

Amanda Roxburgh and Louisa Degenhardt

**Hospital stays related to illicit drugs
in Australia, 1993-2004**

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While every effort has been made to ensure that the analysis of the data and the figures presented in this report are correct, it should be noted that the respective State and Territory health departments have not verified this analysis.

ABBREVIATIONS

ABCI	Australian Bureau of Criminal Intelligence
ABS	Australian Bureau of Statistics
ACC	Australian Crime Commission
ACS	Australian Customs Service
ACT	Australian Capital Territory
AFP	Australian Federal Police
AIHW	Australian Institute of Health and Welfare
ATSI	Aboriginal and/or Torres Strait Islander
BBVI	Blood Borne Viral Infections
GHB	Gamma-Hydroxybutyrate
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
ICD	International Classification of Diseases (WHO coding system)
IDRS	Illicit Drug Reporting System
IDU	Injecting drug user (s)
KE	Key expert (s)
LSD	Lysergic acid diethylamide
MDMA	3,4-methylenedioxymethamphetamine
NDARC	National Drug and Alcohol Research Centre
NDSHS	National Drug Strategy Household Survey
NDLERF	National Drug Law Enforcement Research Fund
NHMD	National Hospital Morbidity Database
NIDIP	National Illicit Drug Indicators Project
NSP	Needle and syringe program
NSW	New South Wales
NT	Northern Territory
PBAC	Pharmaceutical Benefits Advisory Committee
PDI	Party Drugs Initiative
QLD	Queensland
SA	South Australia
SPSS	Statistical Package for the Social Sciences
TAS	Tasmania
TGA	Therapeutic Goods Administration
VIC	Victoria
WA	Western Australia
WHO	World Health Organisation

EXECUTIVE SUMMARY

Aims

This report examines trends in drug-related hospital separations (including use, dependence, psychosis and withdrawal) in Australia during the period 1993 to 2004. The report presents data on characteristics of those people being treated in hospital for drug-related reasons, details of their hospital stay, analysis of which other drugs co-occur with each drug type, and analysis of the non drug-related treatment received while in hospital in conjunction with drug-related treatment.

Method

Hospital separation data from the National Hospital Morbidity Database (NHMD), coded according to the International Statistical Classification of Disease and Related Problems - 9th revision, clinical modification (ICD-9-CM) and the 10th revision, Australian Modification (ICD-10-AM) were analysed for the period 1993 to 2004.

Coding of hospital separations occurs after a patient has been discharged. The coding of a patient's hospital stay (the "hospital separation") therefore refers to the conditions that are significant in terms of the treatment and investigations required, and resources used, rather than the problem for which they may have been nominally admitted to hospital.

Separations with a diagnosis (either principal or additional) related to opioids, amphetamines, cocaine and cannabis were analysed. Numbers and rates (per million persons) of separations with a principal diagnosis related to each drug type were assessed. Gender, age group, length of stay, and funding source were also assessed by drug type.

Results

a) Trends in opioid-related hospital separations

Hospital separations with a principal diagnosis related to opioids (referred to as "opioid-related separations") steadily increased during the period 1993/94 to 1998/99. There was a dramatic decrease in these separations in 2001/02, coinciding with a marked reduction in heroin supply in Australia at this time. NSW recorded the highest number of separations during the eleven-year period, followed by VIC and QLD. NT recorded the lowest number of opioid-related separations.

Separations with a principal diagnosis of opioid dependence showed a similar pattern, with separations more than doubling between 1993 and 2000, and then halving from 2000/01 to 2001/02. NSW recorded the highest numbers of opioid dependence separations followed by VIC and QLD.

Opioid-related separations were highest among the 20 to 29 year age group. Increases between 1993 and 2000 were most pronounced among this group, with a dramatic decline occurring in 2000/01. This pattern was also evident among the 10 to 19 and 30 to 39 year age group although at a lower level. There has been a steady increase in opioid-related separations among the 40 to 49 year age group, and unlike the younger age groups, there was little if any decrease in separations in 2000/01 among either the 40 to 49 or 50 to 59 year olds. These trends were mirrored in separations where opioid

dependence was the principal diagnosis. Males accounted for just over half (58%) of the opioid-related separations recorded in Australia in 2003/04.

Principal diagnoses that were recorded in conjunction with opioid mentions (i.e. separations where opioids were coded as either the principal or as an additional diagnosis) were predominantly physical health problems, reflecting the relatively poor general health of these users. An increasing proportion of opioid mentions had principal diagnoses of mental disorders, while principal diagnoses of pregnancy complications, other drug and alcohol related problems, and injury accompanied smaller proportions of opioid mentions.

Cannabis was the drug most commonly recorded as an additional diagnosis in conjunction with opioid-related separations in 2003/04. Amphetamines were recorded in a smaller number of separations, while cocaine was rarely mentioned in conjunction with opioid-related separations.

Approximately three-quarters of the hospital stays for opioid-related separations in 2003/04 were one week or less in duration, and the majority were for patients receiving public hospital services.

b) Trends in cocaine-related hospital separations

Hospital separations with a principal diagnosis related to cocaine (referred to as “cocaine-related separations”) steadily increased from 1993/94 to 2001/02, with separations more than tripling in this time. NSW recorded the highest number of cocaine-related separations and accounted for the majority of the national total. Other jurisdictions recorded comparatively fewer cocaine-related separations during the eleven-year period.

Separations with a principal diagnosis of cocaine dependence also increased, with peaks occurring in 1998/99 and 2001/02, and declining in 2002/03. They increased slightly in 2003/04. NSW had the highest number of cocaine dependence separations and again accounted for the majority of the national total.

Numbers of cocaine-related separations were small across all age groups, with less than 100 per year being recorded. Separations were highest among the 20 to 29 year age group. Sharp increases were evident among this group between 1999 and 2002, followed by a dramatic decline in 2002/03. They subsequently increased in 2003/04. A similar pattern was evident among the 30 to 39 year age group. Trends for cocaine-related separations were mirrored in those for cocaine dependence, with a sharp increase occurring among the 30 to 39 year age group in 2003/04. Males accounted for more than three-quarters (80%) of the cocaine-related separations recorded in Australia in 2003/04.

The most common principal diagnoses that were recorded in conjunction with cocaine mentions (i.e. separations where cocaine was coded as either the principal or as an additional diagnosis) was for other drug or alcohol problems, particularly opioid and alcohol dependence. A substantial proportion of principal diagnoses was due to a physical health problems, and increasing proportions were accounted for by mental disorders.

Amphetamines were most commonly recorded in conjunction with cocaine-related separations in 2003/04, while cannabis and opioids were only recorded in a minority of cocaine-related separations.

The majority of hospital stays for cocaine-related separations in 2003/04 were for one day only. The funding source reported for the majority of these separations in NSW and VIC (where they were highest) was private health insurance.

c) Trends in amphetamine-related hospital separations

Hospital separations with a principal diagnosis related to amphetamines (referred to as “amphetamine-related separations”) showed a steady increase over the eleven-year period, tripling nationally between 1993/94 and 2001/02. They have remained stable for the past few years at a higher level. NSW recorded the highest number of amphetamine-related separations, followed by QLD and WA. NT and the ACT recorded low numbers of amphetamine-related separations.

Trends in separations with a principal diagnosis of amphetamine dependence mirrored amphetamine-related separations, with NSW recording the highest numbers, followed by QLD.

Amphetamine-related separations were highest among the 20 to 29 year age group followed by the 10 to 19 year age group. Steady increases were recorded across all age groups during the eleven-year period. Separations for amphetamine dependence were also highest among the 20 to 29 year age group followed by the 30 to 39 year olds. Increases in dependence separations were evident across all age groups except the 10 to 19 year olds, where separations have decreased slightly over the past four years. Males accounted for just over half (59%) of the amphetamine-related separations recorded in Australia in 2003/04.

An increasing proportion of amphetamine mentions (i.e. separations where amphetamines were coded as either the principal or as an additional diagnosis) were accompanied by mental disorders, particularly mood and psychotic disorders. These increases were largely due to increasing diagnosis of the psychotic disorders. This should be interpreted with caution, however, as it may not reflect an increase in the incidence of psychotic disorders but, rather, that the same people are presenting to hospital on several occasions with these problems. A substantial proportion of other drug and alcohol problems (particularly drug-related psychosis, and alcohol and opioid dependence) accompanied amphetamine mentions, while smaller proportions were accompanied by a broad spectrum of physical health problems.

Cannabis was the drug most commonly recorded with amphetamine-related separations, followed by opioids. Cocaine rarely co-occurred with amphetamine-related separations.

Approximately two-thirds (63%) of hospital stays for amphetamine-related separations in 2003/04 were for one day only. Among those separations that were for more than one day, the majority were for no more than two weeks (14 days). The majority of amphetamine-related separations in 2003/04 were for patients receiving public hospital services.

d) Trends in cannabis-related hospital separations

Hospital separations with a principal diagnosis related to cannabis (referred to as ‘cannabis-related separations’) steadily increased between 1993/94 and 2001/02 and have remained relatively stable since that time. NSW had the highest number of cannabis-related separations during this period followed by QLD. TAS, the NT and the ACT all had relatively low numbers of cannabis-related separations.

Separations with a principal diagnosis of cannabis dependence also increased in the period leading up to 2001/02, before a slight decline in 2002/03. Cannabis dependence separations in NSW accounted for over half of the national total, while VIC and QLD accounted for 20% and 15% respectively. SA, TAS, the NT and the ACT recorded comparatively lower numbers of cannabis dependence separations.

Cannabis-related separations were highest among the 20 to 29 year age group, followed by the 10 to 19 year olds. Cannabis separations steadily increased among the 20 to 29 year age group during the period, but they declined among the 10 to 19 year age group in 1999/00 and have remained at that lower level over the past five years. Separations also steadily increased among the 30 to 39 year age group. They remained low among the older age groups (the 40 to 49 and 50 to 59 year age groups). Males accounted for approximately three quarters (72%) of the cannabis-related separations in Australia in 2003/04.

An increasing proportion of hospital separations with mentions of cannabis were accompanied by principal diagnoses of mental disorders, particularly psychotic and mood disorders. Substantial proportions of hospital separations where cannabis was mentioned were also accompanied by other drug problems, particularly alcohol and opioid dependence and, to a lesser extent, drug-related psychosis. Smaller proportions of cannabis mentions were accompanied by physical health problems, while there were decreases in the proportions accompanied by poisoning by drugs, medicaments and biological substances.

Amphetamines were the drug type most commonly co-occurring with cannabis-related separations, while opioids co-occurred in small minorities of these separations. Cocaine was rarely reported in conjunction with cannabis-related separations.

Just under half (45%) of the hospital stays in 2003/04 for a principal diagnosis related to cannabis were for one day only. Among those separations that were for more than one day (703 separations), the majority (91%) were for no more than 3 weeks duration (21 days). The majority of cannabis-related separations in 2003/04 were for patients receiving public hospital services. However, the funding source reported for over one-third (37%) of NSW separations was private health insurance.

e) Trends in drug-related psychosis separations

Hospital separations with a principal diagnosis of drug-induced psychosis (referred to as 'drug-related psychosis separations') have increased over the eleven-year period at a national level. Drug-related psychosis separations were most commonly recorded in NSW and QLD. NSW has seen a continued increase in these separations and accounted for approximately one-third of the national total, while QLD separations started to decline in 2001/02, accounting for approximately 25% of the national total.

Hospital separations with a principal diagnosis of amphetamine psychosis (referred to as 'amphetamine-related psychosis separations') accounted for the largest proportion (approximately half) of all drug-related psychosis separations between 1999/00 and 2003/04, followed by cannabis. There was a gradual but steady increase in amphetamine-related psychosis separations during this period, with NSW recording the highest number, followed by QLD. NSW, QLD, WA and SA all recorded increases in amphetamine-related psychosis separations. Cannabis-related psychosis separations (i.e.

with a principal diagnosis of cannabis-induced psychosis) remained relatively stable during the five-year period. Cocaine-related psychosis separations (i.e. with a principal diagnosis of cocaine-induced psychosis) accounted for less than 2% of principal drug-related psychosis separations between 1999 and 2004.

Amphetamine-related psychosis separations were highest among the 20 to 29 year age group, followed by the 30 to 39 year age group. These separations steadily increased among both groups between 1999 and 2004, and separations among the 30 to 39 year age group accounted for the highest proportion of all drug related psychosis separations. Cannabis-related psychosis separations were also highest among the 20 to 29 year age group, and remained relatively stable during the five-year period. A similar trend was evident among the 10 to 19 year olds. There was a slight increase in cannabis-related psychosis separations among the older groups (the 30 to 39 year age group and the 40 to 49 year age group) although numbers were small. Cannabis-related psychosis separations among the 10 to 19 year age group accounted for the highest proportion of all drug-related psychosis separations. Males accounted for approximately two-thirds of the amphetamine-related psychosis separations and three-quarters of the cannabis-related psychosis separations in 2003/04.

Just under half (40%) of the hospital stays in 2003/04 for a principal diagnosis related to amphetamine-induced psychosis were for one day only. Among those separations that were for more than one day (967 separations), the majority (94%) were for no more than three weeks (21 days). The majority of these separations were for patients receiving public hospital services. In VIC however, the funding source reported for one-third of these separations was private health insurance.

Hospital stays for cannabis-related psychosis in 2003/04 were slightly longer than for the other drug-related presentations, with just under one-quarter (23%) being for one day only. Among those separations that were for more than one day (888 separations), the majority (94%) were for no more than four weeks (28 days). The majority of these separations were for patients receiving public hospital services.

f) Trends in drug withdrawal separations

Separations with a principal diagnosis of drug withdrawal ('drug withdrawal separations') increased between 1994/1995 and 2000/01, then decreased dramatically in 2001/02. They have remained stable in the past few years. Drug withdrawal separations in NSW were the highest during the eleven-year period, accounting for just under half of the national total. VIC had the next highest number of separations for drug withdrawal followed by QLD. All jurisdictions recorded decreases in drug withdrawal separations in 2001/02, with the exception of TAS, the NT and the ACT, which all recorded very small numbers during the eleven-year period.

Opioids accounted for the majority of drug withdrawal separations for the period 1999 to 2004, with NSW recording the highest number during this time. Opioid withdrawal separations dropped dramatically in 2001/02 across most jurisdictions.

Amphetamine withdrawal separations accounted for up to 17% of all drug withdrawal separations between 1999 and 2004, and remained relatively stable at a national level and in most jurisdictions until 2003/04, when they increased slightly. NSW and QLD recorded the highest amphetamine withdrawal separations, with NSW separations almost doubling between 2002/03 and 2003/04. The NT, the ACT and TAS recorded very

small numbers of amphetamine withdrawal separations during the five year period. Cannabis accounted for between 5% and 15% of drug withdrawal separations, and although numbers have remained low, they have increased at a national level over the past couple of years. Cocaine accounted for less than 2% of drug withdrawal separations during the five-year period.

Due to relatively small numbers of withdrawal separations recorded for amphetamine, cannabis and cocaine, detailed analyses were only conducted on opioid withdrawal separations. These separations were highest among the 20 to 29 year age group. Dramatic decreases were evident among the younger age groups (the 20 to 29 year and 10 to 19 year age groups) in 2001/02, and have since remained lower. Decreases in opioid withdrawal separations among the older age groups (the 30 to 39 year and 40 to 49 year age groups) were less pronounced at this time. Although numbers of separations among the 50 to 59 year age group were relatively small, they have been increasing since 2001/02. Males accounted for just over half of the opioid withdrawal separations recorded in Australia in 2003/04.

Just over half (54%) of the hospital stays in 2003/04 for a principal diagnosis related to opioid withdrawal were for one day only. Among those separations that were for more than one day (253 separations), the majority (97%) were for no more than two weeks (14 days).

The majority of hospital stays for opioid withdrawal in 2003/04 were for one week or less in duration, and they were primarily for patients receiving public hospital services.

Discussion

Opioid-related separations were the most frequent illicit drug-related separations occurring in Australia over the eleven-year period. A substantial proportion (up to 54%) of opioid mentions was accompanied by a broad spectrum of physical health problems, which is indicative of the relatively poor physical health of this group of drug users, and the provision of primary health care to this group should remain a priority.

Opioid-related separations declined dramatically in 2001/02, the period of the heroin shortage. The decline was predominantly evident among the younger age groups, while the older age groups recorded steady increases in opioid-related separations during the eleven-year period. This suggests that the heroin shortage had a differential impact on illicit drug-related harms among different age groups and confirms the findings of previous research looking at this issue (Degenhardt, Day, Conroy et al., 2005b) and also confirms trends in data on fatal opioid overdoses in Australia (Degenhardt, Roxburgh, Black et al., 2006a). While there was a dramatic decline in opioid-related separations, they remain the highest across the drug types, and continue to place a burden on the public health system, given that the majority of these separations are for patients receiving public hospital services.

Amphetamine-related separations were the next highest in number, and increased over the eleven-year period. Separations for amphetamine dependence and withdrawal accounted for a small minority of amphetamine-related separations while separations for amphetamine-related psychosis accounted for just under half of all amphetamine-related separations in 2003/04, with steady increases evident over the past five years.

These findings suggest that amphetamine users are more likely to present to hospital when they are in crisis (e.g. when they are experiencing significant psychotic symptoms) than for problems associated with dependent amphetamine use. Strategies to encourage amphetamine users experiencing problems related to their use to seek treatment need to be developed and implemented, as effective treatments do exist for the problematic use of amphetamine. Education about the risks associated with amphetamine use (such as psychosis), and how to manage these risks, also needs to be delivered to users.

Problematic amphetamine users may present a range of challenges to frontline health workers, due to aggressive and hostile behaviour often associated with these presentations. Continued training of frontline health workers (e.g. Needle and Syringe Program (NSP) and hospital staff) on the management of amphetamine-related psychosis is required in an attempt to reduce the number of cases that present to hospital, and to minimise the impact on hospital resources when cases do present to hospital.

Cannabis-related separations have remained relatively stable over the past two years following an increasing trend between 1993 and 2002. Numbers of cannabis dependence separations are still comparatively smaller than those for opioid dependence (despite the decrease in opioid-related separations from 2001/02). Increases among the older age groups were evident while dependence separations declined among the 10 to 19 year age group.

Cannabis-related psychosis separations also remained relatively stable over the past five years, however, increasing proportions were accounted for by the younger 10 to 19 year age group. Younger cannabis users appear to have more acute problems associated with their cannabis use than the older users, which may be related to heavier use patterns reported among younger users in Australia (Australian Institute of Health and Welfare, 2005). Up to half of the cannabis mentions were primarily due to mental disorders.

Education interventions focused upon cannabis use need to provide credible and balanced information about the risks (both short and long term) of regular cannabis use. Effective psychological interventions do exist for cannabis dependence, and this should be disseminated to health workers as well as users who may wish to seek help.

Cocaine-related separations were much lower than those for other drugs, with increases coinciding with the heroin shortage in 2001. These separations were predominantly recorded in NSW, and were highest among the older age groups, and up to one-third of cocaine mentions were accompanied by other drug and alcohol problems. These findings suggest that small numbers of predominantly older users present for treatment for cocaine use, and are likely to have problems with other drug and alcohol use.

Training of health workers in the diagnosis, assessment and treatment of co-morbid mental health problems is also crucial, given the high prevalence of co-morbid presentations.

The National Hospital Morbidity Database is a useful data source for monitoring illicit drug-related harms in Australia, and it maps well to other data sources, such as seizure and arrest data, and reports from injecting drug users (IDU). Continued monitoring of this data would provide important information about trends in drug-related harms in Australia, as well as the context within which emerging trends can be understood. Finally, analysis of this data, in conjunction with other available data sources, would provide a reliable framework within which to inform evidence-based drug policy in Australia.

1 INTRODUCTION

Illicit drug-related harms in Australia have become an increasing economic burden in both the public health and law enforcement arenas, highlighting the increasing importance of comprehensive surveillance of these harms in the Australian context. This surveillance enables policy-makers to undertake an evidence-based approach to evaluating current illicit drug strategies as well as formulating future strategies (Shand, Topp, Darke et al., 2003).

Australia has a broad range of illicit drug monitoring systems in place that are designed to detect emerging drug trends (e.g. the Illicit Drug Reporting System (IDRS)) as well as monitor longer term trends within a broader community context (eg, the National Drug Strategy Household Survey (NDSHS)). There are also a range of routine data collections in Australia that record longer term trends in illicit drug use including ambulance callouts to overdoses, emergency room presentations, presentations for drug treatment (the Alcohol and other Drug Treatment Services data collected as part of the National Minimum Dataset (NMDS)) and illicit drug related-hospital separations (the National Hospital Morbidity Database (NHMD)). These routine data sources provide the context within which emerging drug trends can best be understood (Shand et al., 2003), and accordingly, they are useful for the comprehensive surveillance of illicit drug-related harms in Australia.

Triangulation of data sources such as injecting drug user (IDU) surveys, interviews conducted with professionals who have contact with, and knowledge of, illicit drug users and markets, and routine data collections, such as drug-related emergency presentations, has shown that as drug trends change so too does the demand on drug-related services (Stafford, Degenhardt, Black et al., 2006a). For instance, in Australia in 2001, there was a sustained and dramatic reduction in heroin availability which led to a change in heroin use patterns (Topp, Kaye, Bruno et al., 2002b, Topp, Day and Degenhardt, 2003, Day, Topp, Rouen et al., 2003). The jurisdictions in which heroin had previously been readily available showed marked increases in numbers entering treatment programs (Stafford et al., 2006a, Black, Degenhardt and Stafford, 2006), as well as decreases in heroin-related emergency presentations and ambulance callouts to heroin overdoses (Black et al., 2006). There was also a concurrent increase in cocaine use (particularly in NSW) and the harms associated with more frequent cocaine use, which in turn showed as increases in cocaine-related presentations to health services (Roxburgh, Degenhardt, Breen et al., 2003, Black et al., 2006). The dynamic nature of illicit drug markets in Australia is such that monitoring data sources for illicit drug-related harms is essential in ensuring that health, law enforcement and community responses to these harms remains timely and relevant.

1.1 Drug Trends in Australia

Illicit drug use patterns vary in Australia among different sub-populations, and there are various monitoring systems that collect data on these distinct populations. The NDSHS collects data on trends within the broader population, and their latest results from the 2004 survey (Australian Institute of Health and Welfare, 2005) show a slight decline in proportions reporting recent use (within the last 12 months) of cannabis, a slight increase in the proportion reporting recent ecstasy use, and relatively stable methamphetamine,

cocaine and heroin use, compared to the 2001 results (Australian Institute of Health and Welfare, 2002).

Household surveys such as the NDSHS are not well suited, however, to examining problematic use of less commonly used illicit drugs. First, household surveys of drug use are likely to under-sample users who are concentrated in a small number of geographic areas. Second, the lifestyles of more marginalised users make them less likely to live in conventional households, and less likely to participate because of unavailability or reluctance to be interviewed. Third, even when heroin users are selected in a sample and they agree to be interviewed, their heroin use is likely to be under-reported because it is an illegal and stigmatised behaviour. Further, because very few users of drugs such as heroin will be interviewed, there will be considerable error around the estimates.

For this reason, it is important to obtain detailed data from illicit drug users via other methods. Interviews with purposive samples of drug users represent a commonly used method of such data collection. Data collected from regular injecting drug users (IDU) across Australia have been important for their capacity to highlight the dynamics of illicit drug markets in Australia. There has been a decrease in heroin use among regular IDU since the reduction in the availability of heroin in Australia (Stafford et al., 2006a). Cocaine use among Sydney IDU peaked in 1998 and again in 2001, but has since declined (Black et al., 2006, Roxburgh, Degenhardt and Breen, 2004). The use of more potent forms of methamphetamine has steadily increased (i.e. crystalline methamphetamine and base methamphetamine) in Australia in recent years (Topp, Degenhardt, Kaye et al., 2002a, Topp and Churchill, 2002, Stafford et al., 2006a). Cannabis use among regular IDU has remained prevalent and stable over time (Stafford et al., 2006a).

Data collected from regular ecstasy users as part of the Party Drugs Initiative (PDI) shows that there has been an increase since 2000 in the use of drugs such as Gamma-Hydroxybutyrate (GHB) and ketamine, as well as an increase in poly drug use among this group (Stafford, Degenhardt, Dunn et al., 2006b, Dunn, Degenhardt and Stafford, 2006).

Another important aspect of monitoring is the examination of trends in drug related harm. Illicit drug use is related to a range of health related problems, of which death is one of the least common. Trends in opioid overdose deaths have been monitored for some years and have provided long term trend data on harms related primarily to illicit heroin use in Australia (Degenhardt et al., 2006a, Hall, Degenhardt and Lynskey, 1999). Psychostimulant drugs such as methamphetamine and cocaine have also been examined, and do not appear to be related to large numbers of accidental deaths in Australia (Degenhardt, Roxburgh, Black et al., 2006b). In contrast, opioids are thought to be responsible for significant numbers of deaths (Degenhardt et al., 2006a).

Many of the harms related to illicit drug use comprise a range of less severe but nevertheless significant problems which affect the user, their family and the community. Some of these harms might be documented through an examination of hospital records. For persons experiencing significant problems related to their drug use – such as drug induced psychotic episodes, drug withdrawal, or significant problems related to dependent drug use – hospital care may result. In this report, we examine Australian data on hospital episodes where illicit drugs were noted as a principal or contributing factor to the treatment episode. It is important to note that these data refer to episodes of treatment rather than individuals *per se*; one individual may have received multiple episodes of care over time.

1.2 Aims

To date there has been no comprehensive analysis of illicit drug-related hospital separations in Australia. This is an important data source that may provide good information on service utilisation as well as trends over time. It also provides a context within which trends can be analysed. Accordingly, this report aims to do the following:

- 1) Examine the number and rates per million persons of drug-related hospital separations;
- 2) Examine the types of drugs mentioned in diagnoses relating to these separations;
- 3) Examine trends (both jurisdictional and national) in drug-related hospital separations over time;
- 4) Examine the characteristics of those being admitted to hospital for drug-related problems;
- 5) Examine patterns of other drug use in conjunction with the drug mentioned in the principal diagnosis;
- 6) Examine non drug-related problems that occur in conjunction with drugs mentioned in additional diagnoses; and
- 7) Ascertain within the context of other data on drug use and harms whether hospital separations are a useful data source for examining morbidity associated with illicit drug use

2 METHODS

2.1 Data used in this study

Data extracted from the National Hospital Morbidity Database (NHMD) on illicit drug-related hospital separations was analysed for the period 1993 to 2004. The NHMD is managed by the Australian Institute of Health and Welfare (AIHW), and the data is collected from each of the State and Territory Health authorities. The collection commenced in July 1993. Data are available on the number of hospital separations with a principal (or additional) diagnosis related to illicit drug use. The States and Territories provide the up to 30 additional diagnoses to the AIHW. This study utilises both principal and additional diagnoses.

Separations with a diagnosis related to the use of opioids, amphetamine, cannabis and cocaine were analysed.

2.2 Coding of hospital separation data

NHMD data on hospital separations is coded according to the International Statistical Classification of Diseases and Related Problems (ICD), produced by the World Health Organisation (WHO) (World Health Organization, 1993). This classification was designed to standardise the coding of diseases and clinical procedures, hospital morbidity and mortality settings internationally; a clinically modified version of the ICD is used in Australian hospitals. The 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-9-CM (National Coding Centre, 1996) was used to code hospital separations.

Coding of hospital separations occurs after a patient has been discharged. The coding of a patient's hospital stay (the 'hospital separation') therefore refers to the conditions that are significant in terms of the treatment and investigations required, and resources used, rather than the problem for which they may have been nominally admitted to hospital.

2.3 Limitations of the data

There are several limitations that need to be taken into consideration when interpreting this data. First, the data is limited to what is reported in medical records, and depends on accurate and complete recording by clinicians. Second, inherently problematic to the ICD coding system is that it does not focus on the identity of the drugs involved, rather on the circumstance of morbidity such as poisoning or mental and behavioural disorders due to drug use. ICD codes are also limited by their lack of specificity for certain drugs. For instance, there is no distinction made between amphetamines, ecstasy, ketamine or GHB, which is clearly at issue given the increases seen in the use of these drug types in Australia recently (Stafford et al., 2006b). The mapping of ICD-9-CM to ICD-10-AM codes is not necessarily one to one, which makes trend analysis a little more difficult (details of equivalence coding are provided in Tables 1 and 2). Furthermore, data only

relate to inpatients, and as such are likely to under-estimate illicit drug-related morbidity in Australia, as many of the acute problems will be dealt with through accident and emergency departments. Also at issue is jurisdictional variation in the clinical interpretation, coding and recording of diagnoses, an issue inherent to any dataset collected nationally. Finally, some hospitals do not provide data to the NHMD (private hospitals in the NT did not provide data to the AIHW until 2002/03, and some private hospitals in other jurisdictions do not provide data). Nonetheless, the exclusion of these sources of data is not thought to influence the reliability or representativeness of data within the NHMD.

Table 1: Mapping ICD-9-CM to ICD-10-AM Codes

ICD-9 Diagnosis	ICD-9-CM Codes	ICD-10-AM Codes
Poisoning*		
Opium	96500	T400
Heroin	96501	T401
Methadone	96502	T403
Morphine/codeine/pethidine	96509	T402, T404, T406
Psychostimulants – amphetamines & caffeine	9697	T436
Cannabis	9696	T407
Dependent use		
Opioid type (incl. heroin, methadone, morphine, opium)	3040	F112
Combinations of opioid type drugs with any other	3047	No equivalent
Cocaine	3042	F142
Amphetamine & other psychostimulants (methylphenidate, phenmetrazine)	3044	F152
Cannabis dependence	3043	F122
Non-dependent use		
Opioid use disorder	3055	F110, F111
Cocaine use disorder	3056	F140, F141
Amphetamine or related acting sympathomimetic use disorder	3057	F150, F151
Cannabis use disorder	3052	F120, F121
Drug related psychosis**	2921, 2922, 2929	F115, F125, F145, F155
Withdrawal**	2920	F113, F114, F123, F124, F143, F144, F153, F154

*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 psychosis codes for ICD-9-CM were not drug specific, and accordingly, the ICD-10-AM drug specific psychoses and withdrawal codes were pooled for comparable trend analysis from 1993 - 2004.

