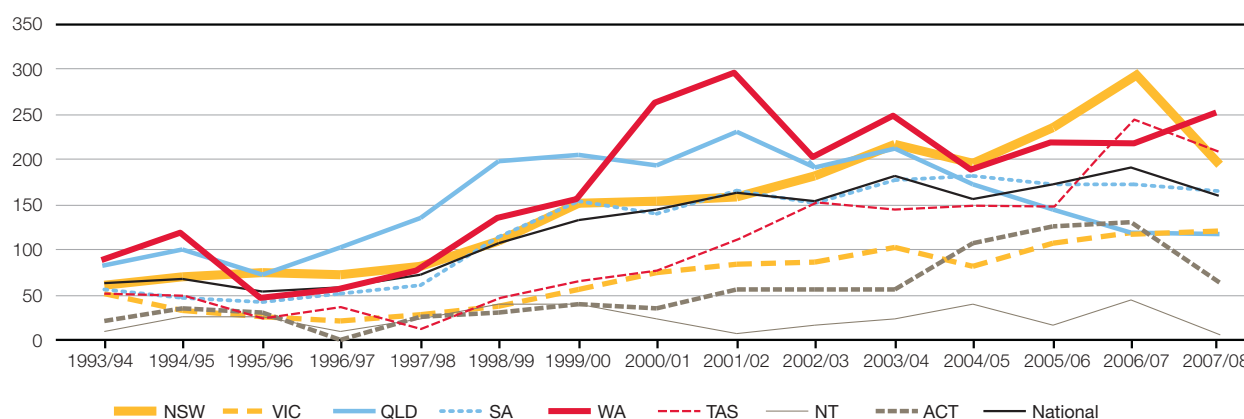
For the purposes of this bulletin, amphetamine-related hospital separations are defined as those separations where amphetamines were recorded as the principal diagnosis. See Appendix A for the ICD codes used in this analysis.

- + 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 since the mid 90's, and peaked at 180 per million persons in 2003/04 and again at 190 in 2006/07. These presentations have stabilised over the past five years.
- + 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. Thirty nine percent of amphetamine separations in 2007/08 were for amphetamine dependence. The 20 to 29 year age group account for the largest proportion (44% in 2007/08) of separations for amphetamine dependence followed closely by the 30 to 39 year age group (36% in 2007/08).
- + Separations for acute intoxication have also increased from 7% of all amphetamine-related separations in 2000/01 to 15% in 2007/08.
- + Conversely, separations for amphetamine poisoning have accounted for a slightly decreasing proportion of amphetamine-related separations at a national level (from 35% in 2004/05 to 32% in 2007/08), as have presentations for harmful amphetamine use.
- + At the jurisdictional level, amphetamine-related separations were highest in NSW until 2007/08, with WA recording the highest number per million population of these separations.
- + Presentations for amphetamine dependence have accounted for an increasing proportion of all amphetamine-related separations in WA over the past four years (from 26% in 2004/05 to 34% in 2007/08).
- + Separations in NSW declined in 2007/08 (from a peak of 291 per million persons in 2006/07 to 196) following dramatic increases in the previous two years. Separations for amphetamine dependence have comprised an increasing proportion (from approximately one-third — 33% — in 2000/01 to just under half — 47% — in 2007/08) of all amphetamine-related separations in NSW.

Amphetamine-related hospital separations continued...

- + Numbers were also relatively high in TAS and SA, with separations in TAS in 2007/08 being predominantly due to amphetamine dependence (46%) and poisoning (35%).
- + Separations in SA and VIC have stabilised over the past few years, while QLD has recorded a downward trend in amphetamine-related separations since 2003/04.
- + Amphetamine-related separations have remained relatively low in the ACT and the NT, with both jurisdictions recording large decreases in 2007/08.
- + Findings from both the NSW IDRS and Ecstasy and related Drugs Reporting System (EDRS) also show a marked decrease in the proportion of participants reporting methamphetamine use in the preceding six months, as well as a decline in the frequency of use among these groups (Scott and Burns, 2009, Phillips and Burns, 2009). This trend was also reflected in both the WA IDRS and EDRS findings (George et al., 2009, Rainsford et al., 2009).
- + At their peak at 2258 in 2006/07, amphetamine-related separations represent only one-quarter (25%) of the highest number of opioid-related separations recorded (in 1998/99 at 9117 nationally) during the fifteen-year period.