Table 2: Mapping ICD-10-AM to ICD-9-CM codes

ICD-10-AM Diagnosis	ICD-10-AM Codes	ICD-9-CM Codes
Poisoning by narcotics and psychodysleptics		
Opium	T400	96500
Heroin	T401	96501
Other opioids (codeine/morphine)	T402	96509
Methadone	T403	96502
Other synthetic narcotics (pethidine)	T404	96509
Cocaine	T405	N/A*
Other and unspecified narcotics	T406	96509
Cannabis	T407	9696
Psychostimulants – amphetamines & caffeine	T436	9697
Mental and behavioural disorders due to use of opioids		
Acute intoxication	F110	3055
Harmful use	F111	3055
Dependence syndrome	F112	3040
Withdrawal state	F113	2920
Withdrawal state with delirium	F114	2920
Psychotic disorder	F115	2921, 2922, 2929
Mental and behavioural disorders due to use of cannabinoids		
Acute intoxication	F120	3052
Harmful use	F121	3052
Dependence syndrome	F122	3043
Withdrawal state	F123	2920
Withdrawal state with delirium	F124	2920
Psychotic disorder	F125	2921, 2922, 2929
Mental and behavioural disorders due to use of cocaine		
Acute intoxication	F140	3056
Harmful use	F141	3056
Dependence syndrome	F142	3042
Withdrawal state	F143	2920
Withdrawal state with delirium	F144	2920
Psychotic disorder	F145	2921, 2922, 2929
Mental and behavioural disorders due to use of other stimulants including caffeine		
Acute intoxication	F150	3057
Harmful use	F151	3057
Dependence syndrome	F152	3044
Withdrawal state	F153	2920
Withdrawal state with delirium	F154	2920
Psychotic disorder	F155	2921, 2922, 2929

*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

3 RESULTS

Results of the analysis are presented by drug type, with a section on opioids, cocaine, amphetamines and cannabis. First, analysis of other principal diagnoses co-occurring with any mention of opioids (i.e. where opioids are recorded as either the principal or additional diagnosis) is presented, followed by numbers and rates per million persons of principal diagnoses relating to opioids. Numbers and rates per million persons of principal diagnoses relating to opioid dependence are then presented followed by examination of hospital separations where opioids were mentioned along with other indicators (e.g. arrests, overdose) of opioid-related harm. Other drug problems, noted as additional diagnoses in conjunction with principal diagnoses relating to opioids are presented, then demographic characteristics (age and gender) and characteristics of these hospital stays (length of stay and funding source) for 2003/04. The structure of the sections for cocaine, amphetamines and cannabis mirror the structure of the opioid section.

Separations for drug-related psychosis and drug withdrawal are then presented in turn. Firstly, overall trends on drug-related psychosis, including all four drug types for the period 1993-2004, are presented, as the psychosis codes in ICD-9-CM did not distinguish by drug type. Analysis of psychosis separations with a principal diagnosis relating to each drug type are then presented for the period 1999-2004. Demographic characteristics (age and gender) and characteristics of these hospital stays (length of stay and funding source) are presented for 2003/04. The structure of the withdrawal section mirrors the structure of the psychosis section.

3.1 Opioid-related hospital separations

During the period 1993 to 2004 over 95% of hospital separations with a principal diagnosis relating to opioids (referred to as opioid-related separations) occurred among the 15 to 54 year age group, and the following results relate to this age group.

Table 3 shows the numbers of principal opioid-related separations as well as the total number of opioid mentions (i.e. where opioids were recorded as either the principal or as an additional diagnosis). The percentages in Figure 1 are based on these numbers.

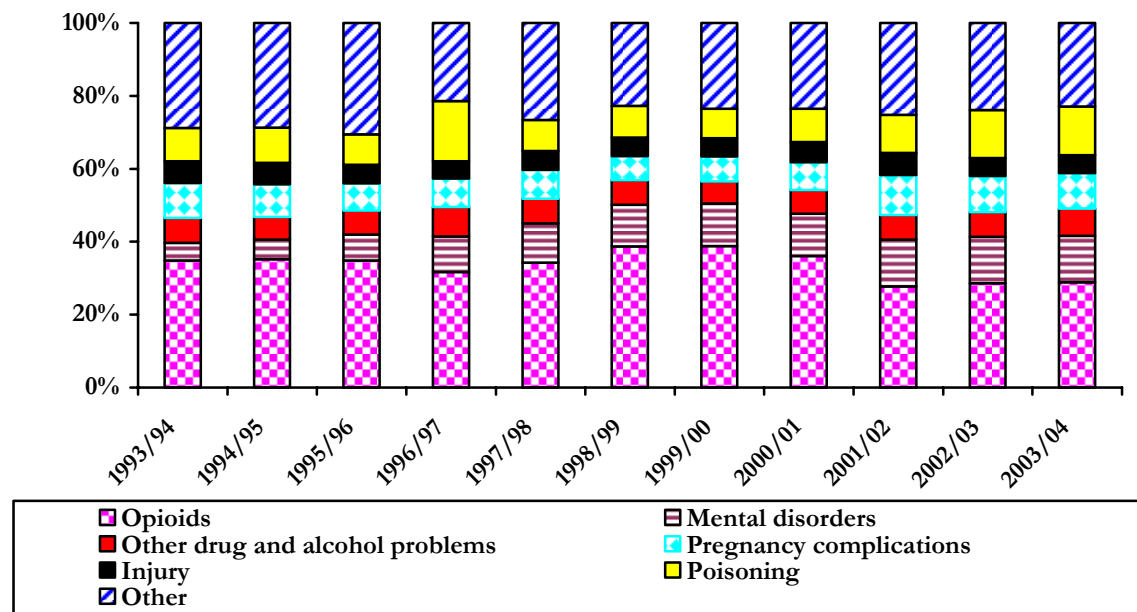
Table 3: Numbers of principal opioid diagnoses and mentions among 15-54 year olds, 1993-2004

Year	No. of principal opioid diagnoses	No. of opioid mentions
1993/94	3015	8653
1994/95	3929	11170
1995/96	5328	15284
1996/97	5624	17735
1997/98	7200	21032
1998/99	9117	23564
1999/00	9064	23377
2000/01	8000	22173
2001/02	4557	16448
2002/03	4797	16772
2003/04	5015	17348

Figure 1 shows the percentage of opioid mentions by principal diagnosis for the period 1993 to 2004 among 15-54 year olds. Principal opioid-related separations accounted for approximately one-third of all opioid mentions during the period, peaking at 39% in 1999/00 and 2000/01. This proportion declined to just over one-quarter (27%) of all opioid mentions in 2001/02 and has since remained lower.

Figure 1 also shows the other principal diagnoses that were recorded in conjunction with opioid mentions. An increasing proportion of opioid mentions were accompanied by principal diagnoses of mental disorders (from 5% in 1993/94 to 13% in 2003/04), and these diagnoses clustered around depressive disorders, borderline type personality disorder and anxiety (in particular adjustment) disorders. There has also been a slight increase in the past few years in the proportion of opioid mentions accompanied by principal diagnoses of poisoning by drugs, medicaments, and biological substances (from 8% in 1997/98 to 13% in 2003/04) and these diagnoses clustered around poisoning by benzodiazepines, paracetamol and antidepressants. Principal diagnoses of pregnancy complications fluctuated during the period (ranging from 7% to 11%), with diagnoses clustering around drug dependency complicating pregnancy. Smaller proportions of opioid mentions were accompanied by principal diagnoses of other drug and alcohol related problems (approximately 7%) and injury (approximately 5%), while the largest proportion (between 25% and 54%) of principal diagnoses were due to a broad spectrum of ‘other’ physical health problems such as diseases of the circulatory system, the respiratory system, the nervous system and digestive system. Percentages are available in Table B1 at Appendix B.

Figure 1: Principal reason for hospital separations where opioids were mentioned among 15-54 year olds, 1993-2004

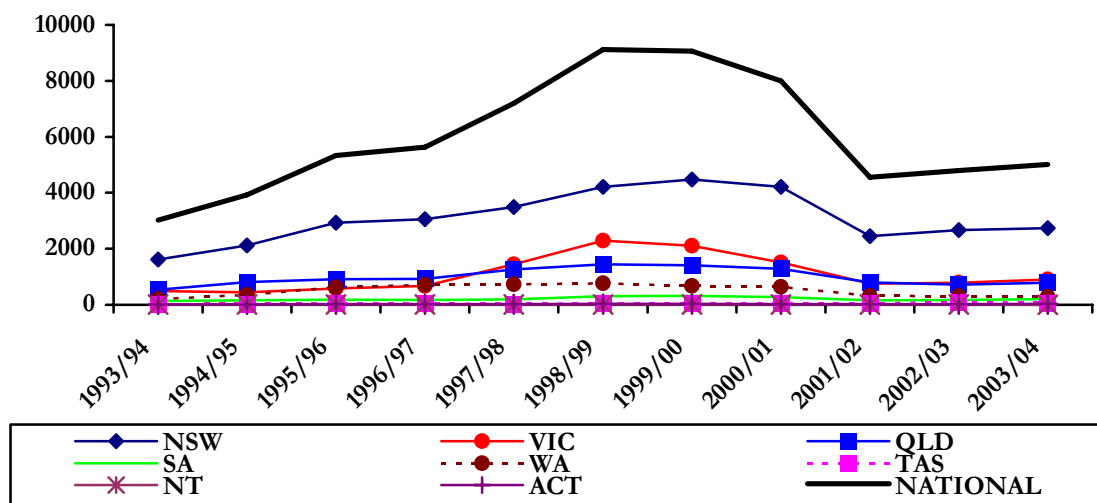


3.1.1 Principal diagnoses

Figure 2 shows that hospital separations with a principal diagnosis related to opioids (referred to as opioid-related separations) tripled from 3,015 in 1993/94 to 9,262 in 1998/99 at a national level, and have since declined to 5,015 in 2003/04. National figures have increased slightly over the past 3 years.

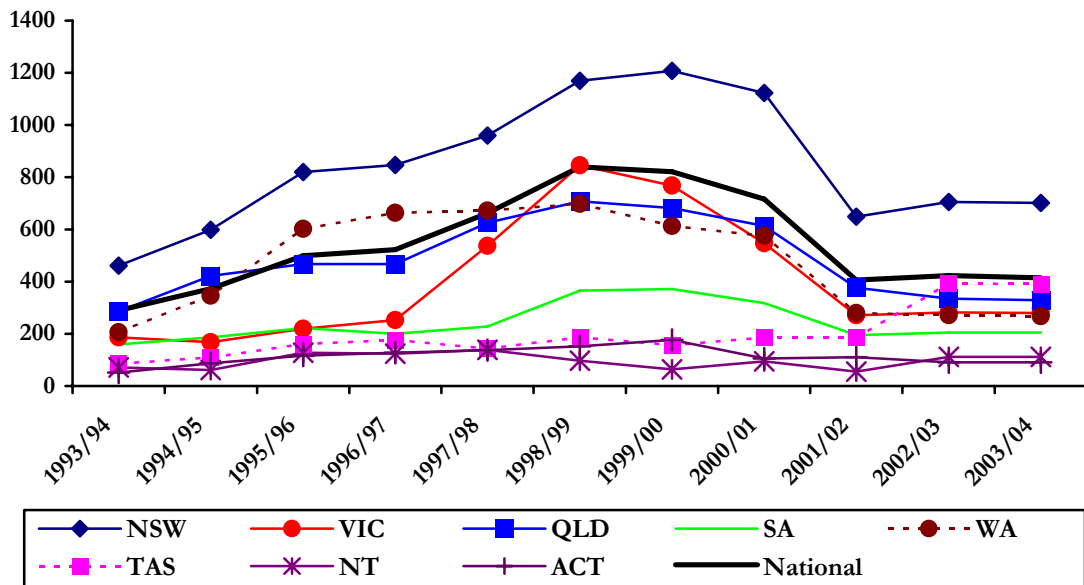
NSW had the highest number of opioid-related separations during the period 1993-2004 followed by VIC. Both jurisdictions recorded decreases in 2001/02, while separations slightly increased again in the past 3 years. Separations in QLD and SA have remained stable in the past 3 years, while they continued to decline in WA after peaking in 1998/99. TAS had relatively low numbers of opioid-related separations ranging from 23 in 1993/94 to 48 in 2001/02. TAS figures increased to 102 in 2002/03 however, this increase is most likely due to detoxification units commencing participation in the NHMD data collection in TAS at this time. Figures for the NT and the ACT remained lower than 40 per year throughout this period.

Figure 2: Number of principal opioid-related hospital separations among 15-54 year olds, 1993-2004



The rates of opioid-related separations per million persons (Figure 3) were highest in NSW, peaking in 1999/00 at 1,207 separations per million persons, and declining to 702 in 2003/04. Rates in VIC showed a marked increase from 186 in 1993/94 to 845 in 1998/99, and then declined dramatically to 279 per million persons in 2003/04. Rates in all other jurisdictions showed similar trends although to a lesser extent. Again the jump in TAS rates in 2002/03 is most likely due to detoxification units commencing contribution to the NHMD data collection at this time.

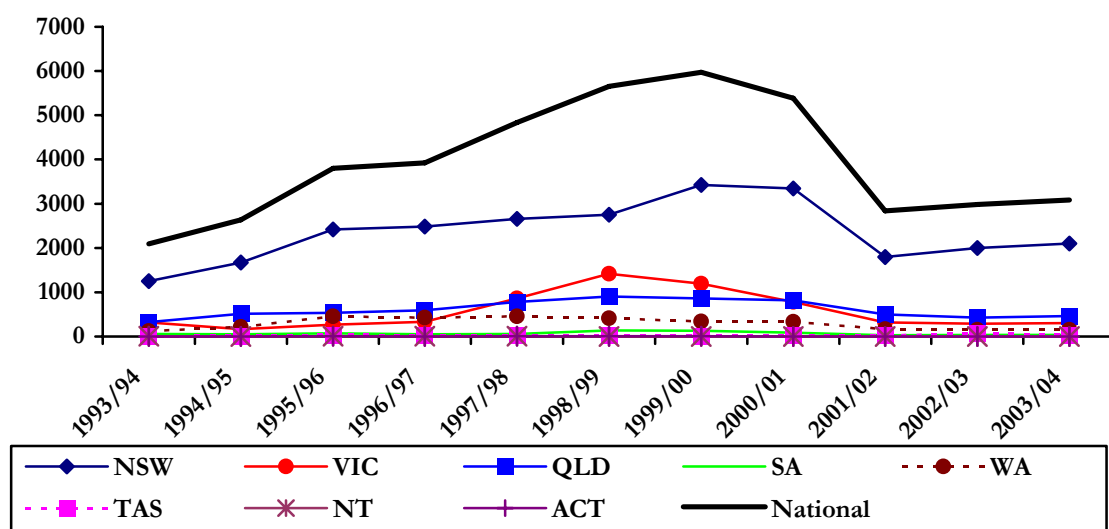
Figure 3: Rates per million persons of principal opioid-related hospital separations among 15-54 year olds, 1993-2004



3.1.2 Dependence - principal diagnoses

An important indicator of illicit-drug related harm is dependence on illicit substances, and the ICD system codes dependence separately. At a national level, hospital separations where the principal diagnosis was for opioid dependence more than doubled from 2,093 in 1993/94 to 5,969 in 1999/00, and have since decreased to 3,087 in 2003/04 (Figure 4). There was a sharp decline from 5,385 in 2000/01 to 2,838 in 2001/02, again coinciding with the reduction in availability of heroin. As with the total number of opioid-related separations, NSW had the highest number of separations for opioid dependence during the period 1993-2004, followed by QLD and VIC. The NT and the ACT had the lowest numbers, which remained under 10 per year.

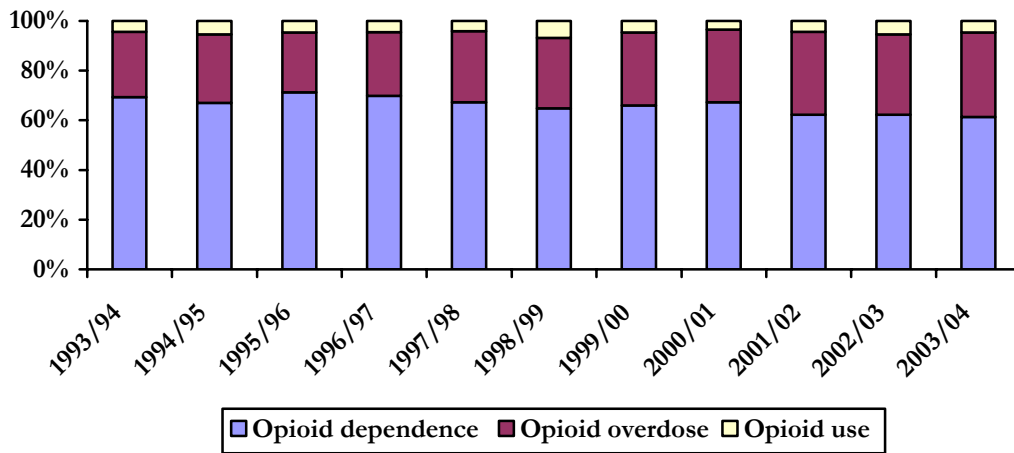
Figure 4: Number of principal opioid-related hospital separations for dependence among 15–54 year olds, 1993-2004



NB: Separations with a principal diagnosis of opioid dependence are a subset of principal opioid-related separations.

Figure 5 shows the percentage of opioid-related separations that are due to opioid dependence. Between 1993/94 and 1999/00, opioid dependence separations accounted for approximately 70% of all opioid-related separations (with the exception of 1998/99, when they declined to 61%). Since 2001/02, this proportion has remained at approximately 62% per year. Separations for opioid overdose accounted for between one-quarter and one-third of opioid-related separations during this time, while separations due to harmful opioid use accounted for approximately 5%.

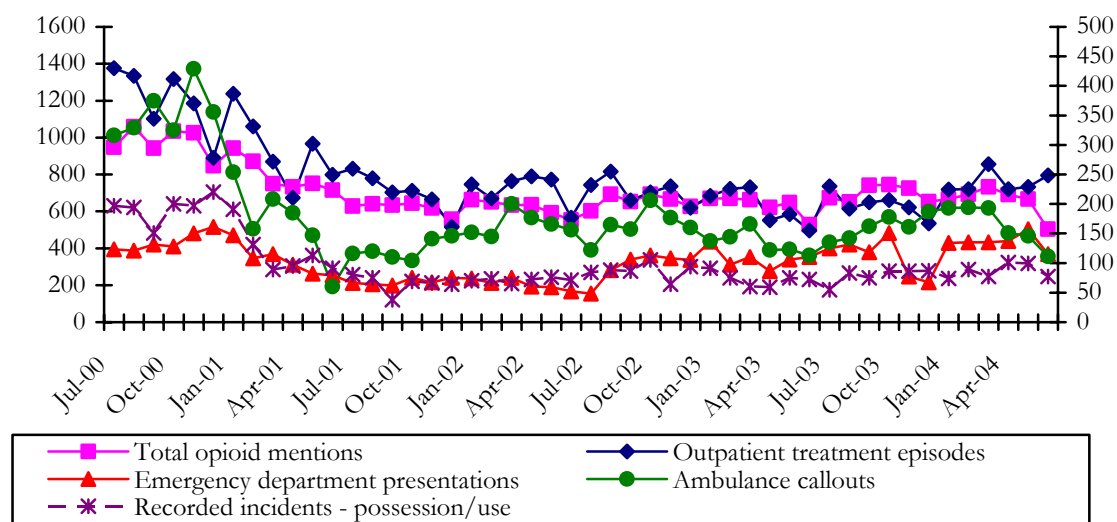
Figure 5: Percentage of principal opioid-related hospital separations that are due to dependence among 15-54 year olds, 1993-2004



3.1.3 Opioid mentions in hospital separations and other indicators of opioid-related harm

NSW has the highest rates of opioid-related separations, reflecting that it has a well established heroin market. Accordingly, NSW is examined in more detail along with other data sources reflecting trends over time in heroin related harm (Black et al., 2006). In Figure 6, the total numbers of opioid mentions, by month, are presented with other indicators of heroin related harms, and it is apparent that trends in hospital separations are mirrored in these other data sources. As with hospital separations, episodes for opioid treatment on an outpatient basis, and ambulance callouts to overdoses have almost halved since 2000. The number of recorded incidents for possession of narcotics has also dropped dramatically during the period. Opioid-related emergency department presentations show a slightly different pattern. Presentations declined dramatically throughout 2001 and the first half of 2002, and have subsequently increased to numbers seen prior to 2001.

Figure 6: Opioid mentions in hospital separations and other indicators of heroin-related harm in NSW, 2000-2004



3.1.4 Other drug problems noted

Cannabis was recorded in conjunction with approximately 14% of opioid-related separations in Australia in 2003/04, while amphetamines were recorded in 7% of opioid-related separations. Cocaine was mentioned in only 1% of opioid-related separations.

3.1.5 Demographic characteristics

Age trends

Figure 7 shows the number of principal opioid-related hospital separations at a national level by 10 year age group, with separations being highest among the 20 to 29 year olds, followed by the 30 to 39 year age group. The increase, over time, in separations was most pronounced among the 20 to 29 year olds. Separations among this group subsequently decreased in 2001/02. This pattern was also evident in separations among the 30 to 39 year olds and the 10 to 19 year olds, albeit on a smaller scale. Opioid-related separations among 40 to 49 year olds have steadily increased from 364 in 1993/94 to 1,099 in 2000/01. Separations among the older group (50 to 59 years of age) more than tripled during the period from 105 in 1993/94 to 395 in 2003/04. While the decline in opioid-related separations was evident in the younger groups (10 to 39 year age groups) around the time of the heroin shortage (2001/02), there was little, if any, decline in separations at this time among the 40 to 49 and 50 to 59 year olds. In the past 3 years opioid-related separations among the 10 to 29 year olds have remained relatively stable at a lower level, while they have increased slightly among the 40 to 59 year olds, and somewhat more substantially among the 30 to 39 year olds.

The 20 to 29 year age group had the highest number of opioid-related separations across all jurisdictions with the exception of TAS, the ACT and the NT where numbers were small and no clear age trends were apparent. Numbers of separations among the 20 to 29 year age group were highest in NSW during this period, and comprised approximately 50% of the total national separations for this group.

Figure 7: Number of principal opioid-related hospital separations by 10 year age group, 1993-2004

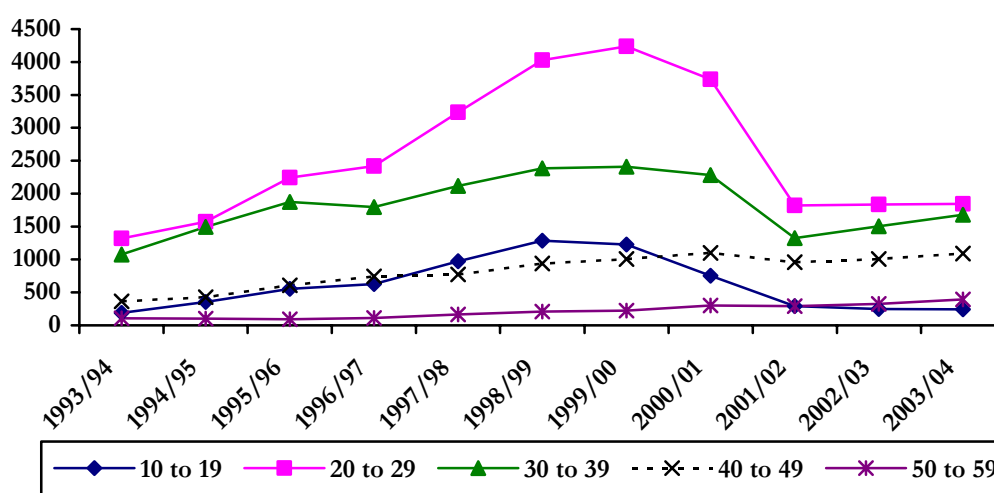
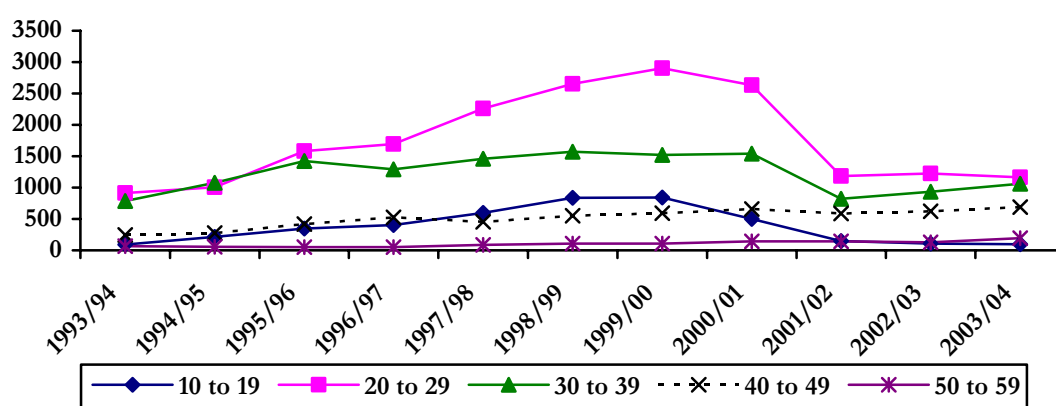


Figure 8 shows the number of principal hospital separations for opioid dependence at a national level by 10 year age group. As with all opioid-related separations, separations for opioid dependence were highest among the 20 to 29 year olds, followed by the 30 to 39 year olds. The increase in opioid dependence separations was most pronounced among the 20 to 29 year olds, and subsequently decreased in 2001/02 to levels lower than recorded from 1995/96 onwards. A similar pattern was evident among the 30 to 39 year olds. Opioid dependence separations among the 10 to 19 year olds decreased even more dramatically, and are the lowest they have been in 10 years. The older groups recorded steady increases in opioid dependence separations (from 246 in 1993/94 to 689 in 2003/04 among the 40 to 49 years olds; and from 68 in 1993/94 to 193 in 2003/04 among the 50 to 59 year olds) across the eleven year period.

Figure 8: Number of principal hospital separations for opioid dependence by 10 year age group, 1993-2004



The 20 to 29 year age group had the highest number of separations for opioid dependence across all jurisdictions with the exception of TAS, the ACT and the NT where numbers were small and no clear age trends were apparent. Numbers were highest in NSW, which comprised between 50 and 70% of the total national separations among the 20 to 29 year age group throughout the period.

Gender

At a national level, males accounted for 58% of opioid-related separations in Australia in 2003/04.

3.1.6 Characteristics of the hospital stay

Just under half (47%) of the hospital stays in Australia in 2003/04 for a principal diagnosis related to opioids were for one day only. Among those separations that were for more than one day (2,658 separations), the median number of days hospital stay was 5 (range 2 to 312). Nearly three-quarters (74%) of opioid-related separations were for one week (7 days) or less, and the majority (91%) were for no more than two weeks (14 days).

The majority of opioid-related separations in Australia in 2003/04 were for patients receiving public hospital services, with only a small proportion reporting the funding source as private health care insurance (QLD data were not available).

3.2 Cocaine-related hospital separations

For consistency with opioid-related separations, analyses of cocaine-related separations have been restricted to 15 to 54 year olds.

Table 4 shows the number of principal cocaine-related separations as well as the total number of cocaine mentions (i.e. where cocaine was recorded as either the principal or as an additional diagnosis). The percentages in Figure 9 are based on these numbers.

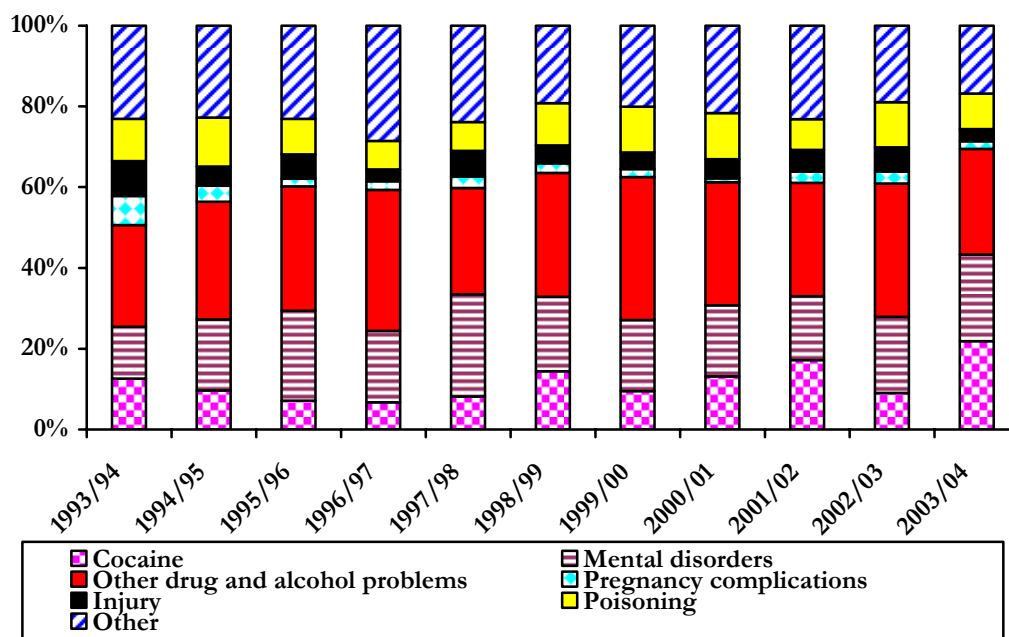
Table 4: Numbers of principal cocaine diagnoses and mentions among 15-54 year olds, 1993-2004

Year	No. of principal cocaine diagnoses	No. of cocaine mentions
1993/94	42	334
1994/95	47	484
1995/96	44	615
1996/97	41	610
1997/98	58	712
1998/99	153	1059
1999/00	96	1013
2000/01	161	1224
2001/02	205	1190
2002/03	56	617
2003/04	159	727

Figure 9 shows the percentage of cocaine mentions (numbers shown in Table 4) by principal diagnosis for the period 1993 to 2004 among 15-54 year olds. Principal cocaine-related separations accounted for less than one quarter of all cocaine mentions during the period, with percentages ranging from 6% in 1996/97 to a peak of 21% in 2003/04.

Figure 9 also shows the other principal diagnoses that were recorded in conjunction with cocaine mentions. Approximately one-third of cocaine mentions were accounted for during the eleven-year period by other drug or alcohol problems as the principal diagnosis, particularly opioid and alcohol dependence. A substantial proportion of principal diagnoses (between 17% and 29%) were due to a broad spectrum of physical health problems such as diseases of the circulatory system, the respiratory system, the nervous system and digestive system. Increasing proportions of principal diagnoses were accounted for by mental disorders (from 12% in 1993/94 to 21% in 2003/04), and these diagnoses clustered around the schizophrenic disorders, depressive disorders and anxiety (in particular adjustment) disorders. Poisoning by drugs, medicaments and biological substances accounted for approximately 10% of principal diagnoses accompanied by cocaine mentions, and clustered around heroin and benzodiazepine poisoning. Smaller proportions of cocaine mentions were accompanied by principal diagnoses of injury (between 3% and 9%) and pregnancy complications (between 1% and 7%). Percentages are available in Table B2 at Appendix B.

Figure 9: Principal reason for hospital separations where cocaine was mentioned among 15-54 year olds, 1993-2004

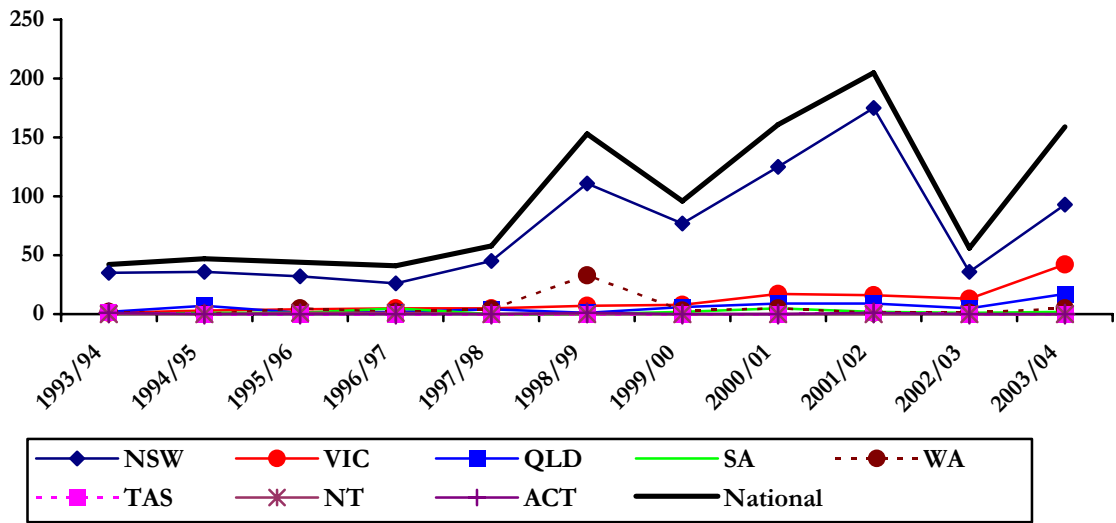


3.2.1 Principal diagnoses

Figure 10 shows that hospital separations with a principal diagnosis related to cocaine (referred to as cocaine-related separations) steadily increased from 42 in 1993/94 to 205 in 2001/02 at a national level. Although they decreased in 2002/03 to 56, they subsequently increased in 2003/04 to 159.

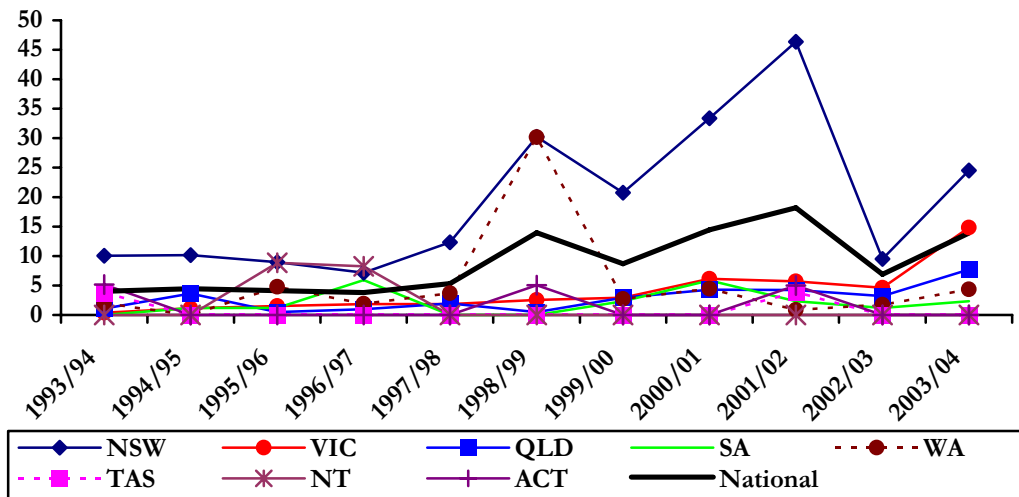
Cocaine-related separations in NSW accounted for the majority of the national total throughout the period 1993-2004. In 1998/99, cocaine-related separations in NSW increased sharply, and almost half of these separations (44%) were for cocaine dependence. Cocaine-related separations increased again in 2000/01, with 57% of these separations being due to cocaine dependence, 27% to poisoning and 13% to harmful use. In 2001/02, 65% of cocaine-related separations were due to dependence, while 21% were due to poisoning. These increases are entirely consistent with drug use trends in NSW at this time (Roxburgh et al, 2004) and reports of problematic cocaine use. While there were relatively few cocaine-related separations recorded in the other jurisdictions between 1993 and 2004, separations in both VIC and QLD increased in 2003/04 (from 13 in 2002/03 to 42 in VIC; from 5 in 2002/03 to 17 in QLD). TAS, the NT and the ACT recorded fewer than 5 cocaine-related separations for the entire period.

Figure 10: Number of principal cocaine-related hospital separations among 15-54 year olds, 1993-2004



The rates of cocaine-related separations per million persons (Figure 11) were highest in NSW, peaking in 2001/02 at 46 separations per million persons. While they decreased to 9 in 2002/03, they have since risen to 24 in 2003/04. The peak occurring in 2001/02 coincides with the sharp decline in rates of opioid-related separations recorded (refer Figure 2, page 9) and the timing of the heroin shortage in Australia. Rates of cocaine-related separations were relatively low in the other jurisdictions between 1993 and 2004. There was, however, a dramatic spike in rates in 98/99 in WA (from 4 in 1997/98 to 30), the majority of which were due to cocaine dependence (85%). VIC recorded an increase from 4.6 cocaine-related separations per million persons in 2002/03 to 14 per million persons in 2003/04. SA, QLD, TAS, the NT and the ACT recorded fewer than 10 separations per million persons per year throughout this period.

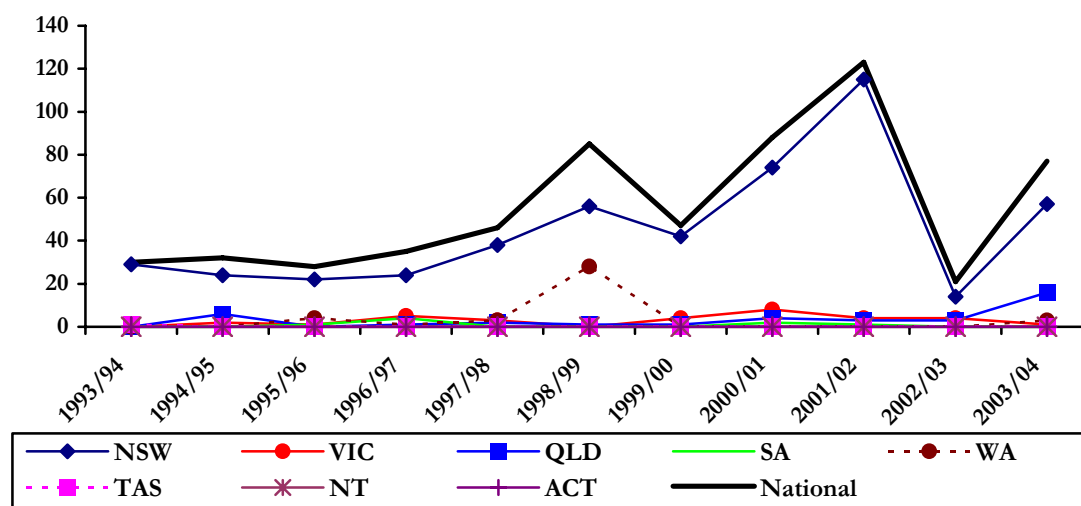
Figure 11: Rates per million persons of principal cocaine-related hospital separations among 15-54 year olds, 1993-2004



3.2.2 Dependence - principal diagnoses

NSW recorded the highest number of separations with a principal diagnosis of cocaine dependence during the period 1993-2004, and comprised the majority of the national total (Figure 12). There was a dramatic increase in cocaine dependence separations from 1999/00 onwards in NSW. These increases are consistent with other data collected on drug use trends in NSW. NSW recorded an increase in cocaine dependence separations again in 2003/04 (from 14 in 2002/03 to 57). WA had very few separations for cocaine dependence with the exception of 1998/99, in which there was a dramatic increase to 28 separations from just 3 in 1997/98. VIC and QLD had the next highest number of cocaine dependence separations, followed by SA then TAS. Neither the ACT nor the NT recorded separations for cocaine dependence during the 11 year period.

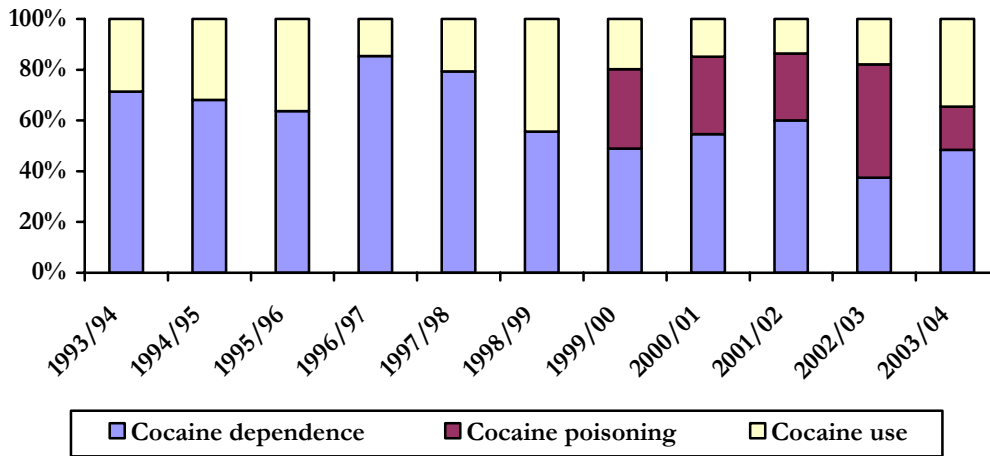
Figure 12: Number of principal cocaine-related hospital separations for dependence among 15– 54 year olds, 1993-2004



NB: Separations with a principal diagnosis of cocaine dependence are a subset of principal cocaine-related separations.

When separations for cocaine dependence are compared with all cocaine-related separations an interesting pattern emerges (Figure 13). While dependence accounted for the majority (up to 85%) of these separations during the period 1993/94 to 1997/98, from 1998/99 onwards proportions of separations for cocaine dependence dropped to between 37 and 60 percent of cocaine-related separations. Cocaine poisoning accounted for between 21 and 27 percent of cocaine-related separations between 1999 and 2004. While the decrease in dependence may in part be due to additional coding options being added at this time (i.e. coding for cocaine poisoning specifically), the increase in poisoning separations also coincides with reports of dangerous patterns of cocaine use (particularly in NSW) (Topp et al., 2003, Roxburgh et al., 2004), and an increase in the proportion of separations due to harmful cocaine use in 1998/99 (from 21% in 1997/98 to 44%).

Figure 13: Percentage of principal cocaine-related hospital separations that are due to dependence among 15-54 year olds, 1993-2004

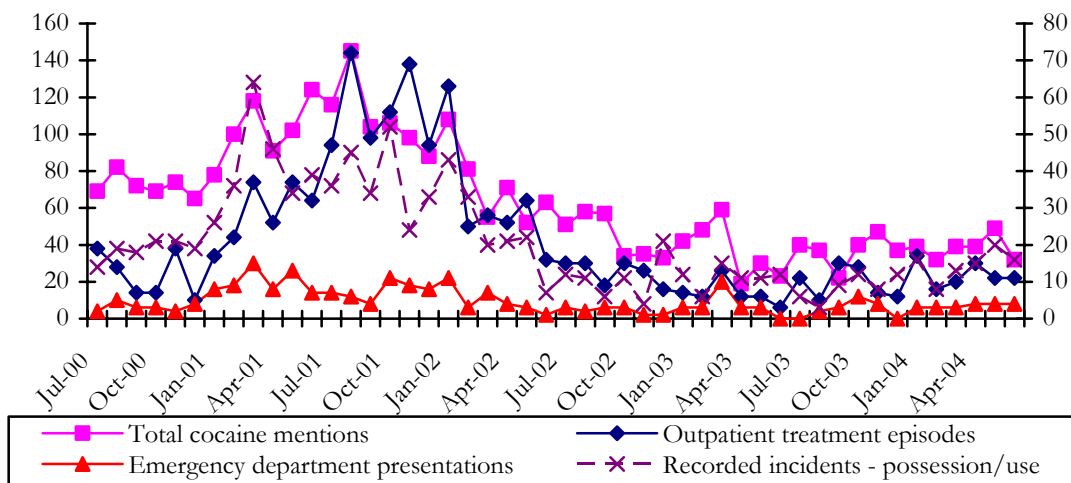


NB: Prior to 1999/00, it was not possible to ascertain how many separations were related to cocaine poisoning, as the ICD-9-CM poisoning code included both cocaine and lignocaine.

3.2.3 Cocaine mentions in hospital separations and other indicators of cocaine-related harm

Rates and numbers of cocaine-related separations in NSW comprised the majority of these separations nationally, indicative that NSW has a fairly stable cocaine market (Shearer, Johnston, Kaye et al., 2005). Accordingly, NSW is examined in more detail along with other data sources reflecting trends over time in cocaine related harm. In Figure 14, the total numbers of cocaine mentions, by month, are presented along with other indicators of cocaine related harm, and it is evident that trends in hospital separations are mirrored in these other data sources. There was a marked increase across all of the cocaine indicators in 2001, with subsequent decreases occurring in 2002.

Figure 14: Cocaine mentions in hospital separations and other indicators of cocaine-related harm in NSW, 2000-2004



3.2.4 Other drug problems noted

Amphetamines were the drug type most commonly recorded in conjunction with cocaine-related separations, occurring in approximately 12% of these separations. Cannabis and opioids were both recorded in conjunction with 5% of cocaine-related separations.

3.2.5 Demographic characteristics

Age Trends

Figure 15 shows the number of principal cocaine-related hospital separations at a national level by 10 year age group, with separations being highest among the 20 to 29 year olds, followed by the 30 to 39 year age group. Although numbers are small (less than 100 separations per year nationally) sharp increases were evident among the 20 to 29 year olds between 1999/00 and 2001/02, followed by a dramatic decline in 2002/03. Separations increased again among this group in 2003/04 although not to the level recorded in 2000/01. A similar pattern was evident among the 30 to 39 year age group, with separations in 2003/04 returning to levels recorded in 2001/02. Increases were also apparent among the 10 to 19 and 40 to 49 year age group in 2000/01. The 40 to 49 year age group also recorded an increase in 1998/99 which was largely due to cocaine dependence (refer to Figure 16). There were less than 5 cocaine-related hospital separations among the 50 to 59 year age group during the eleven-year period. These trends essentially apply to NSW as these separations made up the majority of the national totals of cocaine-related separations.

Figure 15: Number of principal cocaine-related hospital separations by 10 year age group, 1993-2004

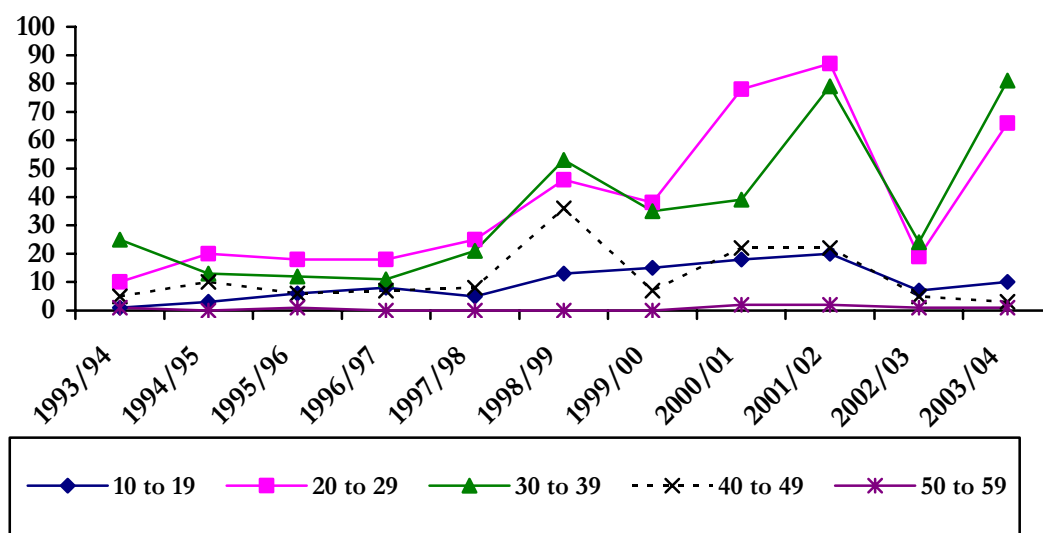
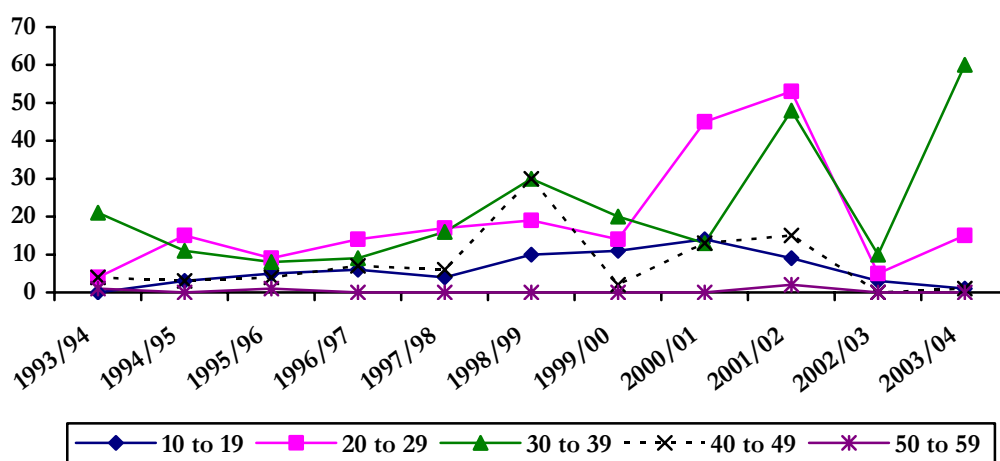


Figure 16 shows the number of principal hospital separations for cocaine dependence at a national level by 10 year age group. There were fewer than 100 separations per year in Australia during the eleven-year period. Separations were highest among the 20 to 29 year olds for the majority of the period, while separations among the 30 to 39 year age group were also relatively high. Sharp increases were evident among 20 to 29 year olds between 1999/00 and 2001/02, followed by a dramatic decline in 2002/03. Separations among this age group increased slightly in 2003/04. There were peaks in dependence separations among the 30 to 39 year age group in both 1998/99, 2001/02 and 2003/04, with separations remaining the highest in 2003/04 (at 60) across the eleven-year period. Separations among the 10 to 19 year olds reached no more than 15 per year, with increases occurring during the period 1998/99 to 2001/02. They have since declined. Separations among the older groups (40 to 49 and 50 to 59 year olds) also remained low throughout the period, with increases occurring among the 40 to 49 year olds in 1998/99, and again between 2000/01 and 2001/02. Again, these trends apply predominantly to cocaine dependence separations in NSW, which accounted for the majority of the national separations during this period.

Figure 16: Number of principal hospital separations for cocaine dependence by 10 year age group, 1993-2004



Gender

At a national level, males accounted for 80% of cocaine-related separations in Australia in 2003/04.

3.2.6 Characteristics of the hospital stay

The majority (82%) of hospital stays in 2003/04 for a principal diagnosis relating cocaine were for one day only. Among those separations that were for more than one day (29 separations), the median number of days stay in hospital was 5 (range 2 to 42). Approximately three-quarters (72%) of these stays were for two weeks (14 days) or less.

In the majority of cocaine-related separations in Australia in 2003/04 (particularly in NSW and VIC where separations were highest) the funding source was reported as private health care insurance (QLD data were not available).

3.3 Amphetamine-related hospital separations

There is no facility in the ICD coding system to distinguish between hospital separations related to amphetamine, methamphetamine or ecstasy, however, analysis of seizures of amphetamines detected at the Australian border shows these seizures are predominantly methamphetamine (Australian Crime Commission, 2005). Accordingly, most hospital separations are likely to be related to methamphetamine, but a small minority may be related to ecstasy. However, to remain consistent with the ICD coding system, hospital separations will be referred to as amphetamine-related. Reference to the research literature and the prevalence of use will refer to methamphetamine, as this will be the predominant form used among the Australian population.

Table 5 shows the numbers of principal amphetamine-related separations as well as the total number of amphetamine mentions (i.e. where amphetamines were recorded as either the principal or as an additional diagnosis). The percentages in Figure 17 are based on these numbers.

Table 5: Numbers of principal amphetamine diagnoses and mentions among 15-54 year olds, 1993-2004

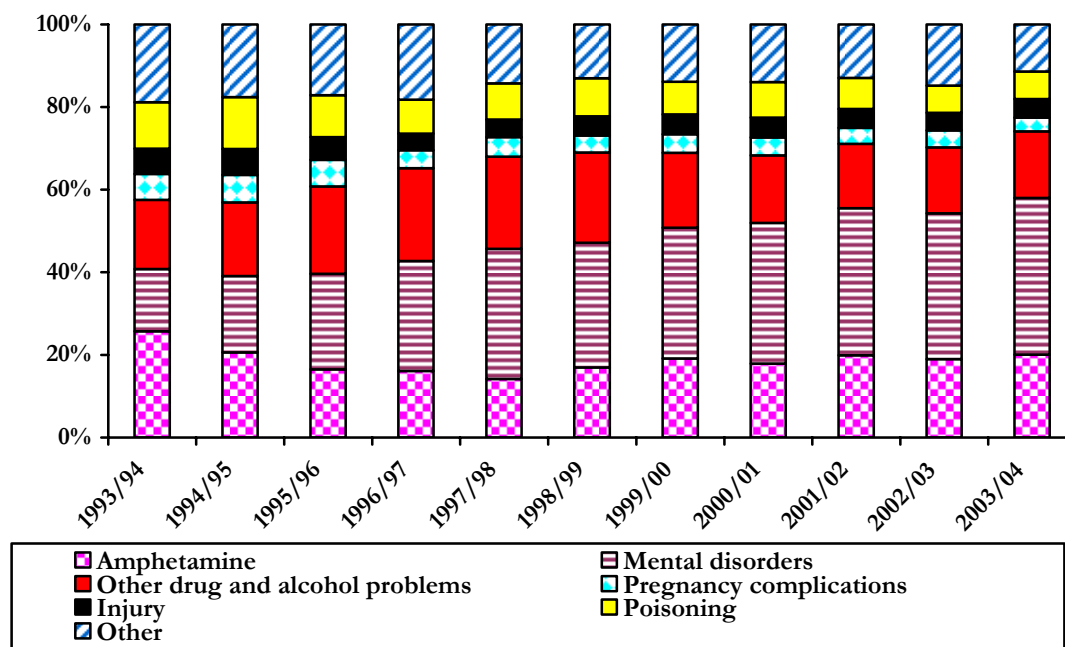
Year	No. of principal amphetamine diagnoses	No. of amphetamine mentions
1993/94	652	2530
1994/95	711	3445
1995/96	584	3541
1996/97	633	3925
1997/98	792	5585
1998/99	1174	6906
1999/00	1470	7677
2000/01	1626	9082
2001/02	1938	9721
2002/03	1750	9229
2003/04	2066	10304

Figure 17 shows the percentage of amphetamine mentions by principal diagnosis for the period 1993 to 2004 among 15-54 year olds. Principal amphetamine-related separations accounted for approximately one-fifth of all amphetamine mentions during the period.

Figure 17 also shows the other principal diagnoses that were recorded in conjunction with amphetamine mentions. An increasing proportion of amphetamine mentions were accompanied by mental disorders (from 15% in 1993/94 to 38% in 2003/04), and these diagnoses were clustered around both depressive and schizophrenic disorders. The increase in mental disorders was largely due to increases in schizophrenic disorders. Other drug and alcohol related problems comprised between 16% and 22% of amphetamine mentions, with diagnoses clustering around drug-related psychosis, alcohol dependence, opioid dependence, and to a lesser extent cannabis dependence. There has been a decrease in the proportion of amphetamine mentions accompanied by poisoning by drugs, medicaments and biological substances (from 12% in 1994/95 to 6% in 2003/04), which is largely due to decreases in heroin poisoning diagnoses. Smaller proportions of amphetamine mentions were accompanied by principal diagnoses of

‘other’ physical health problems such as diseases of the circulatory system, the respiratory system, the nervous system and digestive system (between 11% and 18%), pregnancy complications (between 3% and 6%), and injury (approximately 5%). Percentages are available in Table B3 at Appendix B.

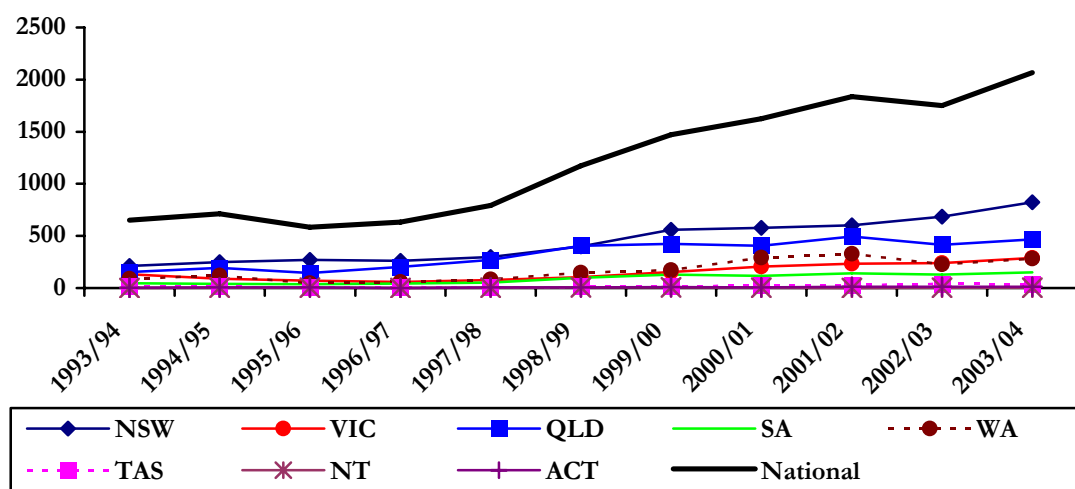
Figure 17: Principal reason for hospital separations where amphetamines were mentioned among 15-54 year olds, 1993-2004



3.3.1 Principal diagnoses

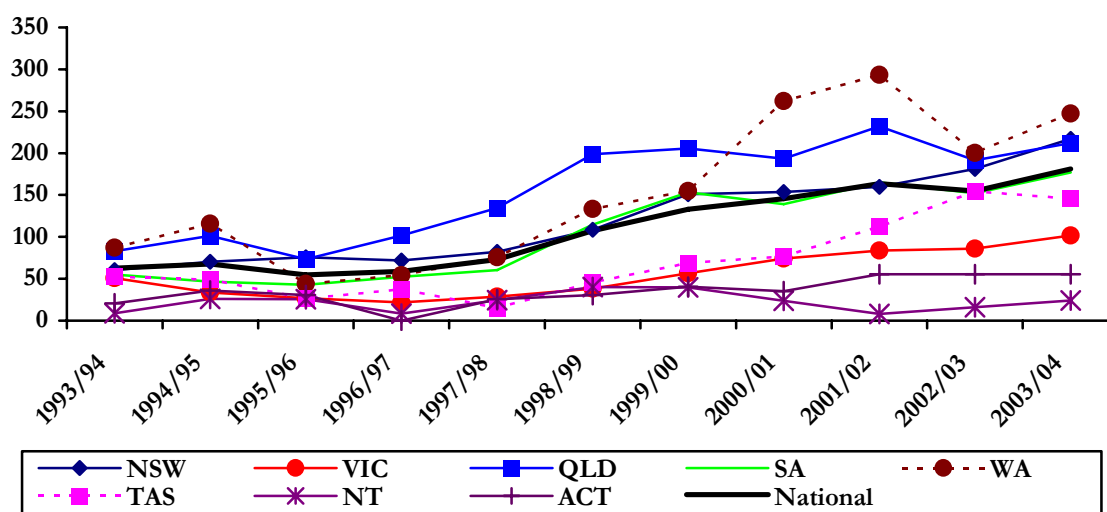
Figure 18 shows that hospital separations with a principal diagnosis related to amphetamines (referred to as amphetamine-related separations) have continued to increase over the eleven-year period from 652 in 1993/94 to 2,066 in 2003/04. All jurisdictions have recorded increases in amphetamine-related separations during the period 1993-2004. NSW had the highest number of separations during this period, which steadily increased from 211 in 1993/94 to 824 in 2003/04. QLD also had relatively high numbers of separations, with a sharp increase recorded in 1998/99 from 271 (in 1997/98) to 405, which was largely due to rises in separations for amphetamine use and dependence. Amphetamine-related separations in QLD peaked in 2001/02 at 493, and have decreased slightly to 468 in 2003/04. VIC and WA had the next highest number of separations followed by SA. TAS also recorded increases in amphetamine-related separations, while the NT and ACT recorded no more than 10 per year throughout the period.