Figure 3: Rates per million persons of principal amphetamine-related hospital separations in Australia among persons aged 15–54, 1993–2008

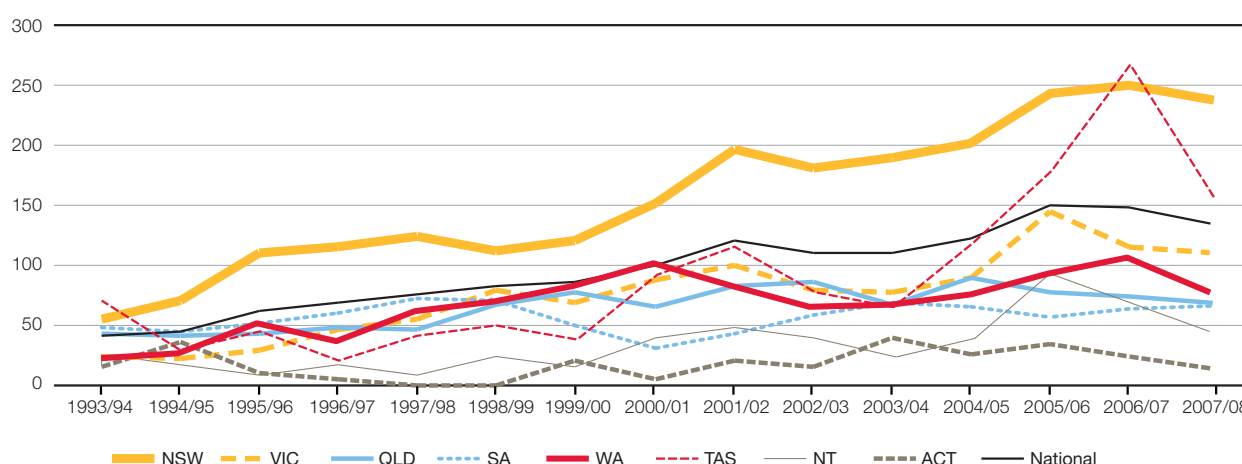


Cannabis-related hospital separations

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 steadily increased between 1993/94 and 2005/06, and have stabilised over the past two years for the first time in the fifteen 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 75% in 2007/08. The 20 to 29 year age group account for the largest proportion (41% in 2007/08) of separations for cannabis dependence, followed by the 30 to 39 year age group (29% in 2007/08). Although presentations among the 40 to 49 year age group are lower relative to the younger age groups, increases among this older group have been most evident.
- + At the jurisdictional level cannabis-related separations have been most predominant in NSW. Steady increases have been recorded in NSW since 1993/94 (from 55 per million persons in 1993/94 to a peak of 250 per million in 2006/07, with a decline recorded in 2007/08 (to 235 per million). This increase has largely been driven by cannabis dependence, and these separations accounted for the majority (81%) of cannabis-related separations in NSW in 2007/08.
- + After dramatic 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. This drop was due to a decline in presentations for harmful use.
- + Separations in VIC and WA have also increased over time, although decreases were recorded in both jurisdictions in 2007/08. The trend seen in VIC is largely being driven by changes in presentations for cannabis dependence, with presentations peaking at 82% of all cannabis-related separations in VIC in 2005/06, and subsequently declining to 77% in 2007/08. Trends in WA are being driven by changes in presentations for harmful use, (these accounted for 39% of all cannabis-related separations in WA in 2005/06, and declined to 18% in 2007/08).
- + Separations in the other jurisdictions showed more variability during the fifteen-year period, with both QLD and SA recording stabilisation of numbers over the past four years, and NT recording a decrease.