Figure 18: Number of principal amphetamine-related hospital separations among 15-54 year olds, 1993-2004



The rates of amphetamine-related separations per million persons (Figure 19) were highest in QLD until 2000/01, when WA rates surpassed them. Rates in QLD steadily increased from 73 separations per million persons in 1995/96 to a peak of 232 in 2001/02. They have decreased slightly to 212 in 2003/04. WA also had relatively high rates of amphetamine-related separations, and sharp increases were evident in 2000/01 (from 154 per million persons in 1999/00 to 262), the majority of which was due to increases in separations for amphetamine dependence, amphetamine use, and to a lesser extent, amphetamine poisoning. TAS rates steadily increased during this period and much of this was also due to amphetamine poisoning. There was also a substantial increase in separations in TAS in 2002/03 for amphetamine dependence. All other jurisdictions also recorded increases in the rates of amphetamine-related separations.

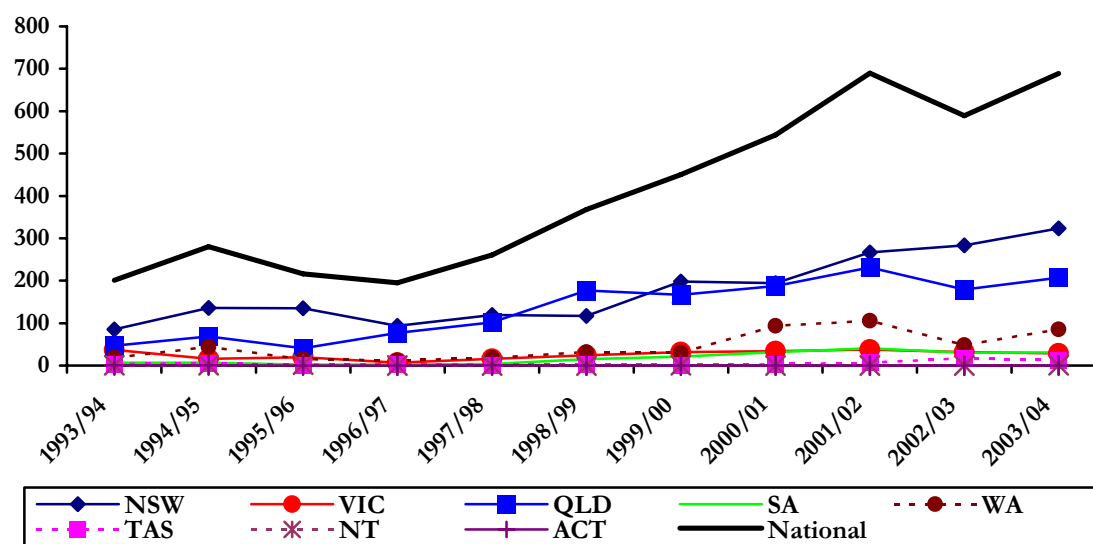
Figure 19: Rates per million persons of principal amphetamine-related hospital separations among 15-54 year olds, 1993-2004



3.3.2 Dependence - principal diagnoses

NSW recorded the highest number of separations where the principal diagnosis was for amphetamine dependence during the period 1993-2004, and comprised between a third and one-half of the national total (Figure 20). Separations in NSW have continued to increase from 85 in 1993/94 to 323 in 2003/04. QLD had the next highest numbers of amphetamine dependence separations, and these steadily increased from 77 in 1996/97 to 231 in 2000/01. They have remained relatively stable since this time (at 207 in 2003/04). WA separations for amphetamine dependence tripled from 30 in 1999/00 to 94 in 2000/01, and have remained stable at a higher level in the past 3 years. Separations in VIC remained relatively stable for the duration of the period at approximately 30 per year, with the exception of 1996/97 and 1997/98 (decreasing to 7 and increasing to 16 respectively). SA and TAS have both recorded increases while the NT and the ACT recorded fewer than 5 separations per year throughout the period.

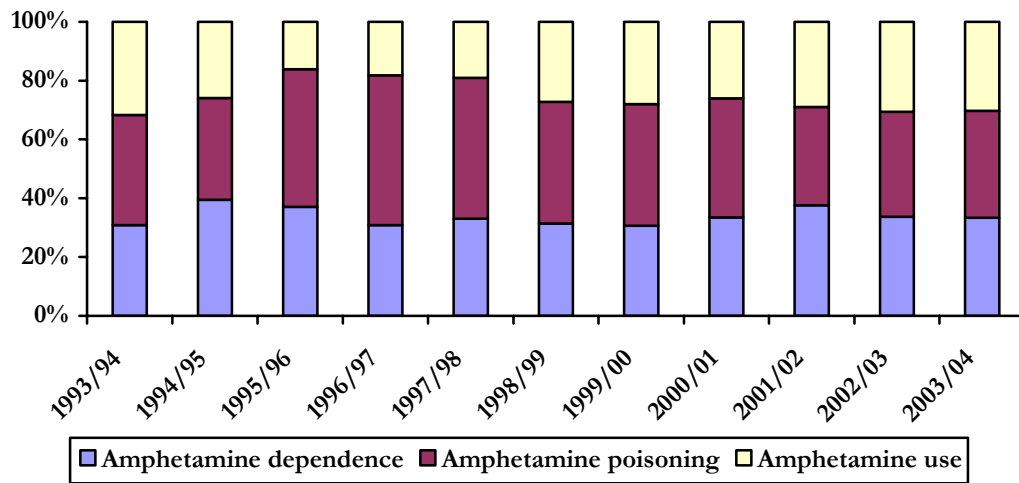
Figure 20: Number of principal amphetamine-related hospital separations for dependence among 15–54 year olds, 1993-2004



NB: Separations with a principal diagnosis of amphetamine dependence are a subset of principal amphetamine-related separations

Figure 21 shows the percentage of amphetamine-related separations that are due to amphetamine dependence. Amphetamine dependence separations accounted for approximately one-third of all amphetamine-related separations, and this proportion has remained relatively stable during the eleven-year period. Poisoning accounted for a slightly larger proportion of these separations, peaking at 51% in 1996/97, and subsequently reducing to 30% in 2003/04. The percentage of separations due to problematic amphetamine use accounted for approximately one-third of amphetamine-related separations over the past few years.

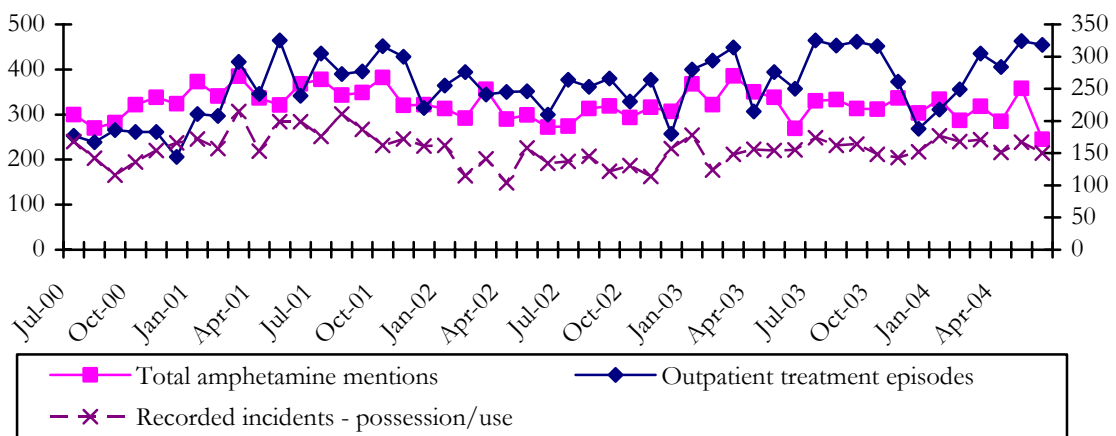
Figure 21: Percentage of principal amphetamine-related hospitals separations that are due to dependence among 15-54 year olds, 1993-2004



3.3.3 Amphetamine mentions in hospital separations and other indicators of amphetamine-related harm

In Figure 22, the total numbers of amphetamine mentions in NSW, by month, are presented along with outpatient treatment episodes for amphetamines and recorded incidents of amphetamine possession/use. All indicators showed increases in 2001, with outpatient treatment episodes increasing again throughout 2003.

Figure 22: Amphetamine mentions in hospital separations and other indicators of amphetamine-related harm in NSW, 2000-2004



3.3.4 Other drug problems noted

Cannabis was recorded in conjunction with approximately one-quarter (24%) of amphetamine-related separations, while opioids were recorded in 9% of these separations. Cocaine was only recorded in conjunction with 2% of amphetamine-related separations.

3.3.5 Demographic characteristics

Age Trends

Figure 23 shows the number of principal amphetamine-related hospital separations at a national level by 10 year age group. Separations were highest among the 20 to 29 year age group, and have steadily increased over the eleven-year period from 364 in 1993/94 to 984 in 2003/04. The 10 to 19 year age group had the next highest number of amphetamine-related separations during the period 1993/94 to 1999/00 with steady increases also occurring (from 153 in 1993/94 to 349 in 1999/00). Separations among this age group have stabilised at a higher rate over the past few years. Steady increases in amphetamine-related separations also occurred among the 30 to 39 year age group (from 130 in 1993/94 to 560 in 2003/04), with numbers of separations surpassing those recorded among the 10 to 19 year olds in 2000/01. Although the 40 to 49 year age group recorded relatively fewer amphetamine-related separations, numbers have continued to increase throughout the entire period (from 25 in 1993/94 to 190 in 2003/04). Separations among the 50 to 59 year age group have also increased from 4 in 1993/94 to 70 in 2003/04.

Figure 23: Number of principal amphetamine-related hospital separations by 10 year age group, 1993-2004

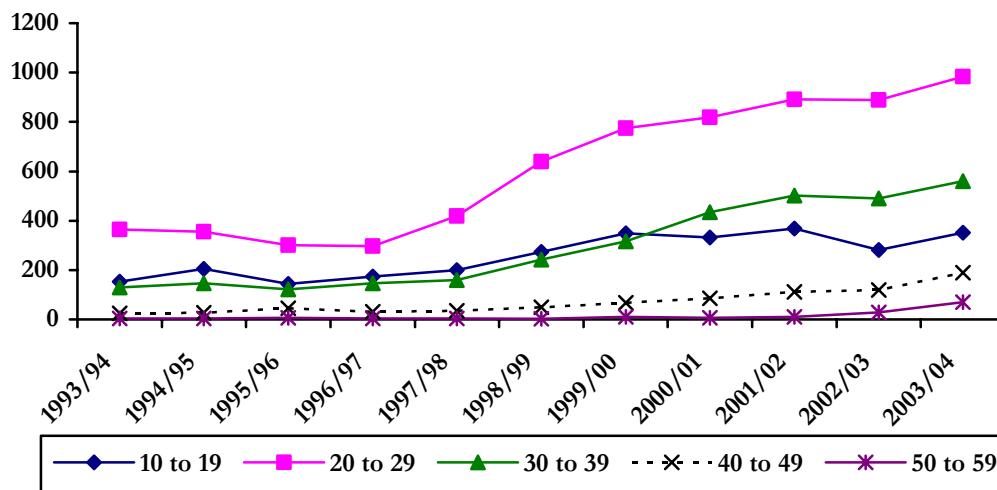
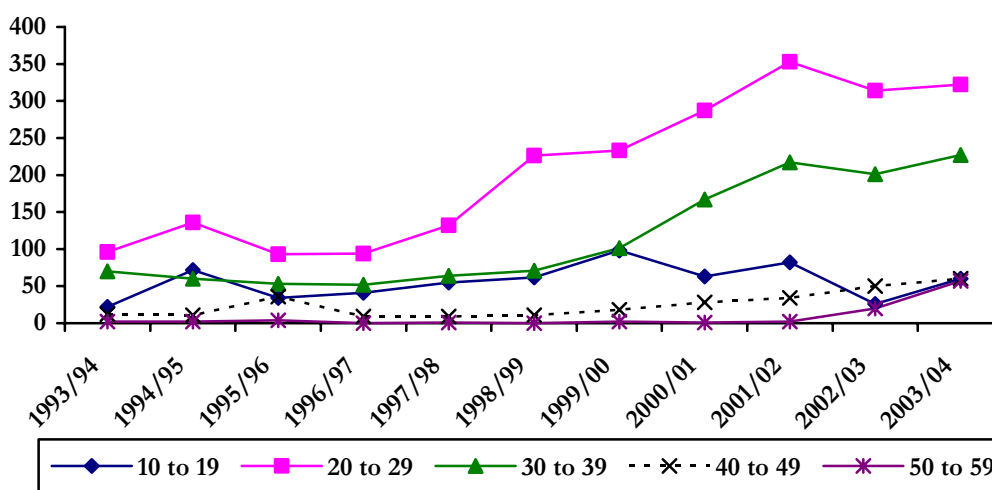


Figure 24 shows the number of principal hospital separations for amphetamine dependence at a national level by 10 year age group. Separations were highest among the 20 to 29 year age group, and have steadily increased over the 11-year period from 96 in 1993/94 to a peak of 353 in 2001/02. They have remained relatively stable at a higher level in the last three years. The 30 to 39 year age group had the next highest number of principal separations for amphetamine dependence, which have also steadily increased from 70 in 1993/94 to 227 in 2003/04. Separations among the 10 to 19 year olds peaked in 1999/00 (at 98), and have fluctuated over the past 4 years (with 60 dependence separations recorded in 2003/04). Dependence separations have also increased substantially among the older age groups in the past few years, although prior to 2002/03, numbers among the 50 to 59 year age group were less than 5 per year.

Figure 24: Number of principal hospital separations for amphetamine dependence by 10 year age group, 1993-2004



Gender

At a national level, males accounted for 59% of amphetamine-related separations in Australia in 2003/04.

3.3.6 Characteristics of the hospital stays

Approximately two-thirds (63%) of hospital stays in 2003/04 for a principal diagnosis related to amphetamines were for one day only. Among those separations that were for more than one day (759 separations) the median number of days hospital stay was 4 (range 2 to 74). The majority (91%) of these separations however, were for two weeks (14 days) or less.

The majority of amphetamine-related separations in Australia in 2003/04 were for patients receiving public hospital services (QLD data were not available).

3.4 Cannabis-related hospital separations

Table 6 shows the number of principal cannabis-related separations as well as the total number of cannabis mentions (i.e. where cannabis was recorded as either the principal or as an additional diagnosis). The percentages in Figure 25 are based on these numbers.

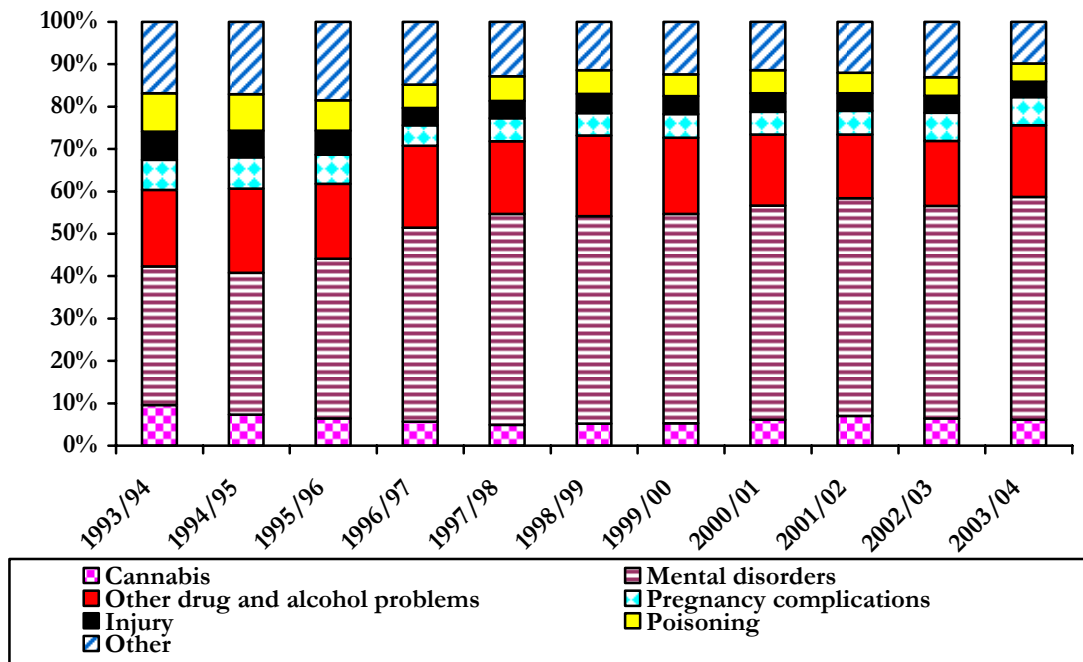
Table 6: Numbers of principal cannabis diagnoses and mentions among 15-54 year olds, 1993-2004

Year	No. of principal cannabis diagnoses	No. of cannabis mentions
1993/94	424	4409
1994/95	469	6379
1995/96	669	10411
1996/97	738	12942
1997/98	830	16877
1998/99	911	17528
1999/00	945	17808
2000/01	1115	18315
2001/02	1358	19352
2002/03	1244	19452
2003/04	1254	20616

Figure 25 shows the percentage of cannabis-related separations by principal diagnosis for the period 1993 to 2004 among 15-54 year olds. Principal cannabis-related separations accounted for approximately 5% of all cannabis mentions during the period.

The figure also shows the other principal diagnoses that were recorded in conjunction with cannabis mentions. An increasing proportion of cannabis mentions were accompanied by principal diagnoses of mental disorders (from 32% in 1993/94 to 52% in 2003/04), and these diagnoses were clustered around schizophrenic and depressive disorders, which have both increased during the eleven-year period. Substantial proportions of cannabis mentions were also accompanied by alcohol and other drug problems (between 15% and 20%), with diagnoses clustering around alcohol dependence, opioid dependence, and to a lesser extent, drug-related psychosis. There has been a decrease in the proportion of cannabis mentions accompanied by poisoning by drugs, medicaments and biological substances (from 9% in 1993/94 to 4% in 2003/04), which may be due in part to gradual decreases in benzodiazepine poisoning. Smaller proportions of cannabis mentions were accompanied by principal diagnoses of injury (between 3% and 6%) and pregnancy complications (between 5% and 7%), while between 10% and 18% were accompanied by 'other' problems such as diseases of the circulatory system, the respiratory system, the nervous system and digestive system. Percentages are available in Table B4 at Appendix B.

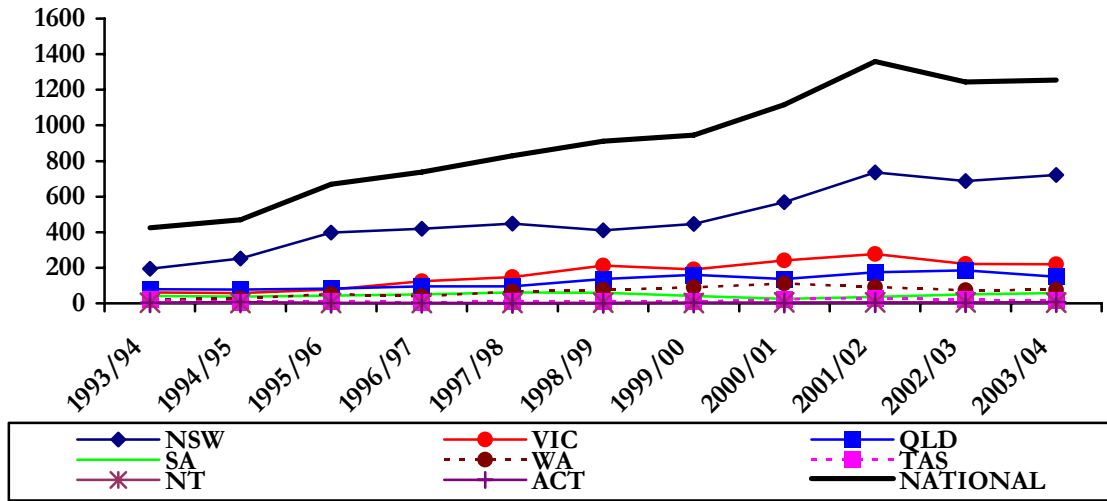
Figure 25: Principal reason for hospital separations where cannabis was mentioned among 15-54 year olds, 1993-2004



3.4.1 Principal diagnoses

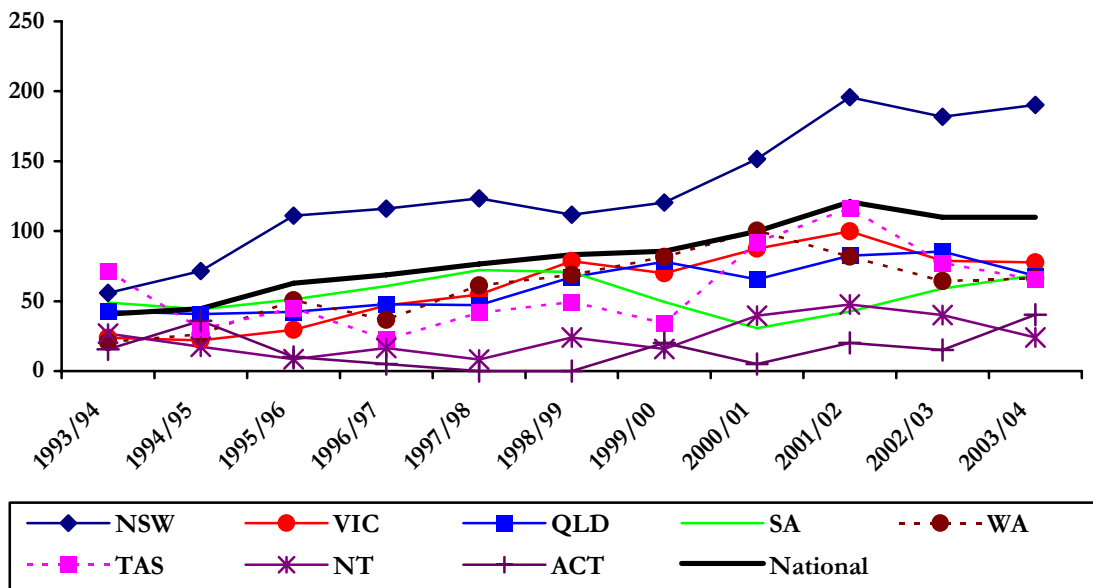
Figure 26 shows that hospital separations with a principal diagnosis related to cannabis (referred to as cannabis-related separations) more than tripled from 424 in 1993/94 to 1,358 in 2001/02 at a national level. They have remained relatively stable over the past two years. NSW had the highest number of cannabis-related separations during the period 1993-2004 followed by VIC and then QLD. Separations in NSW reflected the trend occurring at a national level. Numbers of cannabis-related separations in SA have remained relatively stable during this period with the exception of 2000/01, during which they declined from 42 (in 1999/00) to 26. WA recorded increases up to 2000/01 (from 21 in 1993/94 to 112), with figures declining slightly over the past three years (to 76 in 2003/04). Cannabis-related separations have fluctuated in TAS, while figures for the NT and the ACT remained lower than 10 per year throughout this period.

Figure 26: Number of principal cannabis-related hospital separations among 15-54 year olds, 1993-2004



NSW recorded the highest rates of cannabis-related separations throughout the period, which increased steadily from 55 separations per million persons in 1993/94 to 195 in 2001/02 (Figure 27). They have remained relatively stable in the past 3 years at a higher level. VIC also had relatively high rates of cannabis-related separations increasing from 23 per million persons in 1993/94 to 99 in 2001/02, and declining to 77 in 2003/04. QLD recorded steady increases from 42 separations per million persons in 1993/94 to a peak of 85 in 2002/03, then declining to 68 in 2003/04. Rates for cannabis-related separations in SA fluctuated throughout the period, peaking at 72 per million persons in 1997/98, then steadily decreasing over the next few years to 30 in 2000/01, and increasing again to 68 in 2003/04. Separations in WA, TAS and the NT also increased throughout the period, while the ACT recorded fluctuations at relatively low rates.

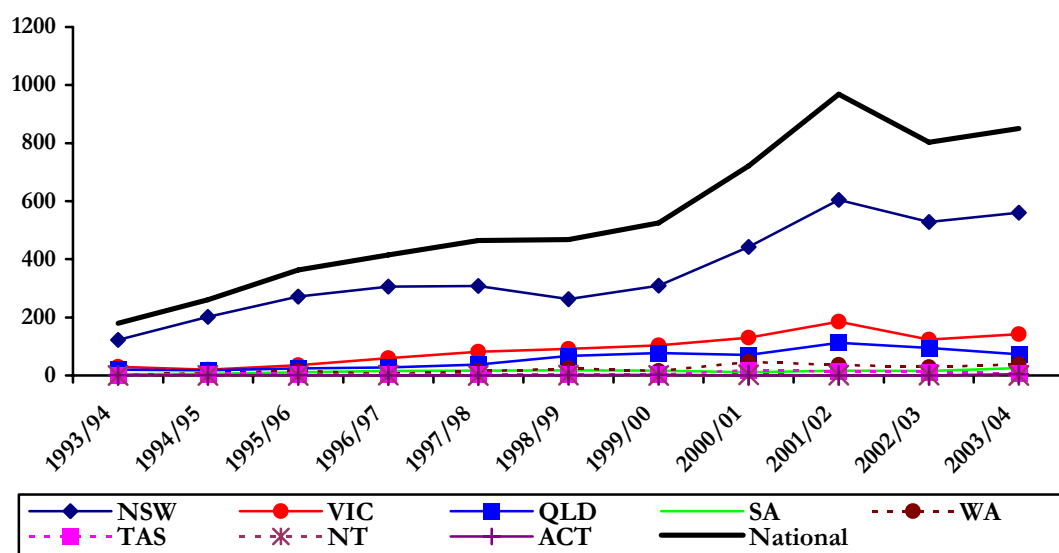
Figure 27: Rates per million persons of principal cannabis-related hospital separations among 15-54 year olds, 1993-2004



3.4.2 Dependence - principal diagnoses

NSW recorded the highest number of separations where the principal diagnosis was for cannabis dependence, comprising more than half to three-quarters of the national total during the period 1993-2004 (Figure 28). Separations in NSW have continued to increase from 122 in 1993/94 to 560 in 2003/04. Cannabis dependence separations in NSW accounted for the majority of all cannabis-related separations in NSW during the eleven-year period. VIC had the next highest numbers of cannabis dependence separations (accounting for no more than 20% of the national separations) followed by QLD (accounting for up to 15% of national separations). VIC separations steadily increased from 30 in 1993/94 to 185 in 2001/02, and decreased again to 142 in 2003/04, while QLD recorded increases from 20 in 1993/94 to 113 in 2001/02. The remaining jurisdictions all had relatively lower numbers of cannabis dependence separations. SA, WA and TAS recorded increases in these separations while the ACT and the NT recorded no more than 10 cannabis dependence separations each for the entire period.

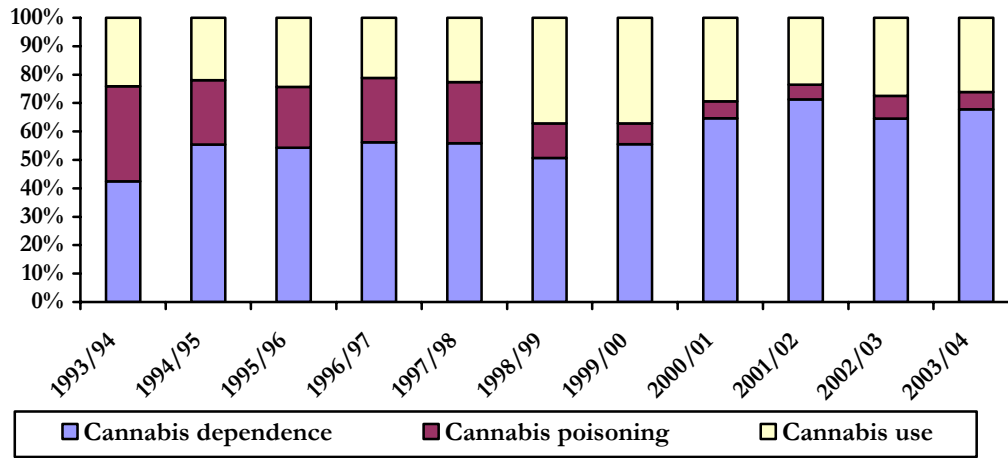
Figure 28: Number of principal cannabis-related hospital separations for dependence among 15–54 year olds, 1993-2004



NB: Separations with a principal diagnosis of cannabis dependence are a subset of principal cannabis-related separations

The percentage of cannabis-related separations that were due to dependence has continued to increase. In 1993/94, cannabis dependence separations accounted for 42% of cannabis-related separations, and in 2003/04, they accounted for just over two-thirds (67%) of these separations (Figure 29). Approximately one-quarter of cannabis-related separations were accounted for by use problems, while smaller proportions (approximately 6% between 1999 and 2004) were due to cannabis poisoning. The decreases in cannabis poisoning separations may be due, in part, to coding changes that occurred with the change from ICD-9-CM coding (where cannabis, lysergic acid diethylamide (LSD) and other hallucinogens were recorded under the same poisoning code) to ICD-10-AM coding (where cannabis poisoning was separated out from other hallucinogens).

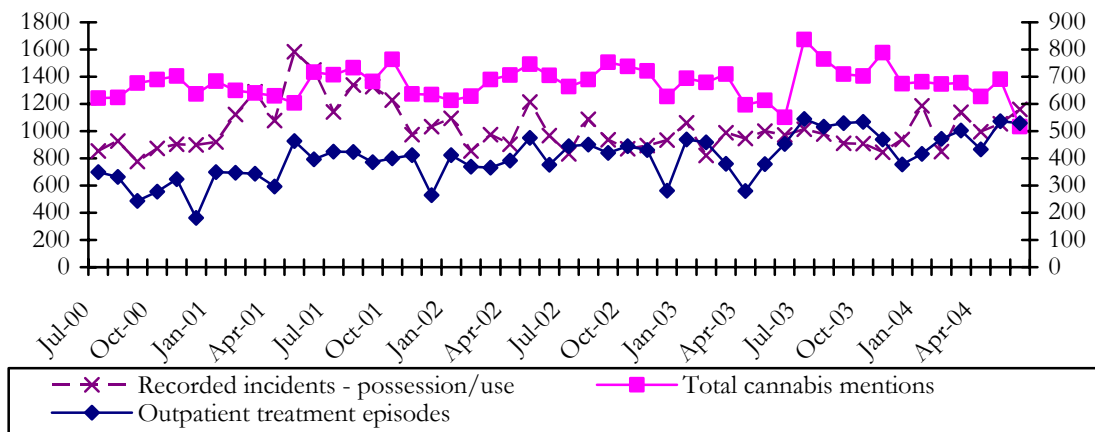
Figure 29: Percentage of principal cannabis-related hospital separations that are due to dependence among 15-54 year olds, 1993-2004



3.4.3 Cannabis mentions in hospital separations and other indicators of cannabis-related harm

In Figure 30, the total numbers of cannabis mentions in NSW, by month, are presented along with outpatient treatment episodes for cannabis and recorded incidents of cannabis possession/use. Outpatient treatment episodes for cannabis have gradually increased over the period, while inpatient separations have remained relatively stable. Recorded incidents for possession/use for cannabis have declined during this time.

Figure 30: Cannabis mentions in hospital separations and other indicators of cannabis-related harm in NSW, 2000-2004



3.4.4 Other drug problems noted

Amphetamines were the drug type most commonly recorded in conjunction with cannabis-related separations accounting for 12% of these. Opioids co-occurred with 5% of cannabis-related separations while cocaine was recorded in conjunction with less than 1% of these separations.

3.4.5 Demographic characteristics

Age Trends

Figure 31 shows the number of principal cannabis-related hospital separations at a national level by 10 year age group, with separations being highest among the 20 to 29 year olds, followed by the 10 to 19 year age group. Separations have steadily increased over time among both age groups (from 213 in 1993/94 to a peak of 587 in 2001/02 among the 20 to 29 year olds; from 144 in 1993/94 to a peak of 333 in 1998/99 among the 10 to 19 year olds). Separations among the 10 to 19 year olds subsequently decreased, and have remained stable over the past four years. Separations among the 20 to 29 year age group have also remained stable in the past two years. Cannabis-related separations have continued to increase among the 30 to 39 year age group (from 61 in 1993/94 to 393 in 2003/04). A similar trend was evident among the 40 to 49 year age group, although on a relatively smaller scale (from 16 in 1993/94 to 140 in 2003/04). Separations among the 50 to 59 year age group remained the lowest over the 10 year period (with no more than 40 separations per year), and slight increases were evident in the latter part of the period. The 20 to 29 year age group had the highest number of cannabis-related separations across all jurisdictions with the exception of TAS, the ACT and the NT, where numbers were small and no clear age trends were apparent (data not shown).

Figure 31: Number of principal cannabis-related hospital separations by 10 year age group, 1993-2004

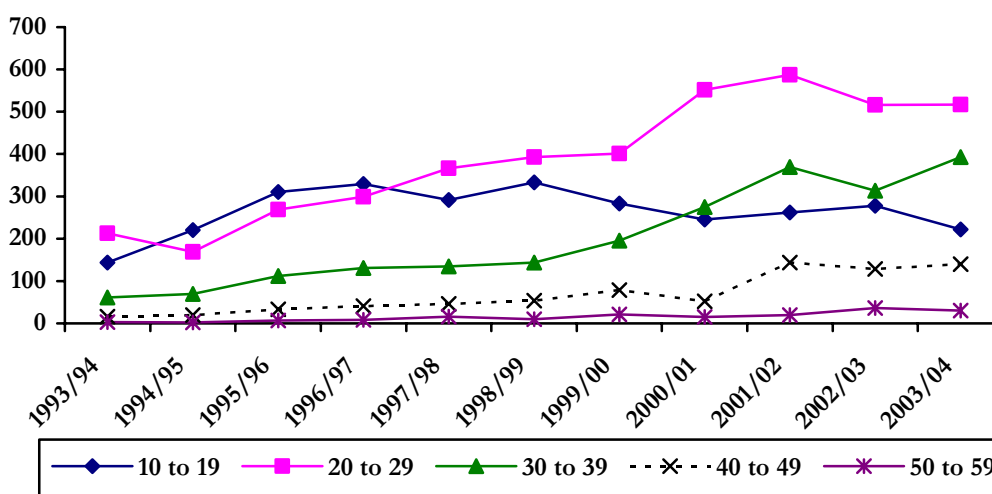
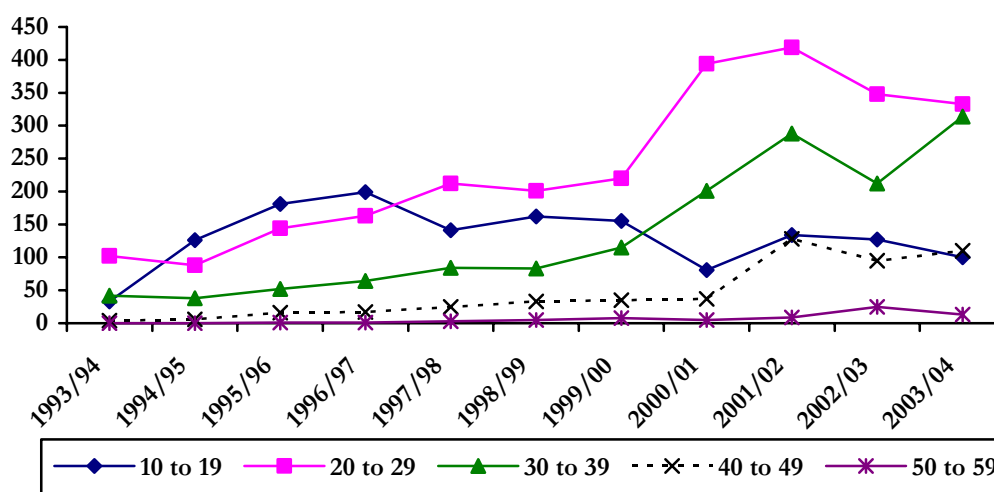


Figure 32 shows the number of principal hospital separations for cannabis dependence at a national level by 10 year age group, with separations being highest among the 20 to 29 year olds. There was a steady increase among this group (from 102 in 1993/94 to 419 in 2001/02) until 2001/02, when separations started to decrease slightly. The 10 to 19 year age group had the next highest number of separations during the period 1993/94 to 1999/00. Separations among this group decreased to 100 in 2003/04 from a peak of 199 in 1996/97. Cannabis dependence separations among the 30 to 39 year age group have continued to increase throughout the period (from 42 in 1993/94 to 314 in 2003/04). The 40 to 49 year age group also recorded increases since 2001/02 and separations for cannabis dependence have remained stable at a higher level. Prior to 2002/03, there were less than 10 separations per year recorded among the 50 to 59 year olds, with 25 recorded in 2002/03 and 13 in 2003/04. As with all cannabis-related separations, cannabis dependence separations were highest among the 20 to 29 year age group across all jurisdictions with the exception of TAS, the ACT and the NT, where numbers were small and no clear age trends were apparent.

Figure 32: Number of principal hospital separations for cannabis dependence by 10 year age group, 1993-2004



Gender

Males accounted for 72% of cannabis-related separations in Australia in 2003/04.

3.4.6 Characteristics of the hospital stay

Just under half (45%) of the hospital stays in 2003/04 for a principal diagnosis related to cannabis were for one day only. Among those separations that were for more than one day (703 separations) the median number of days stay in hospital was 6 (range 2 to 90). The majority (91%) were for no more than 3 weeks duration (21 days).

The majority of cannabis-related separations in Australia in 2003/04 were for patients receiving public hospital services, however, in a substantial proportion (37%) of these separations in NSW, the funding source was reported as private health care insurance (QLD data were not available).

3.5 Drug-related psychosis separations

In order to remove the confounding factor of the change in coding systems from ICD-9-CM to ICD-10-AM on trends in drug-related separations, those separations with a principal diagnosis related to drug-induced psychosis (referred to as drug-related psychosis separations) are reported separately. Within the ICD-9-CM coding system, all drug-related psychosis separations were recorded under the same code, and there was no provision to separate out the drug type that related to the psychotic episode. This was changed when the ICD-10-AM coding system was introduced, with each drug type having a separate psychosis code. Accordingly, overall trends in principal diagnoses relating to drug-related psychosis are presented from 1993 to 2004, while psychosis separations by drug type are presented from 1999 to 2004.

Given that the focus of this report is on illicit drug-related hospital separations, the main illicit drug types used in Australia (i.e. opioids, amphetamines, cocaine and cannabis) form the basis of the analysis for psychosis separations by drug type.

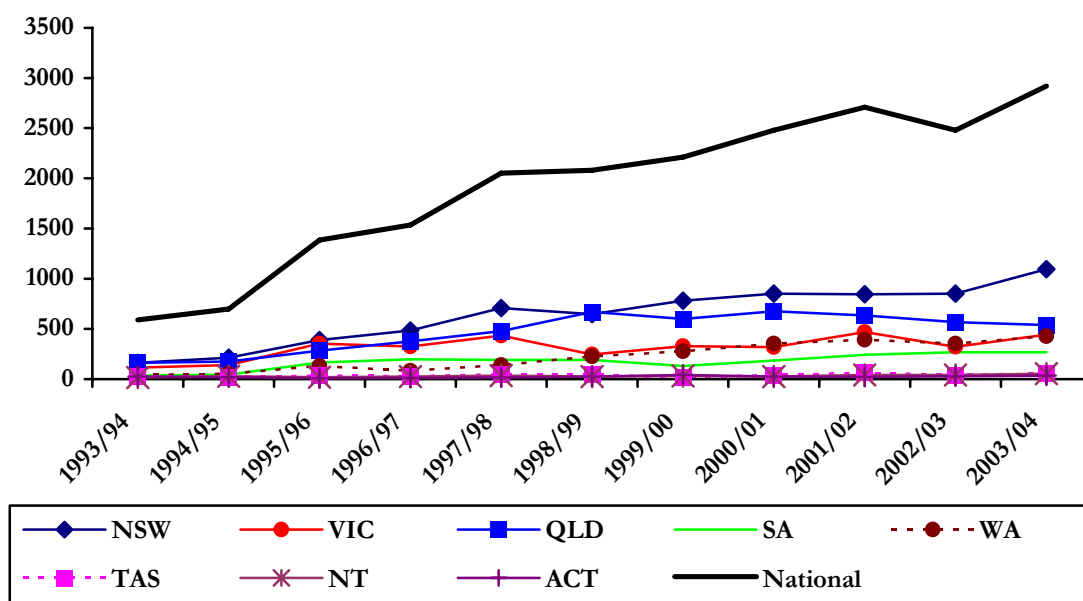
It should be noted that a diagnosis of drug-related psychosis does not necessarily imply a causal relationship between the drug used and psychotic symptoms that are present at the time of admission to hospital, nor does it imply the presence of a psychotic disorder. The term is used in this report to remain consistent with the ICD classifications, and should not be taken as our implicit agreement that these drugs had a causal role, or as an indication of our views regarding the nature of the relationship between cannabis/amphetamine/cocaine/opioid use and psychosis. The diagnosis is dependent on the clinician's judgement as to the role that a drug may have played in triggering psychotic symptoms. At the very least, it may imply that a clinician regards the extent of drug use as problematic, having the potential to result in harms such as psychotic symptoms.

3.5.1 Principal drug-related psychosis diagnoses – 1993-2004

Figure 33 shows the total number of principal drug-related psychosis separations for the period 1993 to 2004 among 15-54 year olds. There has been an increasing trend in drug related psychosis separations during this period, from 589 in 1993/94 to more than four times this number (to 2,920) in 2003/04.

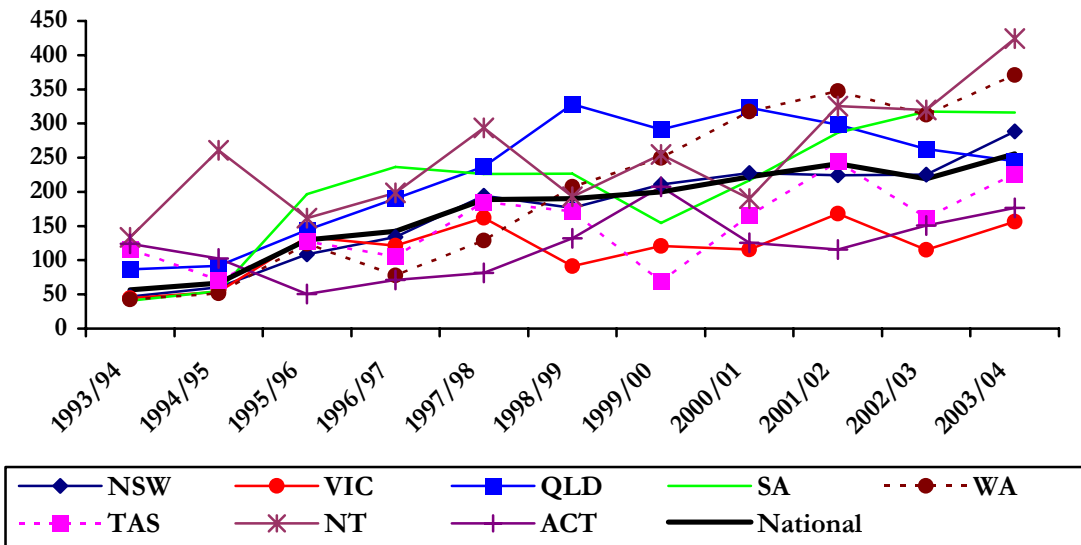
Drug related psychosis separations were highest in NSW and QLD for the majority of the period. Separations in NSW have steadily increased from 164 in 1993/94 to 1,095 in 2003/04 and accounted for approximately one-third of the national separations for drug-related psychosis. QLD recorded increases in drug-related psychosis separations between 1993/94 and 1998/99 (from 162 to 669), with a subsequent decrease to 540 recorded in 2003/04. Separations in QLD accounted for approximately one-quarter of the national total. VIC had the next highest number of drug-related psychosis separations followed by WA and then SA. Numbers were relatively low in the NT, TAS and the ACT.

Figure 33: Number of principal drug-related psychosis hospital separations among 15-54 year olds, 1993-2004



The rates of drug-related psychosis separations per million persons showed a different pattern than the numbers of separations (Figure 34). Rates were predominantly higher in QLD during this period compared to other jurisdictions, and ranged from 86 separations per million persons in 1993/94 to a peak of 328 in 1998/99. Separations in QLD have since declined slightly to 244 in 2003/04 but remain higher than rates recorded prior to 1997/98. WA also recorded relatively high rates of drug-related psychosis separations, showing an increasing trend from 42 per million persons in 1993/94 to 370 in 2003/04. A similar pattern was evident in SA, where rates increased from 40 in 1993/94 to 316 in 2003/04. NT also recorded an increasing trend over time, with rates per million persons rising from 133 in 1993/94 to 424 in 2003/04. Rates in the ACT peaked in 1999/00 at 207, and have since decreased slightly to 176 in 2003/04. Rates in TAS fluctuated during the period with an increasing trend apparent from 1999/00 onwards (to 226 separations per million persons in 2003/04). NSW also recorded a steadily increasing trend in rates of drug-related psychosis separations (from 46 in 1993/94 to 288 in 2003/04).

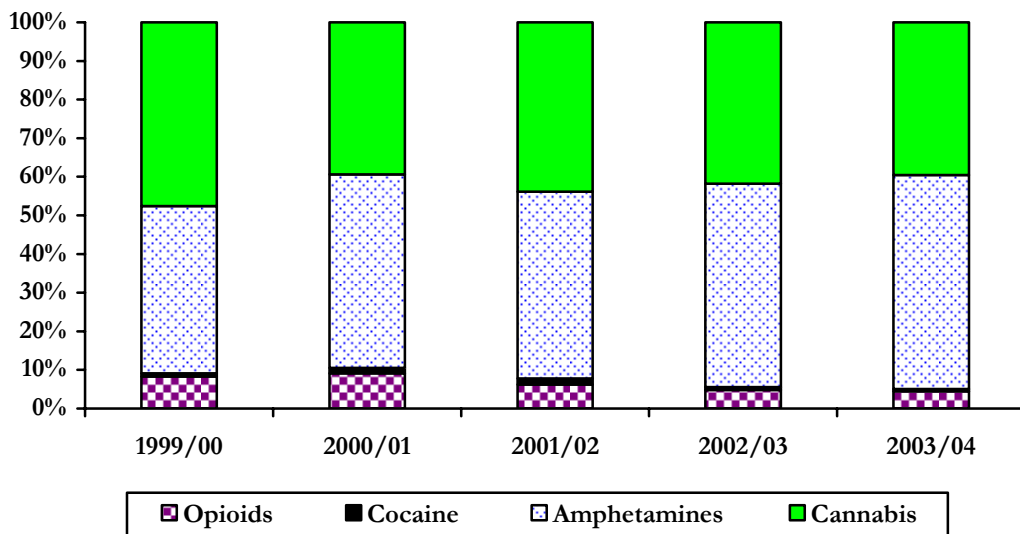
Figure 34: Rates per million persons of principal drug-related psychosis hospital separations among 15-54 year olds, 1993-2004



3.5.2 Principal drug-related psychosis diagnoses by drug type – 1999-2004

Figure 35 shows which drugs comprise the total number of principal drug-related psychosis separations during the period 1999 to 2004. Amphetamines accounted for the largest proportion of drug-related psychosis separations, ranging from 41% in 1999/000 to 55% in 2003/04. Cannabis accounted for the second largest proportion of these separations, ranging from 39% to 45%. Opioids accounted for less than 10% of drug-related psychosis separations during the period and cocaine, less than 2%.

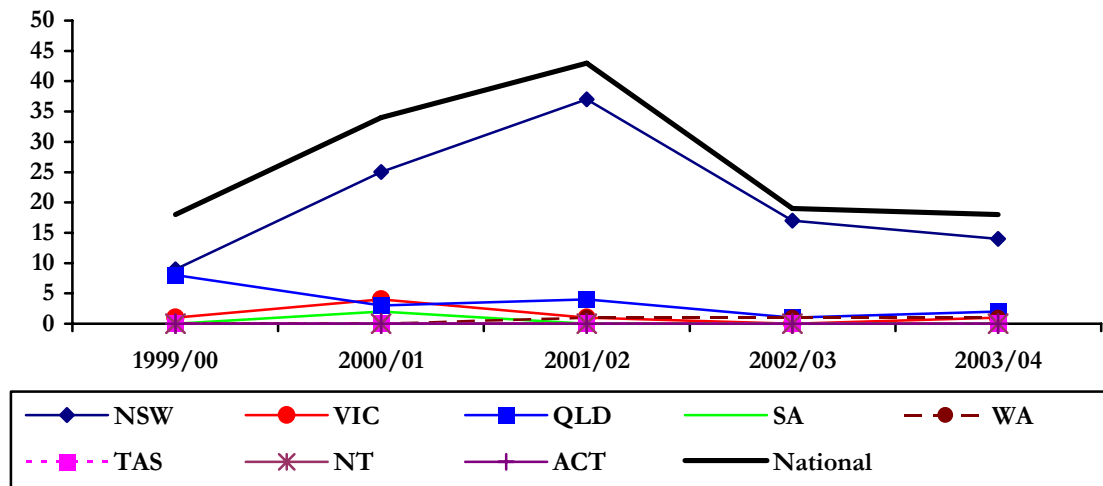
Figure 35: Percentage of drug-related psychosis hospital separations accounted for by different drug types among 15-54 year olds, 1999-2004



3.5.3 Cocaine-related psychosis separations

Numbers of cocaine-related psychosis separations recorded over the past 5 years were low (Figure 36). Figures peaked at a national level at 43 in 2001/02, the majority of which (37) were in NSW, and have since decreased to 18. They have remained stable in the past 2 years. There were no cocaine-related psychosis separations in the NT, ACT or TAS during this period and the remaining jurisdictions recorded less than 10 each year.

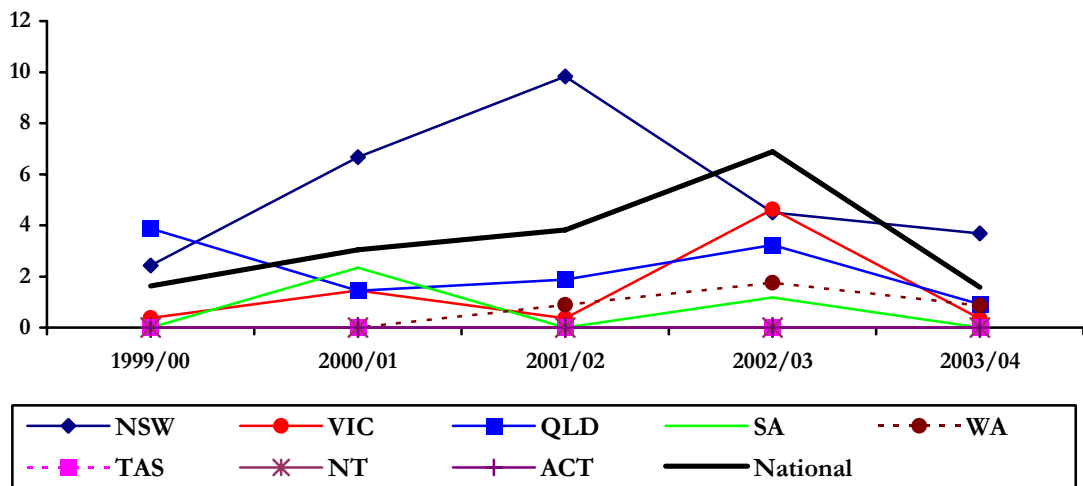
Figure 36: Number of cocaine-related psychosis hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for psychosis separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

At a national level, rates per million persons of cocaine-related psychosis separations showed an increasing trend during the period 1999 to 2003 from 1.6 in 1999/00 to 6.8 in 2002/03, and decreased in 2003/04 to 1.5 (Figure 37). NSW recorded the highest rates, which showed an increasing trend, peaking in 2001/02 at 9.8 separations per million persons, then declining to 3.7 in 2003/04. VIC also saw an increase in rates of cocaine-related psychosis separations in 2002/03 (.37 per million persons to 4.6), which have subsequently declined to .35. Rates were comparatively low in QLD, SA, and WA, while there were no separations in TAS, the NT or ACT.

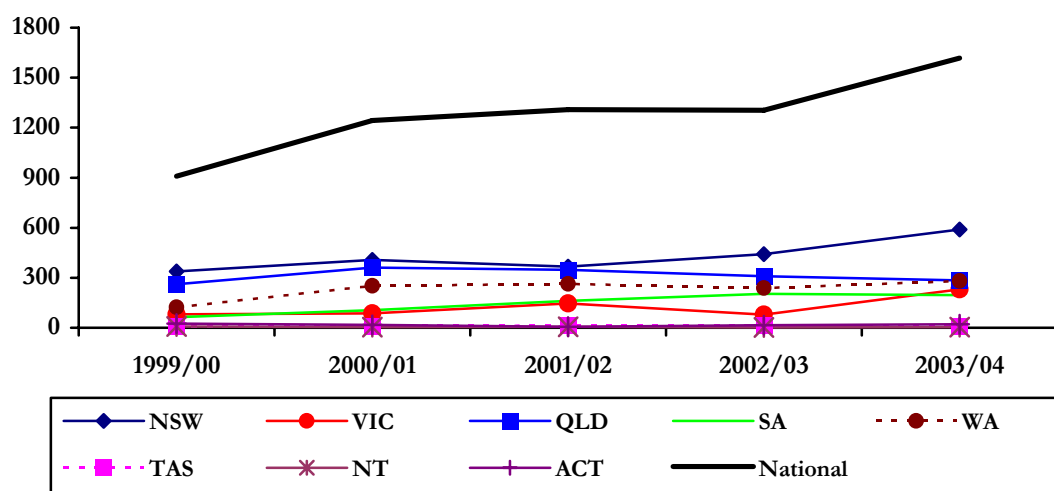
Figure 37: Rates per million persons of principal cocaine-related psychosis hospital separations among 15-54 year olds, 1999-2004



3.5.4 Amphetamine-related psychosis separations

There has been a steady increase nationally in the number of amphetamine-related psychosis separations, from 908 in 1999/00 to 1,617 per year in 2003/04 (Figure 38). Amphetamine-related psychosis separations were highest in NSW and QLD. Separations in NSW have almost doubled from 339 in 1999/00 to 589 in 2003/04, while QLD separations have decreased slightly from 361 in 2000/01 to 284 in 2003/04. WA, SA and VIC also recorded increases in separations for amphetamine-related psychosis during this period. Figures for the ACT, TAS and the NT remained low throughout the period.

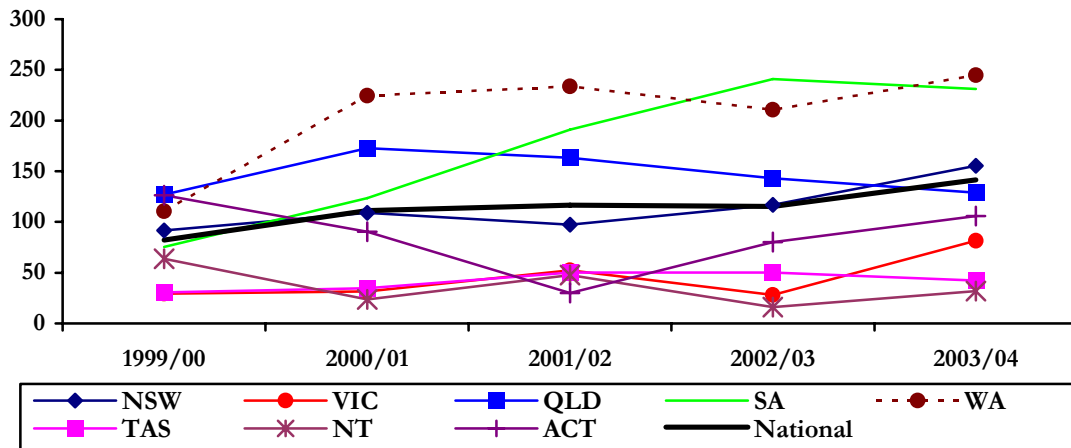
Figure 38: Number of principal amphetamine-related psychosis hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for psychosis separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

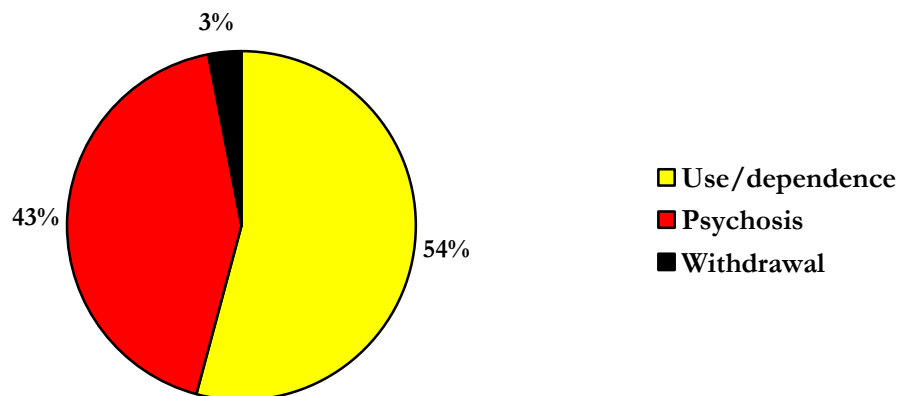
WA recorded the highest rates of amphetamine-related psychosis separations throughout the five year period, increasing from 110 in 1999/00 to 244 per million persons in 2003/04 (Figure 39). QLD also had relatively high rates although these have declined slightly from 172 in 2000/01 to 128 in 2003/04. The increase in rates of amphetamine-related psychosis separations was most marked in SA, ranging from 45 in 1999/00 to 240 in 2002/03, and remaining relatively stable in 2003/04 at 231. NSW and TAS also recorded slight increases in rates of amphetamine-related psychosis separations, albeit it at lower levels. Rates in the NT, ACT and VIC fluctuated during this period.

Figure 39: Rates per million persons of principal amphetamine-related psychosis hospital separations among 15-54 year olds, 1999-2004



Data from 2003/04 show that when all principal amphetamine-related separations (for use, dependence, withdrawal and psychosis) are pooled, amphetamine-related psychosis separations make up nearly half of all separations among 15 to 54 year olds (Figure 40).

Figure 40: Principal amphetamine-related hospital separations by problem type among 15-54 year olds, 2004



Amphetamine-related psychosis separations were highest among the 20 to 29 year age group, followed by the 30 to 39 year age group (Figure 41). Separations have steadily increased among both age groups over the five-year period (from 594 in 1999/00 to 836 in 2003/04 for the 20 to 29 year olds and from 262 in 1999/00 to 510 in 2003/04 for the 30 to 39 year olds). Similar trends were evident among the 10 to 19 and 40 to 49 year olds, while separations have remained low among the 50 to 59 year age group.