Figure 4: Rates per million persons of principal cannabis-related hospital separations in Australia among persons aged 15–54, 1993–2008

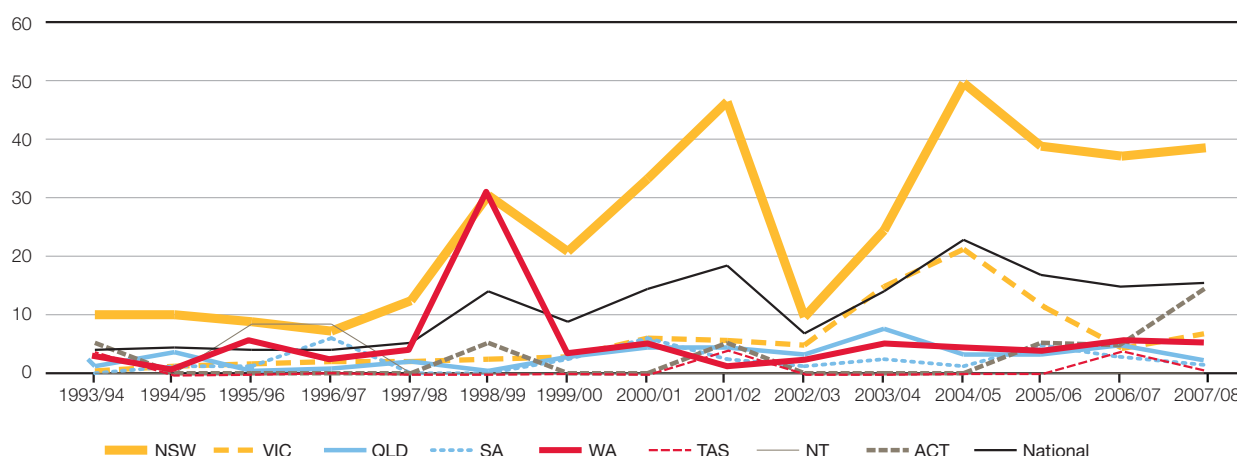


Cocaine-related hospital separations

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 fifteen-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 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. Separations in NSW continue to account for the majority (81% in 2007/08) of cocaine-related separations in Australia, and in 2007/08 almost two-thirds (62%) of NSW cocaine-related separations were for dependence. The 30 to 39 year age group account for the largest proportion of cocaine dependence separations in NSW (49% in 2007/08) followed by the 40 to 49 year olds (34%).
- + 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 (Phillips and Burns, 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, 1993–2008



Implications

- + The increase over time in other opioid poisoning presentations 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). It should be noted however that some of this increase may be due to codeine poisoning, which cannot be separated out from morphine and oxycodone poisoning.
- + Age analysis, showing that opioid dependence presentations are most prominent among the 30 to 39 year age group, suggests the continued need to engage opioid users in treatment as early as possible.
- + Amphetamine-related hospital separations have stabilised after steady increases in Australia during the 1990s.
- + The prominence of amphetamine dependence separations among the 20 to 29 year age group suggests that amphetamine users are developing problems earlier with their amphetamine use.
- + Cannabis-related separations have stabilised over the past two years, after steadily increasing between 1993/94 and 2005/06. Cannabis dependence presentations are particularly evident among the 20 to 29 year and 30 to 39 year age groups, although they have stabilised among these groups in the past year.
- + Although cannabis-related separations among the 40 to 49 year age group are relatively lower than those for the younger age groups, these separations have steadily increased. These findings most likely reflect a lag in people initiating cannabis use at a relatively young age during the 1990s (Degenhardt et al., 2000) and are now starting to experience problems with this use. Findings are also consistent with population research that shows Australians aged 40 to 49 years are more likely to report daily cannabis use than those aged 14 to 19 years (Roxburgh et al., 2010).
- + Cannabis users are traditionally difficult to engage in treatment, with only a minority seeking help (Copeland, 2004). Treatment seeking among this group is often driven by a mental health problem rather than problems associated with cannabis use (Compton et al., 2007). Innovative ways to engage cannabis users earlier in treatment are required such as flexible service delivery models that make interventions more accessible (e.g. web-based interventions). Continued messages, directed at preventing young people from initiating cannabis use are also warranted.
- + Cocaine-related hospital separations were the lowest across the drug types examined, and separations in NSW accounted for the majority nationally. These data, along with data collected from sentinel groups of drug users (i.e. the IDRS and EDRS) indicate that trends in cocaine use and related harms; a) are largely confined to the Sydney metropolitan area; and b) fluctuate, with no discernible patterns evident. However, continued monitoring of trends in cocaine use remains an important public health issue, particularly given the increased harms associated with frequent and injecting cocaine use (Degenhardt et al., 2006) (Roxburgh et al., 2005).
- + 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

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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.

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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