Figure 41: Number of principal amphetamine-related psychosis hospital separations by 10 year age group, 1999-2004

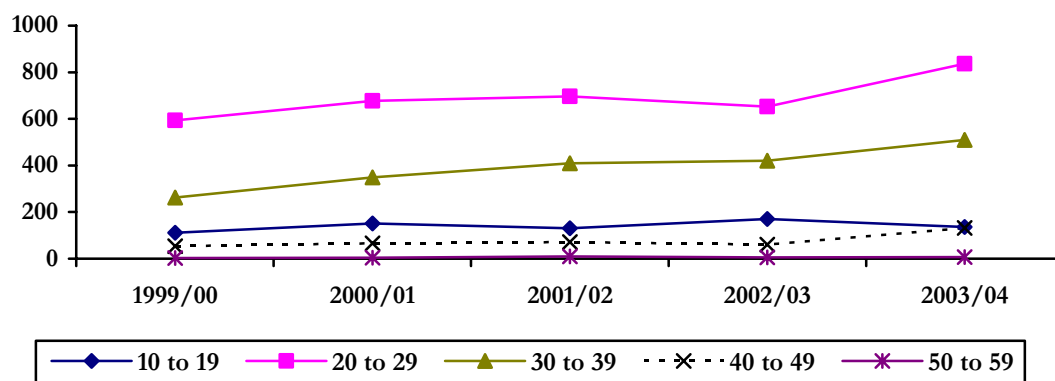
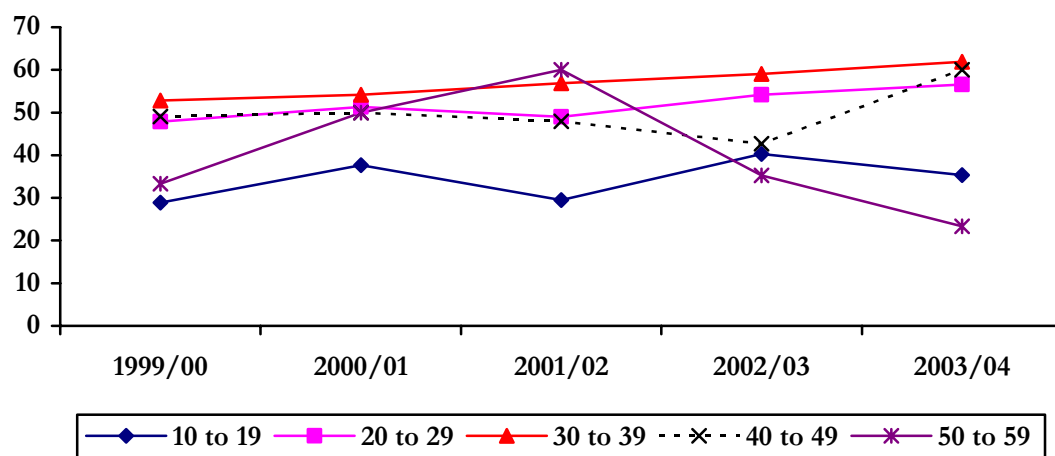


Figure 42 shows the proportion of drug-related psychosis separations that are accounted for by amphetamines by age group. From 1999 to 2004, amphetamines accounted for an increasing majority of drug-related hospital separations among the 30 to 39 year age group. Amphetamine-related psychosis separations among the older age groups comprised a large proportion of drug-related psychosis separations during the five-year period.

Figure 42: Percentage of drug-related psychosis separations accounted for by amphetamines by 10 year age group, 1999-2004



At a national level, males accounted for 64% of amphetamine-related psychosis separations in Australia in 2003/04.

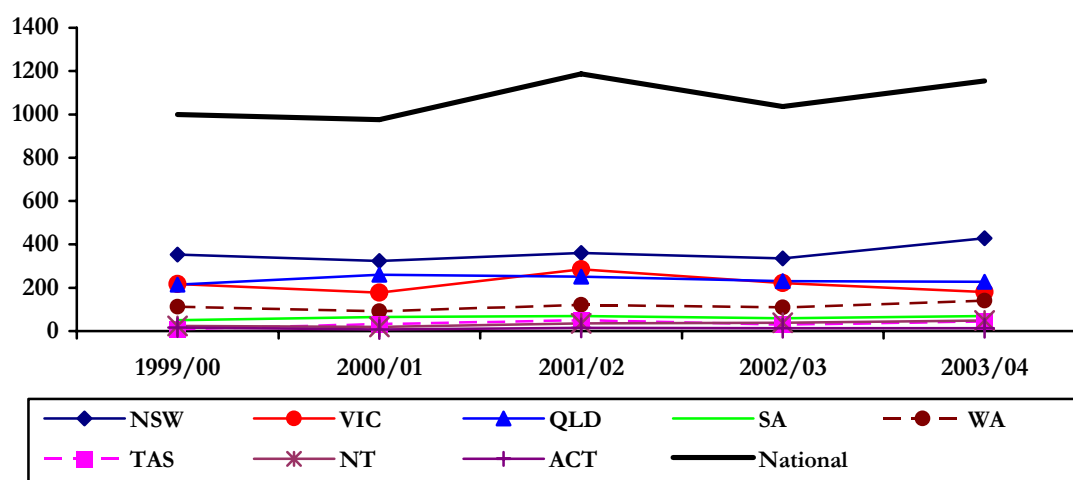
Just under half (40%) of the hospital stays in 2003/04 for a principal diagnosis related to amphetamine-induced psychosis were for one day only. Among those separations that were for more than one day (967 separations), the median number of days stay in hospital was 5 (range 2 to 83). The majority (94%) were for no more than three weeks (21 days).

The majority of amphetamine-related psychosis separations in Australia in 2003/04 were for patients receiving public hospital services. VIC had the highest proportion (33%) of separations in which private health care insurance was reported as the funding source (QLD data were not available).

3.5.5 Cannabis-related psychosis separations

Cannabis-related psychosis separations have remained relatively stable at the national level at approximately 1,000 per year, although there was a slight increase in 2001/02 to 1,187 (Figure 43). Separations were highest in NSW, which accounted for approximately one-third of the national total of cannabis-related psychosis separations. QLD and VIC had the next highest number, accounting for approximately 25% and 20% of national separations respectively. QLD separations were relatively stable during the five year period while VIC recorded an increase from 177 in 2000/01 to 285 in 2001/02. These separations have since decreased to 181 in 2003/04. The remaining jurisdictions recorded relatively stable numbers of cannabis-related psychosis separations during the five-year period, with the ACT recording the fewest separations.

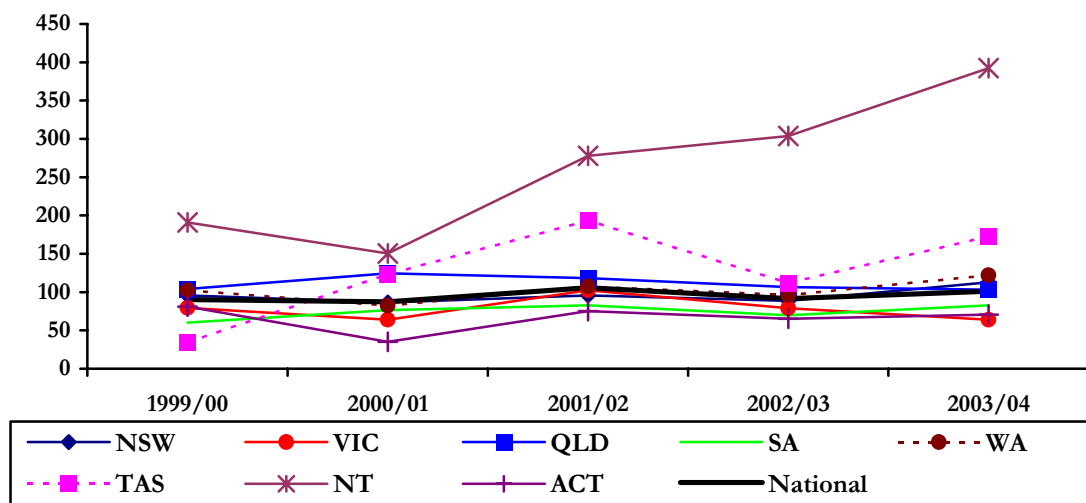
Figure 43: Number of principal cannabis-related psychosis hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for psychosis separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

NT recorded the highest rates of cannabis-related psychosis separations over the five-year period, with increases occurring during the period (Figure 44).

Figure 44: Rates per million persons of principal cannabis-related psychosis hospital separations among 15-54 year olds, 1999-2004



Separations for cannabis-related psychosis were highest among the 20 to 29 year age group for the five year period (Figure 45). Although they have remained relatively stable, they peaked at 608 in 2001/02. A decrease was evident in 2002/03 to 482, however, separations returned to a higher level at 568 in 2003/04. Separations among the 10 to 19 year age group also peaked in 2001/02 at 303. They have since declined to 237 in 2003/04. Separations among the 30 to 39 year age group peaked at 266 in 2003/04, while those among the 40 to 49 year age group were much lower. Separations among the 50 to 59 year age group remained below 10 per year with the exception of 2003/04, when they increased to 19.

Figure 45: Number of principal cannabis-related psychosis hospital separations by 10 year age group, 1999-2004

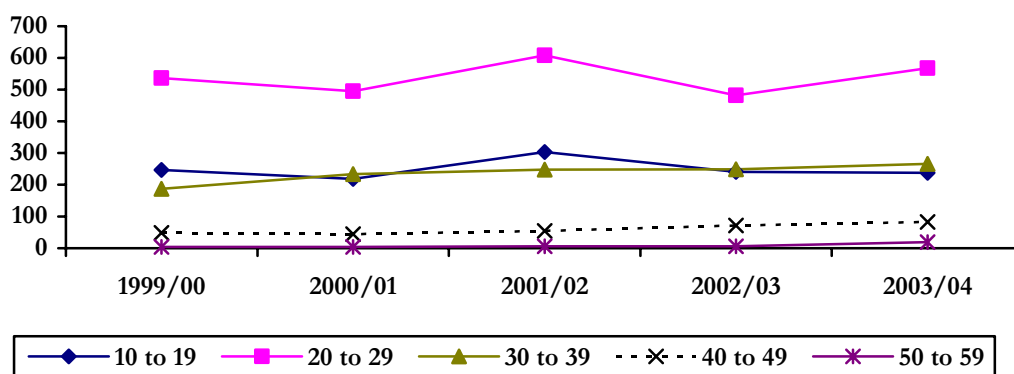
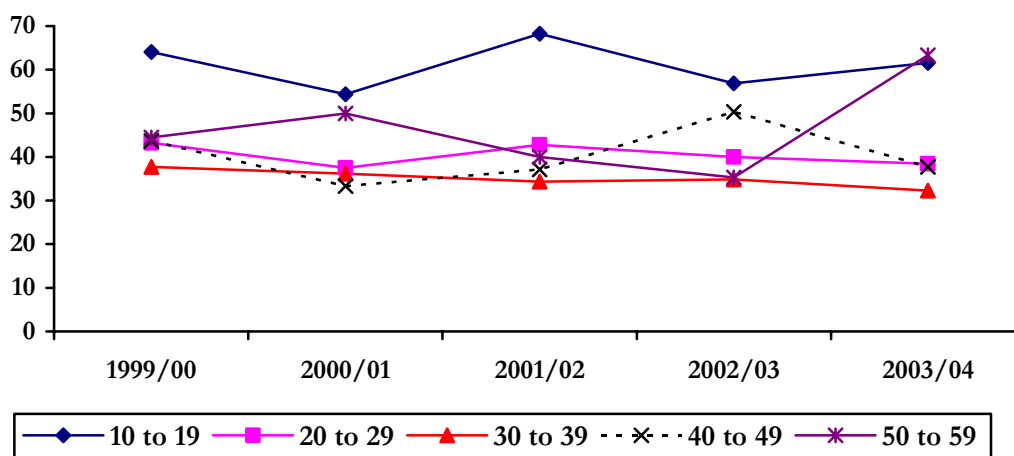


Figure 46 shows the proportion of drug-related psychosis separations that are accounted for by cannabis by age group. A different age trend emerges from this analysis. From 1999 to 2004, cannabis accounted for the majority of drug-related hospital separations among the youngest (10 to 19 year) age group.

Figure 46: Percentage of all drug-related psychosis hospital separations accounted for by cannabis by 10 year age group, 1999-2004



At a national level, males accounted for 74% of cannabis-related psychosis separations in Australia in 2003/04.

Approximately one-quarter (23%) of the hospital stays in 2003/04 for a principal diagnosis related to cannabis-induced psychosis were for one day only. Among those separations that were for more than one day (888 separations), the median number of days stay was 7 (range 2 to 641). The majority (94%) were for no more than four weeks (28 days).

The vast majority of cannabis-related psychosis separations in Australia in 2003/04 were for patients receiving public hospital services (QLD data were not available).

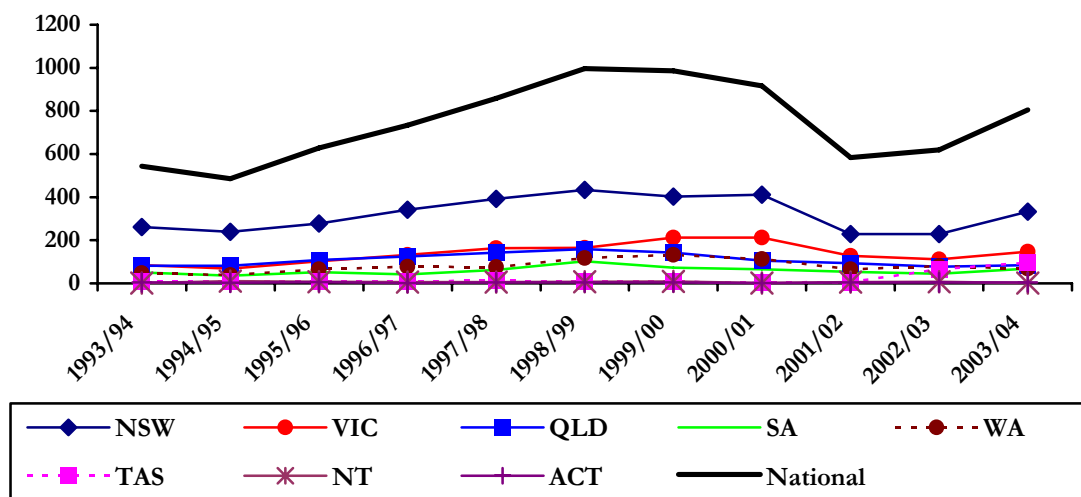
3.6 Drug Withdrawal

Drug withdrawal is another indicator of drug dependence, highlighting the importance of monitoring trends in withdrawal separations. Similar to the drug-related psychosis separations, all drug withdrawal separations within the ICD-9-CM coding system were recorded under the same code, with no provision to distinguish the drug type related to the separation. This changed with the introduction of the ICD-10-AM coding system, with each drug type having a separate withdrawal code. Therefore, in order to remove the confounding factor of the change in coding systems from ICD-9-CM to ICD-10-AM on trends in drug-related separations, withdrawal separations are reported separately. Trends in drug withdrawal separations are presented from 1993 to 2004, while withdrawal separations by drug type are presented from 1999 to 2004.

3.6.1 Principal withdrawal diagnoses – 1993-2004

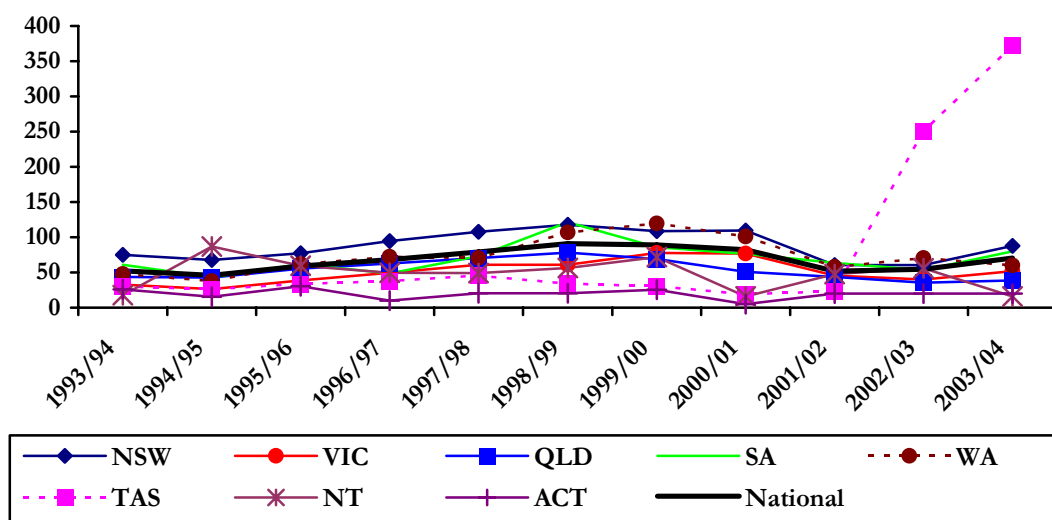
Figure 47 shows the total number of principal drug withdrawal separations between 1993 and 2004 among 15-54 year olds. Drug withdrawal separations increased from 543 in 1993/94 to a peak of 997 in 1998/99. They declined dramatically in 2001/02 (from 916 in 2000/01 to 583), and again increased to 805 in 2003/04. Withdrawal separations were highest in NSW during the 11-year period, and mirrored the national trend (accounting for just under half of the national separations), with increases occurring from 262 in 1993/94 to a peak of 433 in 1998/99, and almost halving in 2001/02 (from 411 in 2000/01 to 228). Withdrawal separations have since increased in NSW to 333 in 2003/04. VIC had the next highest separations (accounting for approximately 20% of national separations) followed by QLD (approximately 15% of national separations) and trends in each jurisdiction mirrored those of NSW and national separations. SA and WA recorded lower numbers of drug withdrawal separations, with peaks occurring in 1998/99 and subsequently declining. Numbers of drug withdrawal separations in the NT, the ACT and TAS were very small with the exception of 2002/03 and 2003/04 in TAS, when 65 and 95 separations were recorded respectively. The increases recorded in TAS in 2002/03 and 2003/04 most likely reflect the increased number of facilities contributing to the hospital data collection at this time, rather than a real increase in drug withdrawal separations.

Figure 47: Number of principal drug withdrawal hospital separations among 15-54 year olds, 1993-2004



NSW recorded the highest rates of drug withdrawal separations over the period, ranging from 75 in 1993/94 to a peak of 117 per million persons in 1998/99 (Figure 48). Rates in NSW have since declined to 87 in 2003/04. WA recorded the next highest rates of drug withdrawal separations followed by SA, then QLD. VIC recorded relatively lower rates of separations, as did the NT, the ACT and TAS. All jurisdictions recorded a decrease in rates of drug withdrawal separations in 2000/01 (with the exception of NSW and VIC, which both recorded decreases in 2001/02).

Figure 48: Rates per million persons of principal drug withdrawal hospital separations among 15-54 year olds, 1993-2004

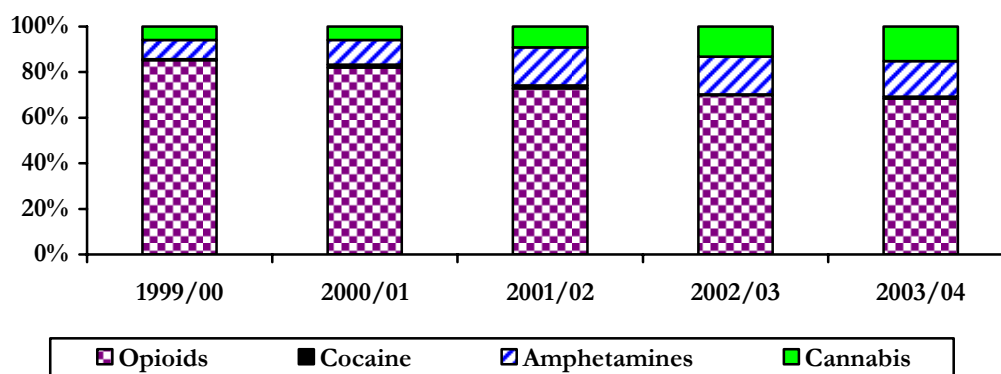


NB: The increase in rates recorded in 2002/03 and 2003/04 in TAS most likely reflect the addition of extra facilities contributing to the NHMD data collection at this time rather than real increases per se.

3.6.2 Principal withdrawal diagnoses by drug type – 1999-2004

Figure 49 shows which drugs comprise the total number of principal drug withdrawal separations during the period 1999 to 2004. Opioids accounted for the largest proportion of withdrawal separations. However, they have declined over time from 85% in 1999/000 to 68% of drug withdrawal separations in 2003/04. Amphetamines accounted for the second largest proportion, ranging from 8% to 17% and increasing over time. Cannabis accounted for between 5% and 15%, increasing over time, and cocaine accounted for less 2% of withdrawal separations during the period.

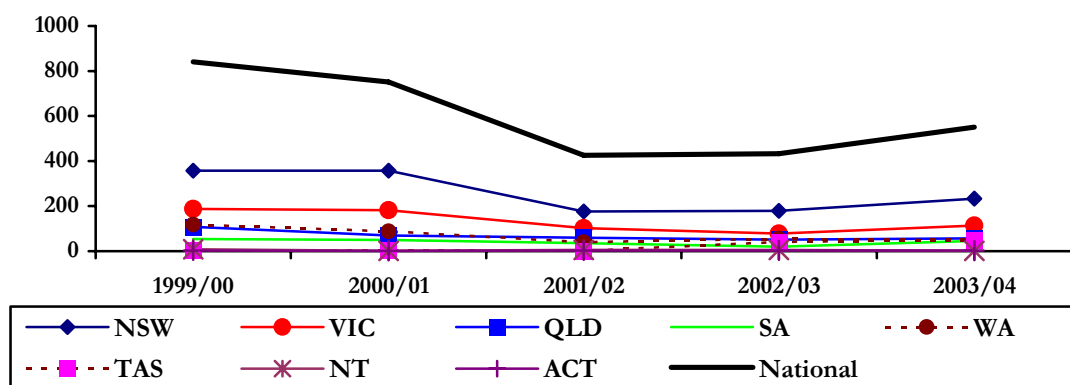
Figure 49: Principal drug withdrawal hospital separations by drug type among 15-54 year olds, 1999-2004



3.6.3 Opioid withdrawal separations

Figure 50 shows the number of hospital separations with a principal diagnosis related to opioid withdrawal. Separations at a national level almost halved from 841 in 1999/00 to 425 in 2001/02, with 551 opioid withdrawal separations recorded in 2003/04. These separations were highest in NSW, followed by VIC. Decreases occurred in both jurisdictions in 2001/02. Opioid withdrawal separations have continued to decrease in QLD, almost halving in the five year period (from 108 in 1999/00 to 57 in 2003/04). SA recorded increases in 2003/04 to the level seen in 1999/00, after a decrease in 2002/03, while separations in WA continued to decrease. Numbers in the remaining jurisdictions were relatively small.

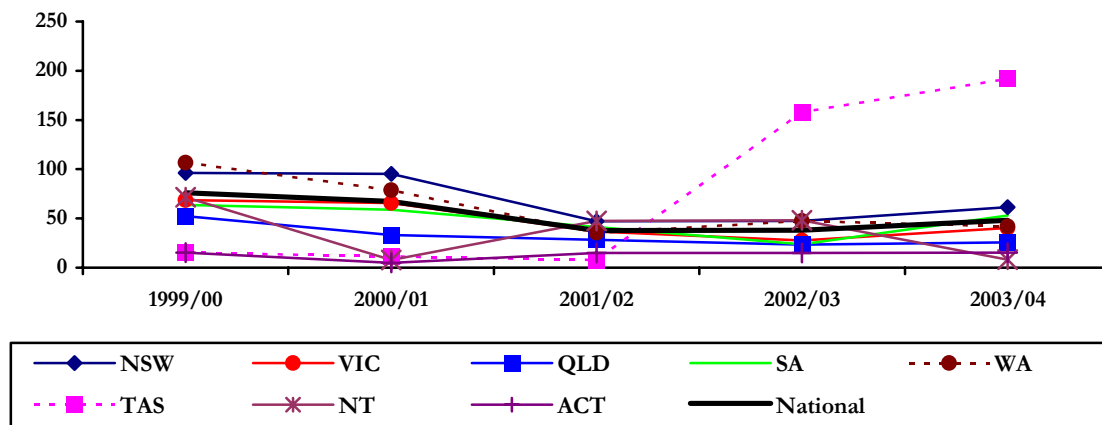
Figure 50: Number of principal opioid withdrawal hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for withdrawal separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

Rates per million persons for opioid withdrawal separations were highest in NSW, followed by WA, VIC then SA (Figure 51). The NT and the ACT recorded relatively low rates throughout the five year period.

Figure 51: Rates per million persons of principal opioid withdrawal hospital separations among 15-54 year olds, 1999-2004

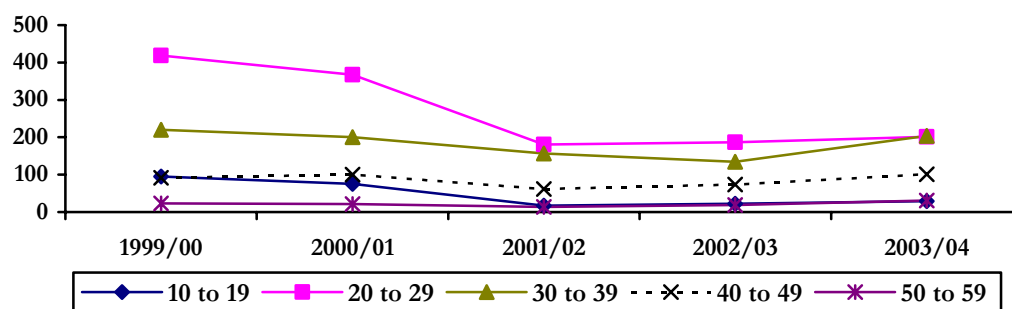


NB: The increase in rates recorded in 2002/03 and 2003/04 in TAS most likely reflect the addition of extra facilities contributing to the NHMD data collection at this time rather than real increases per se.

Due to the relatively small numbers of withdrawal separations for amphetamines, cannabis and cocaine, data on demographic characteristics are only presented for opioid withdrawals.

Figure 52 shows that opioid withdrawal separations were highest among the 20 to 29 year age group. A dramatic decrease was evident among this group in 2001/02 when separations halved from 367 in 2000/01 to 181. They have remained relatively stable at a lower rate since this time. The 30 to 39 year age group had the next highest number of opioid withdrawal separations, which have remained relatively stable during the five-year period. Opioid withdrawal separations among the 40 to 49 year age group dropped slightly between 2001/02 and 2002/03, and increased to 101 in 2003/04. Opioid withdrawal separations decreased dramatically among the 10 to 19 year age group in 2001/02 from 75 in 2000/01 to 17. They have remained lower since this time. Although numbers of separations among the 50 to 59 year age group are relatively small, they have been increasing since 2001/02.

Figure 52: Number of principal opioid withdrawal hospital separations by 10 year age group, 1999-2004



At a national level, males accounted for 59% of opioid withdrawal separations in Australia in 2003/04.

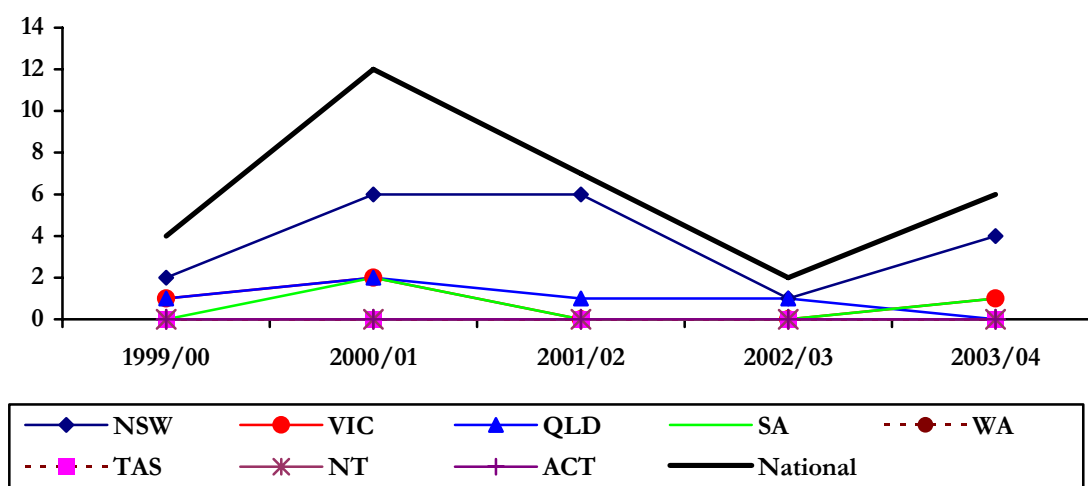
Just over half (54%) of the hospital stays in 2003/04 for a principal diagnosis related to opioid withdrawal were for one day only. Among those separations that were for more than one day (253 separations), the median number of days stay in hospital was 4 (range 2 to 46). The majority (97%) of these separations were for no more than two weeks (14 days).

The majority of opioid withdrawal separations in Australia in 2003/04 were for patients receiving public hospital services (QLD data were not available).

3.6.4 Cocaine withdrawal separations

The number of hospital separations in Australia with a principal diagnosis related to cocaine withdrawal was less than 20 per year (Figure 53). NSW recorded the highest number of separations during this period, with a similar pattern evident to that of the national separations.

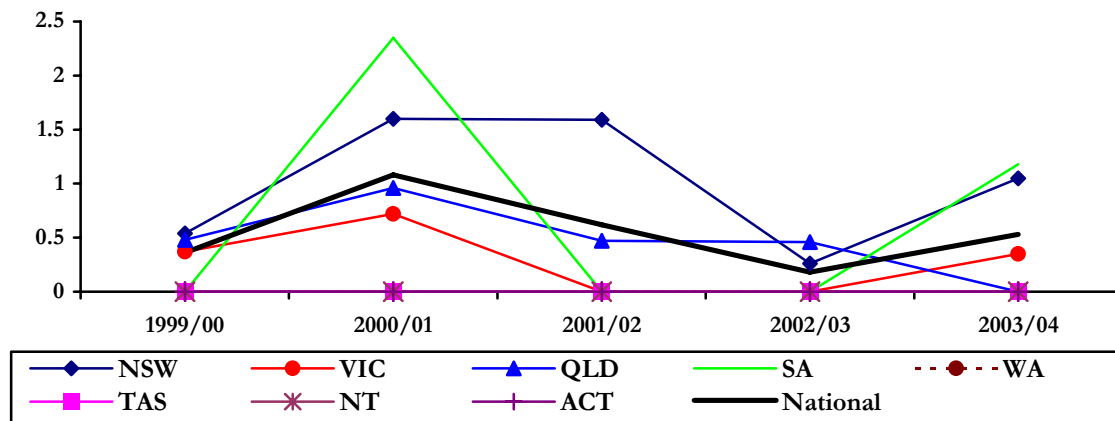
Figure 53: Number of principal cocaine withdrawal hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for withdrawal separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

Rates per million persons of cocaine withdrawal separations were very low in all jurisdictions between 1999 and 2004, with SA recording the highest (at 2.35) in 2000/01. SA, NSW, VIC and QLD all recorded an increase in 2000/01 (Figure 54)

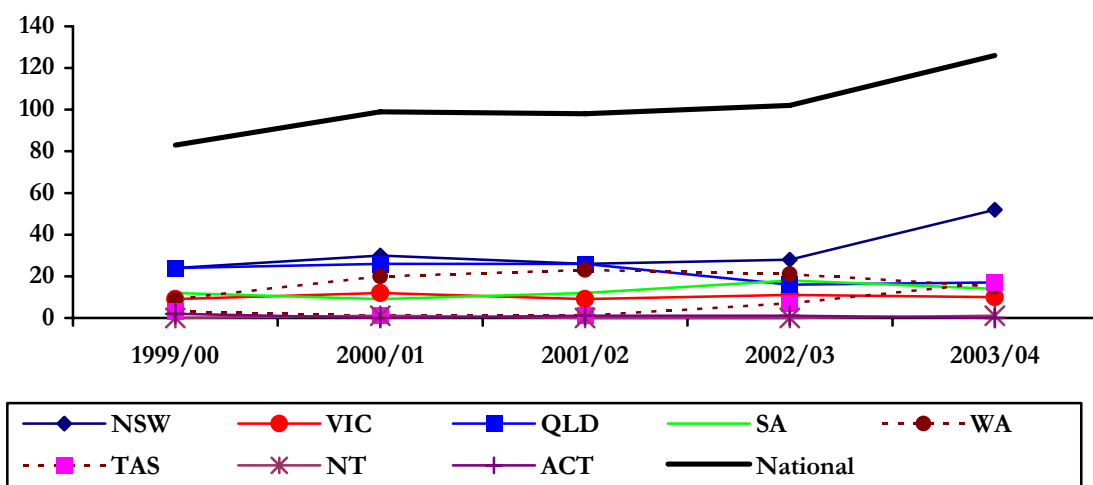
Figure 54: Rates per million persons of principal cocaine withdrawal hospital separations among 15-54 year olds, 1999-2004



Amphetamine withdrawal separations

At a national level, hospital separations with a principal diagnosis relating to amphetamine withdrawal increased slightly from 83 in 1999/00 to 126 in 2003/04 (Figure 55). NSW and QLD had the highest number of separations with NSW recording an increase in 2003/04 (from 28 in 2002/03 to 52). QLD separations decreased slightly from 26 in 2001/02 to 17 in 2003/04. WA had the next highest number of amphetamine withdrawal separations followed by SA and VIC. TAS, the NT and the ACT recorded fewer than 5 separations per year during this period (with the exception of 17 separations recorded in TAS in 2003/04).

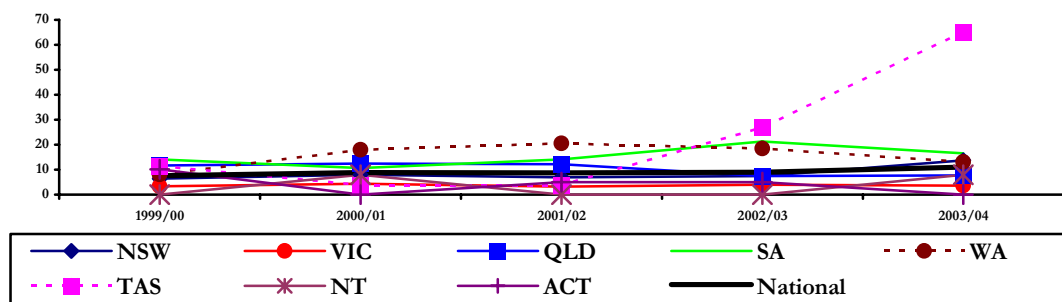
Figure 55: Number of principal amphetamine withdrawal hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for withdrawal separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

Rates per million persons in all jurisdictions were low during the period 1999 to 2004 (Figure 56). WA recorded the highest rates per million persons of amphetamine withdrawal separations, with rates remaining relatively stable in the past few years at a higher level than previously recorded. QLD and SA also recorded relatively high rates of these separations compared with other jurisdictions, with SA recording increases, and QLD rates remaining stable until 2002/03 when they declined. Rates of amphetamine withdrawal separations have remained stable in NSW and VIC, while they fluctuated in the NT, the ACT and TAS.

Figure 56: Rates per million persons of principal amphetamine withdrawal hospital separations among 15-54 year olds, 1999-2003

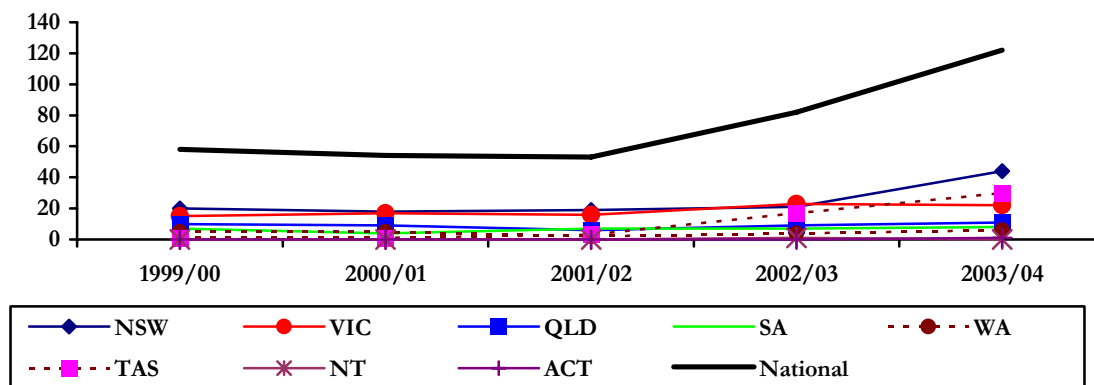


NB: The increase in rates recorded in 2002/03 and 2003/04 in TAS most likely reflect the addition of extra facilities contributing to the NHMD data collection at this time rather than real increases per se.

3.6.6 Cannabis withdrawal separations

At a national level, hospital separations with a principal diagnosis relating to cannabis withdrawal have increased in the past 3 years, from 53 in 2001/02 to 122 in 2003/04, although numbers still remain fairly low (Figure 57). NSW recorded the highest number of cannabis withdrawal separations, which more than doubled from 20 in 1999/00 to 44 in 2003/04. VIC had the next highest number of separations, which increased slightly between 1999/00 and 2002/03, and have remained stable in the past 2 years. Cannabis withdrawal separations have remained stable in QLD, SA and WA. Numbers were lowest in the NT, the ACT and TAS.

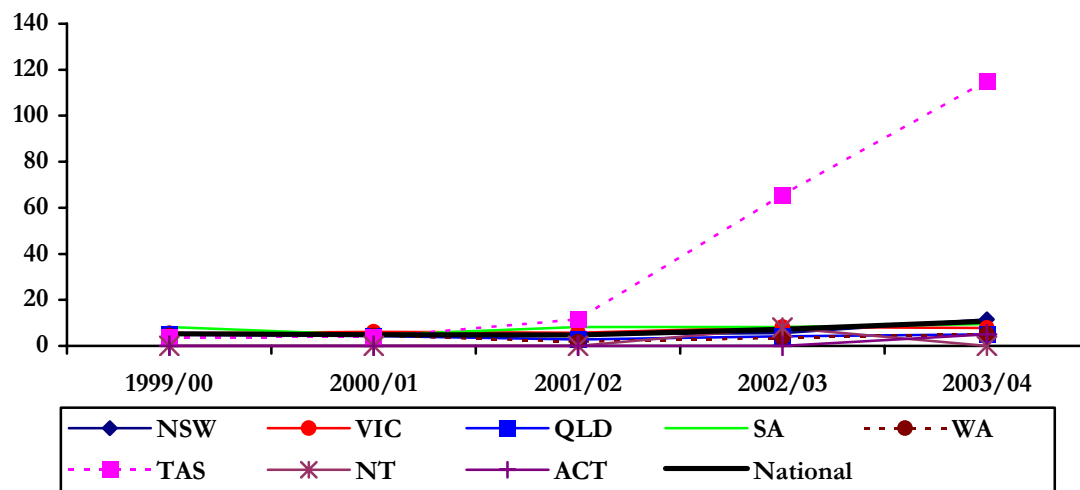
Figure 57: Number of principal cannabis withdrawal hospital separations among 15-54 year olds, 1999-2004



NB: There was no provision to specify drug type for withdrawal separations prior to ICD-10-AM. Accordingly, only data from 1999 onwards are presented by drug type.

Rates of cannabis withdrawal separations have remained low during the period 1999 to 2004 (Figure 58).

Figure 58: Rates per million persons of principal cannabis withdrawal hospital separations among 15-54 year olds, 1999-2004



NB: The increase in rates recorded in 2002/03 and 2003/04 in TAS most likely reflect the addition of extra facilities contributing to the NHMD data collection at this time rather than real increases per se.

4 DISCUSSION

4.1 Separations by drug type

During the period 1993 to 2004, changes in drug-related hospital separations in Australia were evident across all four drug types examined. At a national level, numbers of separations were highest for opioids, followed by amphetamines, cannabis and cocaine. There was a dramatic drop in opioid-related separations in 2001/02, which was consistent with the reduction in heroin supply in Australia at this time (Day et al., 2003, Topp et al., 2002b), and these separations have remained lower over the past few years.

Numbers of amphetamine-related separations have continued to increase over the eleven-year period and this is consistent with reported increases in; the prevalence of methamphetamine use among various sub-populations of users in Australia (Australian Institute of Health and Welfare, 2005, Stafford et al., 2006a, Stafford et al., 2006b); the number of border detections (particularly of crystalline amphetamine) by the Australian Customs Service (ACS) (Stafford et al., 2006a); and the number of police detections of clandestine laboratories manufacturing methamphetamines, particularly in QLD (Kinner, Fischer and Lloyd, 2006) and NSW (Black et al., 2006). At their peak, however, amphetamine-related separations only represented one-quarter of the highest number of opioid-related separations recorded during the eleven-year period.

Cannabis-related separations increased at a national level between 1993 and 2002, and remained relatively stable between 2003 and 2004. Interestingly, although cannabis is one of the most commonly used illicit drugs in Australia (Hall, Degenhardt and Lynskey, 2001, Australian Institute of Health and Welfare, 2005), use in the general population has declined over the past seven years (Australian Institute of Health and Welfare, 1999, Australian Institute of Health and Welfare, 2002, Australian Institute of Health and Welfare, 2005). The prevalence of cannabis use among sub-populations such as regular injecting drug users, however, has remained relatively stable across time (Stafford et al., 2006a). The highest number of cannabis-related separations represented less than one-fifth of the highest number of opioid-related separations recorded between 1993 and 2004.

Cocaine-related separations were lower than 250 per year at a national level, which is consistent with research suggesting that the cocaine market in Australia, particularly outside the Sydney metropolitan area, is relatively small, and that only a small number of cocaine users report presenting for treatment for their cocaine use (Shearer et al., 2005, Stafford et al., 2006a). There were peaks in cocaine-related separations in both 1998/99 and 2001/02 (primarily in NSW), with the later increase coinciding with the reduction in heroin supply, and increased reports among injecting drug users of cocaine-related harms at this time (Topp et al., 2002b, Roxburgh et al., 2004, Topp et al., 2003). The highest number of cocaine-related separations, however, represented less than 5% of the highest number of opioid-related separations over the eleven-year period.

4.2 Drug dependence separations

Trends in drug-related dependence separations were also analysed and numbers were highest for opioid dependence followed by cannabis, amphetamine and cocaine dependence. Separations for opioid dependence accounted for approximately two-thirds of all opioid-related separations. Opioid dependence separations declined in 2001, at the same time as the heroin shortage. Research examining the impact of the heroin shortage on patterns of drug use (Degenhardt and Day, 2004a) and on presentations for treatment of heroin use in NSW (Degenhardt, Conroy, Day et al., 2005a) suggests several reasons for the decline in presentations for opioid dependence. First, there may be lower levels of physical dependence among users as a consequence of lower heroin purity at street level being reported during the shortage (Degenhardt et al., 2005a). Second, the number of regular heroin users in NSW most likely declined following the shortage (Degenhardt and Day, 2004a), resulting in fewer presentations for dependence.

Separations for cannabis dependence have continued to increase since 1998/99, and accounted for an increasingly large proportion (67% in 2003/04) of all cannabis-related separations. However, cannabis dependence separations accounted for less than one-fifth of the highest number of opioid dependence separations over the eleven-year period, and this is consistent with other research. The Australian National Survey for Mental Health and Well-being found that only 1.7% of Australian adults met criteria (in accordance with the ICD-10-AM) for cannabis dependence (Andrews, Hall, Teesson et al., 1999). The literature also suggests that the risk of developing dependence is low (about 1 in 10 people) among those who have ever used cannabis (Hall et al., 2001) while those who use cannabis on a daily basis are at greater risk (about 1 in 3 daily cannabis users) of developing dependence (Glantz, M. and Pickens, R., 1992). These findings, together with relatively small numbers of hospital separations for cannabis dependence, and a declining trend in cannabis use among the general population in Australia (Australian Institute of Health and Welfare, 1999, Australian Institute of Health and Welfare, 2002, Australian Institute of Health and Welfare, 2005), indicate that only a small proportion of cannabis users in Australia go on to develop dependence, and to experience problems associated with their cannabis use.

Separations for amphetamine dependence have steadily increased during the eleven-year period, and there is a growing literature on the increases in problematic methamphetamine use in Australia. One study conducted in Sydney (McKetin, McLaren and Kelly, 2005) found that methamphetamine dependence was prevalent among regular methamphetamine users (56%). In addition, users who reported crystalline methamphetamine use (one of the more potent forms of methamphetamine) were twice as likely to be dependent than those who did not report crystalline methamphetamine use. Likewise, Baker et al (2004) found a significant increase over time in the prevalence of daily methamphetamine use (62% in 2002 compared to 35% in 1998) among regular methamphetamine users in Newcastle and a trend for a higher level of methamphetamine dependence (95% in 2002). In addition, estimates of methamphetamine dependence across Australia suggest that it is increasingly becoming a problem (McKetin, McLaren, Kelly et al., 2005). Separations for amphetamine dependence, however, only accounted for a small proportion (approximately one-third) of all amphetamine-related separations, with a larger proportion attributable to poisoning. In addition, figures for amphetamine dependence represent a small proportion (11%) of the highest number of opioid dependence separations. Despite increasing reports of problematic methamphetamine use and dependence in Australia,

numbers of amphetamine dependence separations remain lower than for opioid dependence. This may indicate that fewer methamphetamine users than opioid users present for treatment for problems associated with their methamphetamine use, and that they present to health services only when they are in crisis. Findings of a study conducted in Sydney on the utilisation of health services by methamphetamine users (Kelly, McKetin and McLaren, 2005) support these assertions. The authors found that methamphetamine users were likely to be heavier users of emergency departments than the general population, and that only 10% of the methamphetamine users interviewed reported receiving treatment for their methamphetamine use in the past 12 months.

Separations for cocaine dependence have remained below 150 per year during the eleven-year period. Cocaine dependence separations accounted for the majority (85% in 1996/97) of all cocaine-related separations in the earlier part of the period. This proportion has since declined to under 50% in 2003/04, with an increase in separations for poisoning and harmful use recorded since 1998/99. This trend coincides with reports of increased frequency in cocaine use, particularly during 2001/02 (Topp et al., 2003, Roxburgh et al., 2004).

4.3 Drug-related psychosis separations

Separations for drug-related psychotic episodes have continued to increase over the eleven-year period. Amphetamines accounted for the largest proportion of drug-related psychosis separations between 1999 and 2004, followed by cannabis. Cocaine-related psychosis accounted for less than 2% of drug-related psychosis separations during this period. It is important to note that these hospital separations have been considered by a clinician to be related to drug use. They are psychotic *episodes* that are clinically (and importantly) distinct from psychotic illnesses such as schizophrenia.

There is evidence to show that drugs such as methamphetamine have the potential to induce psychotic symptoms (Connell, 1958); there is also some evidence suggesting that cannabis may trigger psychotic symptoms. The potential for drugs such as cannabis and methamphetamine to trigger a psychotic *episode* following very high doses of the drug has been given some support (Hall and Degenhardt, 2004, Hall, Degenhardt and Teesson, 2004, Bell, 1973, Connell, 1958). This is distinct from triggering a psychotic illness.

The occurrence of methamphetamine psychosis often follows a period of recurrent binge use of the drug, which may include escalating doses across binges (Segal and Kuczenski, 1997). Psychotic symptoms have been linked to blood levels of the drug (Batki and Harris, 2004); reduction of blood levels of methamphetamine (following reduced use) will typically lead to a reduction in psychotic symptoms (Dawe and McKetin, 2004). Among persons vulnerable to psychotic illness, or among those who have already developed psychotic disorders, exacerbation of symptoms may not be ameliorated through simply reducing use.

Trends in amphetamine-related psychosis separations are consistent with other data that not only show an increase in the use of potent forms of methamphetamine (Stafford et al., 2006b, Stafford et al., 2006a) and methamphetamine-related arrests (McKetin and McLaren, 2004), but also an increasing prevalence of problems associated with regular methamphetamine use. In a study of regular methamphetamine users in Sydney (McKetin et al., 2005), the authors found that approximately one-quarter of those interviewed reported experiencing clinically significant psychotic symptoms in the preceding 12 months. In addition, users who reported being methamphetamine

dependent were three times more likely to report psychotic symptoms than those who were not methamphetamine dependent. Amphetamine-related psychosis presentations are likely to present unique challenges to hospital staff, due to hostility and aggressive behaviours that are often associated with psychotic episodes. McKetin et al (2005) investigated the impact that methamphetamine psychosis presentations had on frontline health workers, and many of these workers reported these presentations as being high risk, and resource-intensive to manage.

Cannabis-related psychosis separations have remained relatively stable over the past five years, despite increasing concern among the community about the association between cannabis and psychosis. This is consistent with what is known about the cannabis market in Australia – it appears to have remained relatively stable over recent years.

4.4 Drug-related withdrawal separations

Drug-related withdrawal separations in Australia steadily increased between 1994/5 and 1998/99, and have remained stable since this time. In 2000/01 they declined dramatically, and slowly started increasing again in 2003/04. Opioid withdrawal separations accounted for the majority (up to 85%) of drug-related withdrawal separations followed by methamphetamines (up to 17%), cannabis (15%) and cocaine (less than 2%). Opioid withdrawals have declined over the past five years, and there may be several reasons for this trend. Firstly, prevalence and frequency of heroin use among regular injecting drug users dropped dramatically across Australia at the time of the heroin shortage (Stafford et al., 2006a, Topp et al., 2003). Degenhardt et al (2004b) note that in NSW in particular, the number of regular heroin users most likely declined at this time, and that due to the lower purity of heroin reported among users, many may have been able to manage withdrawal without presenting to hospital (Degenhardt et al., 2005a).

Although amphetamine withdrawal separations accounted for a small minority of drug-related withdrawal separations, they have steadily increased over the past five years, a trend that is consistent with other data. Increased prevalence of dependence reported among regular methamphetamine users (McKetin et al., 2005, Baker et al., 2004) as well as increased purity of methamphetamine detections at the border (Stafford et al., 2006a) may explain the increases in hospital presentations for amphetamine withdrawal.

Cannabis withdrawal separations accounted for a small minority of drug-related withdrawal separations but again, an increase in the last five years was evident.

4.5 Demographic and hospital stay characteristics

Age trends in drug-related separations were very clear, with larger numbers of 20 to 29 year olds presenting to hospital for drug-related problems. This was the case across all four drug types with the exception of cocaine-related separations, in which the number of 30 to 39 year olds presenting to hospital was comparable to those for the 20 to 29 year olds. This finding is not surprising given that cocaine is generally more expensive to purchase than other drugs (Stafford et al., 2006a). Previous research also shows a higher prevalence of cocaine use among older age groups (Shearer et al., 2005), and that age of initiation tends to be higher for cocaine than for other drug use (Kaufman, Levin, Kukes et al., 2000).

An interesting pattern emerged from the age analysis of opioid-related separations. While there were dramatic decreases evident among the younger age groups around the time of the heroin shortage, there was little evidence of a decrease among the older (40 to 59 year) age groups. These findings are consistent with other research that suggests younger users, who may have been relatively new to the illicit drug market, were more inclined to stop using heroin around the time of the shortage, while the older more entrenched users remained in the market (Degenhardt et al., 2005b). Other data sources (such as drug-related deaths) also show that opioid overdose is more prevalent among older age groups (Degenhardt et al., 2006a, Darke, Kaye and Duflou, in press). In a recent analysis of coronial cases of opioid overdose in Australia (Darke et al., in press), the authors found that systemic disease was particularly prominent amongst older cases, and suggested that pathology may play an important role in understanding the prevalence of opioid-related deaths among the older users. It may also be then, that the older users are experiencing a broader spectrum of general health problems that, together with their drug use, results in greater numbers presenting for opioid-related problems than among the younger age groups.

Separations for opioid dependence steadily increased among the older age groups over the eleven year period, while separations among the younger age groups declined around the time of the heroin shortage. Opioid withdrawal separations also increased among the older age group (50 to 59 year olds), and decreased dramatically in 2001/02 among the younger (10 to 19 and 20 to 29 year) age groups. In an analysis of the differential impact of the heroin shortage on different age groups (Degenhardt et al., 2005b), the authors speculated that it might have been that older, more entrenched users were more likely to be dependent on heroin than younger users, who may have been able to reduce or stop their heroin use without assistance during this time. This explanation may account for the dramatic reductions in both opioid dependence and opioid withdrawal separations among the younger age groups in 2001/02.

Sharp increases in cocaine-related separations were apparent among the 20 to 29 and the 30 to 39 year age group in 1998/99, 2001/02 and 2003/04.

There were steady increases in amphetamine-related separations across all age groups, however, the 20 to 29 year age group recorded the highest number of separations followed by the 10 to 19 year age group. The younger age of those presenting to hospital for amphetamine-related problems is consistent with other drug-trend data that show greater prevalence of methamphetamine use among the younger age groups (Stafford et al., 2006b, Australian Institute of Health and Welfare, 2005).

Separations for amphetamine dependence showed a slightly different pattern, with the 30 to 39 year age group recording the second highest number of separations after the 20 to 29 year olds. Recent population data collected in Australia suggested that while there were no age differences in frequency of methamphetamine use, older users were more likely to report use of crystalline methamphetamine and injecting methamphetamines than younger users (Australian Institute of Health and Welfare, 2005). In other research conducted in Sydney (McKetin et al., 2005), the authors found that crystalline methamphetamine use was more likely among those participants who were methamphetamine dependent. Amphetamine-related psychosis separations were also more prevalent among the older users, with an increasing majority of drug-related psychosis separations accounted for by amphetamine-related psychosis among the 30 to 39 year age group.

Steady increases were evident in cannabis-related separations among the 20 to 29 and the 30 to 39 year age groups over the eleven year period, while they have declined since 1998/99 among the 10 to 19 year age group. These trends are consistent with recent population data that showed the prevalence of past year cannabis use was highest among the 20 to 39 year age groups (Australian Institute of Health and Welfare, 2005). Separations for cannabis dependence also increased across the 20 to 39 year age groups, and have continued to decline among the 10 to 19 year age group since 1996/97. Again, these findings are consistent with Australian population data that show cannabis dependence is most prevalent among the 18 to 34 year age groups (Swift, Hall and Teesson, 2001).

Trends among cannabis-related psychosis separations showed a slightly different pattern, with an increasing proportion of drug-related psychosis separations among the 10-19 year age group being accounted for by cannabis. Recent Australian population data showed that younger cannabis users reported larger amounts of cannabis per occasion of use (Australian Institute of Health and Welfare, 2005), and these 'binge' patterns of use may account for greater numbers of 10 to 19 year olds presenting to hospital with psychotic symptoms thought to be related to cannabis. It is important to note, however, that increasing community attention to the issues of cannabis use and its association with psychosis is likely to increase the probability that cannabis use is assessed or identified as a problem.

At a national level, males accounted for just over half of all amphetamine-related (59%) and opioid-related (58%) separations in 2003/04. Males accounted for a larger proportion of cannabis-related (72%) and cocaine-related (80%) separations. Males accounted for just over half (59%) of all opioid withdrawal separations, while they accounted for larger proportions of amphetamine-related (65%) and cannabis-related (73%) psychosis separations. These findings are also consistent with recent population data that show higher percentages of males than females report lifetime and recent (past 12 month) use of cannabis, heroin, methamphetamine and cocaine (Australian Institute of Health and Welfare, 2005).

Opioid-related separations in 2003/04 were primarily for patients receiving public hospital services. While the majority of hospital stays for opioid-related problems were for two weeks or less in duration (with a median of 5 days), given that opioid-related separations were the highest across all four drug types, they are likely to place a substantial financial burden on the public health care system. Nevertheless, these figures remain dramatically lower than figures recorded prior to the heroin shortage in Australia in 2001.

In contrast, the funding source for the majority of cocaine-related separations (particularly in NSW and VIC where numbers were highest) was private health insurance. The majority of cocaine-related separations were for one day only, and were relatively low in number.

The majority of amphetamine-related separations in Australia in 2003/04 were for patients receiving public hospital services, and approximately two-thirds were for one day only. Median days stay among those who were in hospital for more than one day was 4. Separations for amphetamine-related psychosis were slightly longer (with a median of 5 days), and these separations have also steadily increased.

The majority of cannabis-related separations in Australia in 2003/04 were for patients receiving public hospital services. The median length of stay for cannabis-related problems was a little higher (at 6 days) than the other drug types, with the majority being for three weeks or less in duration. Hospital stays for cannabis-related psychosis were substantially higher at a median of 7 days, with three-quarters of these separations being for more than one day. In addition, a substantial minority of these separations (12%) were for longer than three weeks. While these separations have remained relatively stable over the past five years, cannabis-related psychosis presentations are likely to challenge primary health carers, particularly given that symptoms may be mistaken for other mental disorders such as schizophrenia. In addition, the relatively greater length of these stays indicates a greater financial burden on the public health system.

Future research is scheduled to be conducted at the National Drug and Alcohol Research Centre (NDARC), examining the economic costs of illicit drug and alcohol hospital stays in Australia. This project will aim to examine in detail cost trends by drug type, across time, and by broad characteristics such as age and gender, and hospital type. The results of this project will increase understanding of the cost implications for the hospital system posed by illicit drugs and alcohol.

4.6 Underlying reasons for drug related hospital separations

The largest proportion of opioid mentions was accompanied by principal diagnoses of broad spectrum physical health problems (up to 54%). This is consistent with the relatively poor general health of opioid injecting drug users. Substantial proportions of opioid mentions were accompanied by principal diagnoses of mental health problems (up to 13% - in particular depressive, borderline type personality and anxiety disorders), poisoning by other drugs (up to 13% - in particular benzodiazepines, paracetamol and anti-depressants), and pregnancy complications (up to 11%). A smaller proportion of opioid mentions were accompanied by other drug and alcohol problems (7%).

The largest proportion of cocaine mentions was accompanied by principal diagnoses of other drug and alcohol problems (up to 35% - particularly opioid and alcohol dependence). There was an increasing proportion of cocaine separations accompanied by mental disorders (up to 21% - particularly schizophrenic, depressive and anxiety disorders), while approximately 10% were accompanied by poisoning by other drugs (in particular heroin and benzodiazepines).

The largest proportion of amphetamine mentions was accompanied by principal diagnoses of mental disorders (up to 38%), in particular depressive and schizophrenic disorders, and increases over the eleven-year period were largely due to increasing diagnoses of schizophrenic disorders. Almost one-quarter of amphetamine mentions were accompanied by other drug and alcohol problems, particularly drug-related psychosis, alcohol and opioid dependence, and to a lesser extent, cannabis dependence. Poisoning diagnoses in conjunction with amphetamine mentions have decreased over time, largely due to decreases in heroin poisoning.

Just over half (52%) of the cannabis mentions in 2003/04 were accompanied by principal diagnoses of mental disorders (particularly schizophrenic and depressive disorders), which have continued to increase over the eleven-year period. Substantial minorities (20%) were accompanied by other drug and alcohol problems (particularly alcohol and opioid dependence and to a lesser extent, drug-related psychosis).

These results show clear specificity of accompanying problems across drug types, and they raise several issues. First, the increase in schizophrenic disorders that accompanied both amphetamine and cannabis-related hospital separations raises the difficulties of distinguishing schizophrenia among substance users from drug-related psychoses. It also raises issues about the efficacy with which schizophrenia is being assessed, particularly given that many of these hospital stays are relatively short in duration. Schizophrenia is a complex mental disorder that takes skill and time to assess. The increases recorded, then, may be diagnostic artefacts rather than reflective of real increases in the incidence of schizophrenia. Clearly, this is an issue that warrants further research attention, particularly with regard to thorough and effective assessment of these presentations. Second, assuming that there have been real increases in some mental disorders (e.g. depression) accompanying drug-related separations, these increases indicate a greater need for integrated service provision, addressing both mental health and drug-related problems. A note of caution, however, is warranted in the interpretation of trends in the diagnoses of mental disorders, as these are episodes rather than individual presentations being analysed. It may be that the same people are repeatedly presenting to hospital with these problems, which would account for the increases noted. Finally, these findings demonstrate the complex nature of drug-related hospital presentations, and any primary health care response needs to take these complexities into account.

4.7 Jurisdictional trends

Jurisdictional trends in drug-related separations show that NSW recorded the highest number of separations across all drug types. Opioid-related separations in NSW accounted for approximately half of the national total, cocaine-related separations in NSW accounted for between 58% and 85%, amphetamine-related separations accounted for between one-third and approximately half of the national total, and cannabis-related separations in NSW accounted for approximately half of the national total. These findings are consistent with other drug trends that show that NSW has a larger illicit drug market, where each of the four drug types is readily available (Stafford et al., 2006a). Amphetamine-related separations in QLD were also comparatively high (accounting for between one-quarter and one-third of the national total), which is consistent with jurisdictional patterns of amphetamine use reported among regular injecting drug users (Stafford et al., 2006a), and increases in police detections of clandestine methamphetamine laboratories in QLD, which recorded the highest number of detections in Australia between 1997/98 and 2001/02 (McKetin et al., 2005).

4.8 Analysis of hospital data with other indicators

The National Hospital Morbidity Database (NHMD) mapped relatively well with other data sources in NSW across all drug types. Trends in opioid, cocaine, amphetamine and cannabis-related hospital separations mirrored those of outpatient treatment episodes, recorded incidents for possession and use, and, where relevant, presentations to emergency departments and ambulance callouts. NHMD data then, appears to be a useful data source through which to monitor harms related to illicit-drugs, particularly psychostimulants, and is a more sensitive indicator than illicit drug-related deaths.

5 CONCLUSIONS

Numbers of hospital separations during the period 1993-2004 were highest for opioids compared to the other drug types examined, however, opioid-related separations declined dramatically in 2001/02. While a dramatic decline was evident among the younger age groups at this time, the older age groups recorded steady increases in separations for opioid dependence and opioid withdrawal during the period. This suggests that the heroin shortage had a differential impact on illicit drug-related harms among different age groups and confirms the findings of previous research looking at this issue (Degenhardt et al., 2005b). A substantial proportion (up to 54%) of opioid mentions was accompanied by a broad spectrum of general health problems, which is indicative of the relatively poor physical health of this group of drug users, and the provision of primary health care to this group should remain a priority. While there was a dramatic decline in opioid-related separations, they remain the highest across the drug types, and given that they are primarily for patients receiving public hospital services, they are likely to place a continuing burden on the public health system.

Amphetamine-related separations were the next highest in number, and have continued to increase over the eleven-year period. Separations for amphetamine dependence were highest among the 20 to 29 and the 30 to 39 year age groups, and continued to increase until 2001/02. They have remained relatively stable since this time. Separations for amphetamine withdrawal only accounted for a small minority of amphetamine-related separations. In contrast, amphetamine-related psychosis separations accounted for just under half of all principal amphetamine-related separations in 2003/04, and steady increases were evident over the past five years. An increasing proportion of amphetamine-related psychosis separations were accounted for by the 30 to 39 year age group. These findings suggest that methamphetamine users are more likely to present to hospital when they are in crisis (i.e. when they are experiencing psychotic symptoms) than for problems (such as dependence and withdrawal) associated with their methamphetamine use. More research is required to develop strategies to encourage methamphetamine users to engage in treatment. Amphetamine-related psychosis presents a range of challenges to frontline health workers with many workers assessing these presentations as being high risk and resource-intensive (McKetin et al., 2005). Education strategies on the risks associated with methamphetamine use (particularly psychosis), and how to manage these risks, need to be developed. These strategies should target the higher risk (i.e. older) methamphetamine users. Continued training of frontline health workers (e.g. NSP staff) on management of amphetamine-related psychosis is also required in an attempt to reduce the number of cases that present to hospital. Training of hospital staff also remains a priority, in order to minimise the impact of these presentations on hospital resources. The majority of amphetamine-related separations were for patients receiving public hospital services, and despite being relatively lower in number, the increasing trend, in conjunction with the complexity of these presentations may place an increasing burden on the public health care system.

Cannabis-related separations were third highest in number, and have remained relatively stable over the past two years following an increasing trend between 1993 and 2002. While separations for cannabis dependence have continued to increase since 1998, numbers are still comparatively smaller than those for opioid dependence. Increases among the older age groups (20 to 39 year olds) were evident while cannabis dependence separations declined among the 10 to 19 year age group. These trends indicate that a

small proportion of cannabis (predominantly older) users go on to develop dependence and experience problems associated with their cannabis use. Cannabis-related psychosis separations have remained relatively stable over the past five years. These presentations were more prevalent among the younger age group (10 to 19 year olds). Hospital stays for cannabis-related psychosis were slightly longer in duration than other drug-related separations. Up to 52% of cannabis mentions were accompanied by mental disorders, with increases in the diagnosis of the schizophrenic disorders in particular. These findings have several implications. First, preventative education strategies, targeting younger age groups, should address the longer term problems (such as dependence) that may develop, particularly with ongoing daily use. More information about cannabis-related psychosis should also target younger users. Strategies targeting older cannabis users should also be developed, providing information about available treatment programs and how to address problematic use and dependence. Circulation of information about cannabis-related psychosis, more broadly within the community, is also warranted as there are many myths in the media about this issue, despite the fact that methamphetamine-related psychosis separations are higher in number. Finally, the increase in diagnosis of schizophrenia accompanying cannabis-related separations also raises issues. First, the increases may be an artefact of the data being analysed. The data represents episodes rather than individual presentations, and it may be that the same individuals are presenting on numerous occasions with these problems. More detailed analysis, looking at individual presentations rather than episodes, is required to ascertain whether there have actually been increases in the incidence of these disorders. Second, schizophrenia is a complex mental disorder that takes skill and time to assess, and this is a diagnostic issue that also warrants further research attention, particularly with regard to thorough and effective assessment of these presentations. Training of health workers in the diagnosis and assessment of mental health problems is also crucial, given the high prevalence of co-morbid presentations.

Numbers of cocaine-related separations were much lower comparatively, with increases coinciding with the heroin shortage. These separations were predominantly recorded in NSW, which is consistent with recent research findings that the cocaine market in Australia, particularly outside of the Sydney metropolitan, is relatively small (Shearer et al., 2005). The majority of separations were funded through private health insurance and tended to be higher among the older age groups (20 to 39 year olds). Up to one-third of cocaine mentions were accompanied by other drug and alcohol problems. These findings suggest that small numbers of predominantly older users present for treatment for problems associated with their cocaine use. These users are also likely to have problems with other drug and alcohol use.

Mental health problems were recorded in varying proportions of drug mentions, indicative of the need for integrated service provision within the hospital system, including thorough assessment and treatment of both mental health and drug-related problems.

The National Hospital Morbidity Database is a useful data source for monitoring illicit drug-related harms in Australia, and it maps well to other data sources, such as seizure and arrest data, and reports from injecting drug users. Continued monitoring of this data would provide invaluable information about trends in drug-related harms in Australia, as well as the context within which emerging trends can be understood. Finally, analysis of this data, in conjunction with other available data sources would provide a reliable framework within which to inform evidence-based drug policy in Australia.

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APPENDIX A – TABULATED RATES PER MILLION PERSONS FOR DRUG RELATED HOSPITAL SEPARATIONS

Opioids

Table A1: Rates of any mention of opioid-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	1305.79	523.81	619.11	788.27	737.37	243.63	195.67	387.97	832.23
1994/95	1553.45	676.82	959.69	908.99	1052.31	341.23	208.57	558.41	1061.82
1995/96	2136.19	887.84	1263.62	1079.27	1490.58	577.42	357.26	756.20	1433.98
1996/97	2361.76	1054.56	1530.19	1225.67	1793.66	650.60	462.96	894.74	1648.03
1997/98	2619.15	1496.06	1830.80	1349.59	2063.39	710.48	481.39	829.82	1937.15
1998/99	2684.33	1950.45	1961.09	1670.17	2250.83	1016.31	531.08	1066.32	2152.25
1999/00	2811.62	1997.11	1712.92	1523.54	1871.28	975.07	533.01	1379.88	2116.21
2000/01	2682.18	1790.53	1517.82	1646.83	1834.85	950.33	427.87	1213.22	1986.88
2001/02	1880.11	1331.50	1199.20	1354.52	1238.27	1095.66	579.18	1079.63	1464.29
2002/03	1978.04	1313.14	1119.85	1388.06	1191.79	1499.37	431.94	1074.49	1481.70
2003/04	2145.23	1305.36	1192.97	1258.77	1109.04	1073.59	376.28	1038.34	1519.21

Table A2: Rates of principal opioid-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	461.14	186.34	286.03	160.04	205.87	86.21	71.15	51.73	289.98
1994/95	598.55	168.25	421.95	186.34	345.91	108.74	60.83	87.09	373.49
1995/96	819.52	219.51	467.29	221.82	602.72	161.23	127.59	116.73	499.88
1996/97	846.13	253.33	467.50	199.72	663.59	176.75	124.01	127.09	522.61
1997/98	959.18	537.26	625.31	228.48	672.38	143.61	138.70	137.45	663.16
1998/99	1169.02	845.87	708.13	365.90	698.47	186.51	96.55	152.33	839.84
1999/00	1207.95	767.92	681.97	372.34	613.50	156.78	63.64	176.91	820.52
2000/01	1122.98	547.82	612.96	317.83	575.23	184.68	95.08	105.28	716.87
2001/02	649.54	270.68	376.66	194.68	280.01	185.84	55.54	110.47	405.69
2002/03	705.31	282.07	334.66	205.38	270.62	393.15	111.98	90.38	423.78
2003/04	702.42	279.19	328.61	205.27	267.25	391.09	112.08	90.73	415.01

Table A3: Rates of principal opioid dependence hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	359.17	122.06	174.29	72.86	118.77	33.73	35.58	0.00	201.30
1994/95	473.06	63.57	267.04	62.11	208.91	67.50	17.38	10.25	250.77
1995/96	676.37	100.70	274.46	85.86	434.87	123.73	51.04	30.45	356.24
1996/97	688.32	125.54	297.09	59.44	400.78	97.78	66.14	15.25	364.82
1997/98	959.18	537.26	625.31	228.48	672.38	143.61	138.70	137.45	663.16
1998/99	749.76	524.79	443.32	159.35	374.83	87.55	0.00	25.39	516.32
1999/00	924.17	436.78	415.87	155.54	304.94	53.53	7.96	30.33	540.34
2000/01	891.93	283.30	391.90	101.23	296.12	76.95	15.85	0.00	482.54
2001/02	477.46	113.08	236.83	35.40	147.56	92.92	7.93	5.02	252.65
2002/03	528.25	103.64	198.49	43.67	134.87	285.23	16.00	15.06	263.79
2003/04	552.98	107.87	209.40	43.65	132.32	111.19	0.00	15.12	270.34

Opioids (continued)

Table A4: National rates of principal opioid-related hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	73.53	471.15	375.87	143.96	61.50
1994/95	138.39	559.06	517.88	166.34	58.05
1995/96	214.12	797.19	646.09	230.27	51.02
1996/97	242.86	860.83	617.15	278.16	58.43
1997/98	374.69	1159.40	727.28	286.45	81.09
1998/99	503.13	1493.87	829.67	346.82	100.29
1999/00	459.40	1545.41	822.09	361.65	101.74
2000/01	278.28	1378.86	770.92	387.26	130.76
2001/02	106.71	672.28	445.18	331.89	122.75
2002/03	91.12	673.52	504.15	342.24	131.37
2003/04	87.71	666.51	563.95	367.39	96.32

Table A5: National rates of principal opioid dependence hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	36.77	326.24	274.22	97.29	39.83
1994/95	83.43	358.23	372.29	107.54	32.69
1995/96	133.34	561.66	490.95	157.42	26.60
1996/97	155.60	602.83	443.43	195.80	25.63
1997/98	229.04	810.22	501.23	168.54	43.47
1998/99	318.93	960.22	538.05	200.52	49.21
1999/00	316.40	1059.34	518.15	212.90	49.07
2000/01	184.78	972.51	520.48	231.87	61.48
2001/02	53.54	437.59	276.51	203.50	60.75
2002/03	39.36	448.28	312.95	211.13	52.71
2003/04	34.65	420.09	355.82	231.81	38.05

Cocaine

Table A6: Rates of any mention of cocaine-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	76.47	7.65	10.16	8.36	18.81	3.75	0.00	5.17	32.12
1994/95	105.94	9.14	24.51	14.33	24.29	3.75	0.00	5.12	46.01
1995/96	130.30	16.97	19.39	33.39	32.42	0.00	17.01	10.15	57.70
1996/97	121.83	9.37	50.77	19.02	23.46	0.00	16.53	5.08	56.68
1997/98	140.60	12.28	42.15	35.52	44.39	7.56	8.16	5.09	65.58
1998/99	214.53	19.56	51.49	36.59	64.91	11.42	32.19	20.31	96.73
1999/00	214.99	29.24	31.02	43.60	27.15	11.47	0.00	10.11	91.70
2000/01	258.80	32.88	28.71	47.09	52.78	15.39	0.00	0.00	109.68
2001/02	262.63	23.69	37.67	29.50	20.45	19.36	0.00	10.04	105.94
2002/03	119.89	21.73	25.85	34.23	12.34	3.85	8.00	10.04	54.51
2003/04	119.40	33.84	45.33	55.45	21.76	19.17	0.00	5.04	63.67

Cocaine (continued)

Table A7: Rates of principal cocaine-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	10.02	0.38	1.07	0.00	1.98	3.75	0.00	5.17	4.04
1994/95	10.20	1.14	3.65	1.19	0.00	0.00	0.00	0.00	4.47
1995/96	8.95	1.51	0.51	1.19	4.77	0.00	8.51	0.00	4.13
1996/97	7.20	1.87	1.01	5.94	1.88	0.00	8.27	0.00	3.81
1997/98	12.36	1.86	1.98	0.00	3.70	0.00	0.00	0.00	5.34
1998/99	30.22	2.58	0.49	0.00	30.17	0.00	0.00	5.08	13.97
1999/00	20.77	2.92	2.91	2.36	2.71	0.00	0.00	0.00	8.69
2000/01	33.35	6.14	4.31	5.89	4.47	0.00	0.00	0.00	14.43
2001/02	46.47	5.74	4.24	2.36	0.89	3.87	0.00	5.02	18.25
2002/03	9.53	4.63	3.23	1.18	1.76	0.00	0.00	0.00	6.89
2003/04	24.51	14.81	7.71	2.36	4.35	0.00	0.00	0.00	13.92

Table A8: Rates of principal cocaine dependence hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	8.31	0.00	0.00	0.00	0.00	3.75	0.00	0.00	2.89
1994/95	6.80	0.76	3.13	0.00	0.00	0.00	0.00	0.00	3.04
1995/96	6.15	0.38	0.00	1.19	3.81	0.00	0.00	0.00	2.63
1996/97	6.65	1.87	0.50	4.76	0.94	0.00	0.00	0.00	3.25
1997/98	10.43	1.12	0.99	0.00	2.77	0.00	0.00	0.00	4.24
1998/99	15.25	0.00	0.49	0.00	25.60	0.00	0.00	0.00	7.76
1999/00	11.33	1.46	0.48	0.00	0.00	0.00	0.00	0.00	4.25
2000/01	19.74	2.89	1.91	2.35	0.00	0.00	0.00	0.00	7.89
2001/02	30.54	1.44	1.41	1.18	0.00	0.00	0.00	0.00	10.95
2002/03	3.71	4.63	3.23	1.18	1.76	0.00	0.00	0.00	6.89
2003/04	15.02	0.35	7.25	0.00	2.61	0.00	0.00	0.00	6.74

Table A9: National rates of principal cocaine-related hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	0.39	3.57	8.73	1.98	0.59
1994/95	1.17	7.12	4.51	3.87	0.00
1995/96	2.32	6.39	4.14	2.26	0.54
1996/97	3.09	6.41	3.78	2.62	0.00
1997/98	1.92	8.96	7.21	2.96	0.00
1998/99	4.95	16.64	18.14	2.18	0.00
1999/00	5.63	13.87	11.94	2.51	0.00
2000/01	6.65	28.79	13.18	7.75	0.87
2001/02	7.33	32.15	26.54	7.61	0.84
2002/03	2.55	6.97	8.05	1.70	0.41
2003/04	3.61	23.88	27.19	1.01	0.39

Cocaine (continued)

Table A10: National rates of principal cocaine dependence hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	0.00	1.43	7.34	1.58	0.59
1994/95	1.17	5.34	3.81	1.16	0.00
1995/96	1.93	3.20	2.76	1.51	0.54
1996/97	2.32	4.98	3.10	2.62	0.00
1997/98	1.54	6.09	5.50	2.22	0.00
1998/99	3.81	6.87	10.27	10.92	0.00
1999/00	4.13	5.11	6.82	0.72	0.00
2000/01	5.17	16.61	4.39	4.58	0.00
2001/02	3.30	19.59	16.13	5.19	0.84
2002/03	1.09	1.83	3.35	0.00	0.00
2003/04	0.36	5.43	20.14	0.34	0.00

Amphetamines

Table A11: Rates of any mention of amphetamine-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	265.80	218.09	167.34	182.74	503.79	116.19	62.26	98.29	243.33
1994/95	365.42	192.23	292.08	244.87	795.79	112.49	112.97	117.83	327.48
1995/96	425.28	176.13	333.12	353.00	524.52	97.49	59.54	106.58	332.22
1996/97	471.24	138.28	539.39	407.76	362.30	82.73	124.01	76.26	364.73
1997/98	569.80	130.59	947.14	615.60	578.97	177.62	236.61	137.45	514.41
1998/99	580.97	168.29	1127.91	987.94	942.57	319.74	80.47	187.88	629.22
1999/00	803.86	288.38	1033.38	785.93	800.81	542.98	159.11	313.38	694.96
2000/01	904.73	321.61	981.41	1174.79	1356.23	630.99	150.55	265.70	813.82
2001/02	893.85	403.15	1020.75	1422.95	1411.61	696.89	190.42	331.42	865.42
2002/03	877.07	371.47	897.36	1657.17	1079.84	828.70	191.97	301.26	815.32
2003/04	989.72	412.44	1050.65	1653.97	1196.96	743.85	144.11	362.91	902.35

Table A12: Rates of principal amphetamine-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	60.43	50.89	82.87	54.94	87.10	52.47	8.89	20.69	62.71
1994/95	70.25	33.50	101.18	46.58	115.63	48.75	26.07	35.86	67.59
1995/96	75.77	26.78	73.46	42.93	43.87	26.25	25.52	30.45	54.79
1996/97	71.99	21.74	101.54	52.31	54.44	37.61	8.27	0.00	58.82
1997/98	82.11	28.65	134.38	60.38	75.84	15.12	24.48	25.45	72.95
1998/99	108.63	38.38	198.61	114.49	133.48	45.68	40.23	30.47	107.23
1999/00	150.79	56.65	205.51	153.18	154.73	68.83	39.78	40.44	133.07
2000/01	153.68	74.08	193.32	138.90	262.12	76.95	23.77	35.09	145.70
2001/02	159.60	83.64	232.12	165.19	293.35	112.28	7.93	55.24	172.53
2002/03	181.29	85.83	191.57	152.26	200.10	154.18	16.00	55.23	154.60
2003/04	217.19	101.52	212.12	176.96	247.23	145.70	24.02	55.45	180.93

Amphetamines (continued)

Table A13: Rates of principal amphetamine dependence hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	24.35	14.16	25.13	8.36	18.81	14.99	8.89	5.17	19.33
1994/95	37.96	6.09	35.99	8.36	42.75	22.50	8.69	5.12	26.43
1995/96	37.75	7.54	20.92	2.39	14.31	3.75	17.01	0.00	20.27
1996/97	26.03	2.62	38.71	2.38	11.26	11.28	0.00	0.00	18.12
1997/98	32.68	5.95	50.58	4.74	16.65	3.78	0.00	5.09	24.04
1998/99	31.85	8.86	86.80	17.71	29.26	11.42	0.00	0.00	33.61
1999/00	53.41	11.70	80.94	24.74	27.15	3.82	7.96	0.00	40.74
2000/01	51.76	12.29	89.48	37.67	84.09	11.54	0.00	0.00	48.75
2001/02	70.90	13.64	108.76	48.38	94.23	27.10	0.00	0.00	61.43
2002/03	74.90	11.40	82.63	35.41	42.31	65.52	0.00	0.00	52.03
2003/04	85.13	10.22	93.82	36.57	73.99	49.85	8.01	0.00	60.34

Table A14: National rates of principal amphetamine-related hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	59.84	129.92	45.41	9.89	2.34
1994/95	79.92	126.41	50.61	10.44	2.25
1995/96	55.66	106.93	42.06	17.36	3.26
1996/97	67.18	105.69	50.23	11.61	2.05
1997/98	76.86	150.21	54.62	12.94	1.95
1998/99	104.28	231.55	82.83	17.83	1.41
1999/00	130.99	282.81	108.13	24.01	4.50
2000/01	122.69	301.90	146.68	30.30	2.60
2001/02	134.95	329.30	168.66	38.76	4.19
2002/03	102.78	326.12	164.36	40.86	11.76
2003/04	126.69	356.05	187.98	63.92	27.75

Table A15: National rates of principal amphetamine dependence hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	8.60	34.27	24.45	4.75	1.17
1994/95	28.07	48.43	20.80	4.26	1.13
1995/96	13.14	33.04	18.27	13.59	2.17
1996/97	15.83	33.45	17.89	3.37	0.00
1997/98	21.14	47.32	21.99	3.33	0.49
1998/99	23.60	81.77	24.30	4.00	0.00
1999/00	36.78	85.02	34.45	6.45	0.90
2000/01	23.28	105.92	56.44	9.87	0.43
2001/02	30.07	130.47	72.91	11.77	0.84
2002/03	9.48	115.19	67.42	17.03	8.11
2003/04	21.66	116.51	76.20	20.19	22.59

Cannabis

Table A16: Rates of any mention of cannabis-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	563.10	259.03	361.95	493.27	525.56	209.89	284.61	294.86	424.05
1994/95	785.22	338.79	535.13	678.46	878.39	251.24	460.59	507.18	606.39
1995/96	1361.40	483.14	768.78	1497.86	1095.77	577.42	808.09	507.52	976.78
1996/97	1491.53	734.89	1184.84	1867.63	1109.42	665.64	1198.74	823.57	1202.64
1997/98	1797.27	752.31	1948.82	2381.90	1588.93	1337.83	1631.81	488.73	1554.46
1998/99	1634.01	938.14	1994.44	2529.46	1812.91	1937.47	1021.92	913.99	1600.94
1999/00	1916.04	1130.50	1663.48	1701.46	1617.01	2091.63	1177.39	1283.84	1612.07
2000/01	1945.27	1109.01	1504.42	2454.35	1726.60	2023.79	950.82	751.99	1641.18
2001/02	2012.09	1161.33	1595.63	2954.45	1545.84	2404.26	1126.63	728.12	1722.82
2002/03	1994.98	1081.64	1638.69	3025.17	1597.28	2509.22	1279.82	707.96	1718.46
2003/04	2198.73	1017.71	1868.78	3156.94	1537.33	1759.92	1409.04	942.57	1805.40

Table A17: Rates of principal cannabis-related hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	55.85	23.72	42.77	48.97	20.78	71.21	26.68	15.52	40.78
1994/95	71.38	22.08	40.68	44.20	26.23	30.00	17.38	35.86	44.58
1995/96	111.00	29.42	42.34	51.28	50.54	44.99	8.51	10.15	62.77
1996/97	116.01	46.84	47.76	60.63	36.61	22.56	16.53	5.08	68.58
1997/98	123.30	54.69	47.11	72.21	61.04	41.57	8.16	0.00	76.45
1998/99	111.62	78.61	67.18	70.82	68.57	49.48	24.14	0.00	83.21
1999/00	120.31	69.81	78.04	49.49	81.44	34.41	15.91	20.22	85.55
2000/01	151.54	87.45	65.56	30.61	100.20	92.34	39.62	5.01	99.91
2001/02	195.71	99.80	82.39	42.48	81.78	116.15	47.60	20.09	120.90
2002/03	181.82	78.71	85.40	59.02	64.35	77.09	39.99	15.06	109.90
2003/04	190.30	77.55	67.99	68.42	66.16	65.18	24.02	40.32	109.82

Table A18: Rates of principal cannabis dependence hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	34.94	11.48	10.69	4.78	1.98	3.75	0.00	5.17	17.31
1994/95	57.22	7.61	9.39	7.17	7.77	18.75	0.00	5.12	24.72
1995/96	75.77	13.20	12.24	13.12	15.26	18.75	0.00	5.08	34.06
1996/97	84.45	22.49	14.08	17.83	3.75	7.52	8.27	0.00	38.56
1997/98	84.58	30.51	18.84	20.13	12.95	18.90	0.00	0.00	42.74
1998/99	71.60	33.95	32.86	21.25	21.94	7.61	8.05	5.08	42.75
1999/00	83.35	38.01	37.32	18.85	13.57	7.65	0.00	10.11	47.53
2000/01	117.93	46.98	33.97	12.95	41.15	73.10	15.85	0.00	64.61
2001/02	160.39	66.41	53.20	18.88	32.00	50.33	7.93	0.00	86.18
2002/03	139.74	43.81	43.85	17.70	25.56	46.25	8.00	0.00	70.94
2003/04	147.60	50.06	33.09	29.49	33.95	26.84	0.00	20.16	74.44

Cannabis (continued)

Table A19: National rates of principal cannabis-related hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	56.32	76.03	21.31	6.33	1.76
1994/95	85.76	60.18	24.26	7.74	1.13
1995/96	119.81	95.56	38.61	12.46	3.80
1996/97	127.03	106.40	45.06	15.35	4.10
1997/98	111.83	131.21	46.38	17.00	7.82
1998/99	126.73	142.19	49.29	19.65	4.69
1999/00	106.22	146.33	66.52	28.32	9.45
2000/01	90.54	203.73	92.94	18.32	6.49
2001/02	96.08	216.95	123.98	49.84	8.38
2002/03	101.33	189.29	104.99	43.93	14.60
2003/04	80.13	187.07	131.92	47.10	11.89

Table A20: National rates of principal cannabis dependence hospital separations per million persons by age, 1993-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1993/94	12.91	36.41	14.67	1.58	0.00
1994/95	49.12	31.34	13.17	2.32	0.00
1995/96	69.96	51.16	17.93	6.04	0.54
1996/97	76.83	58.01	22.02	6.36	0.51
1997/98	54.19	76.00	28.86	9.24	1.47
1998/99	61.65	72.72	28.41	12.01	2.34
1999/00	58.18	80.28	39.23	12.54	3.60
2000/01	29.93	145.41	67.93	13.04	2.16
2001/02	49.14	154.86	96.76	44.30	3.77
2002/03	46.29	127.66	71.11	32.35	10.14
2003/04	36.09	120.49	105.40	37.01	5.15

Drug-related psychosis

Table A21: Rates of principal drug related psychosis hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	46.97	44.38	86.61	40.61	42.56	116.19	133.41	124.15	56.65
1994/95	60.62	53.67	91.80	54.95	51.50	71.25	260.71	102.46	66.45
1995/96	108.49	133.89	144.37	196.77	123.98	127.48	161.62	50.75	129.85
1996/97	134.01	121.42	190.02	236.57	77.90	105.30	198.41	71.17	142.55
1997/98	194.14	161.85	237.03	226.11	128.56	185.18	293.73	81.45	188.91
1998/99	176.69	91.16	328.07	226.62	207.53	171.29	193.12	132.02	189.89
1999/00	210.68	120.62	291.30	154.36	249.74	68.83	254.57	207.23	200.06
2000/01	227.58	115.63	322.99	216.59	317.59	165.44	190.16	125.33	222.14
2001/02	224.39	168.01	298.50	286.71	347.57	243.91	325.29	115.50	241.08
2002/03	225.22	115.04	262.65	317.51	312.93	161.89	319.95	150.63	219.00
2003/04	288.61	156.52	244.76	316.17	370.84	226.22	424.31	176.42	255.71

Drug-related psychosis (continued)

Table A22: Rates of principal cocaine-related psychosis hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	2.43	0.37	3.88	0.00	0.00	0.00	0.00	0.00	1.63
2000/01	6.67	1.45	1.44	2.35	0.00	0.00	0.00	0.00	3.05
2001/02	9.83	0.36	1.88	0.00	0.89	0.00	0.00	0.00	3.83
2002/03	4.50	4.63	3.23	1.18	1.76	0.00	0.00	0.00	6.89
2003/04	3.69	0.35	0.91	0.00	0.87	0.00	0.00	0.00	1.58

Table A23: Rates of principal amphetamine-related psychosis hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	91.45	29.24	126.99	75.41	110.39	30.59	63.64	126.36	82.20
2000/01	108.86	31.44	172.74	123.60	224.55	34.63	23.77	90.24	111.29
2001/02	97.19	52.41	163.38	191.14	233.79	50.33	47.60	30.13	116.53
2002/03	116.98	28.14	143.10	240.79	210.68	50.11	16.00	80.34	115.29
2003/04	155.25	81.43	128.72	231.23	244.62	42.18	32.02	105.85	141.61

Table A24: National rates of principal amphetamine-related psychosis hospital separations per million persons by age, 1999-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1999/00	41.66	216.76	89.37	19.35	1.35
2000/01	55.80	249.86	117.95	23.26	1.73
2001/02	48.04	257.60	137.42	24.57	3.77
2002/03	61.96	239.55	140.88	20.77	2.43
2003/04	49.09	302.50	171.20	44.41	2.77

Table A25: Rates of principal cannabis-related psychosis hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	95.49	79.31	104.21	60.09	102.25	34.41	190.93	80.87	90.43
2000/01	86.44	63.96	124.41	76.51	82.30	123.12	150.55	35.09	87.46
2001/02	95.60	102.31	118.18	82.59	107.56	193.58	277.69	75.32	105.67
2002/03	88.66	79.07	106.63	69.64	96.08	111.78	303.96	65.27	91.52
2003/04	112.81	63.81	103.34	82.58	121.87	172.54	392.29	70.57	101.15

Table A26: National rates of principal cannabis-related psychosis hospital separations per million persons by age, 1999-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1999/00	92.33	195.59	63.79	17.20	1.80
2000/01	80.56	182.69	78.75	15.50	1.73
2001/02	111.11	224.71	82.99	19.03	2.51
2002/03	87.48	176.82	83.19	24.52	2.43
2003/04	85.54	205.52	89.29	27.92	7.53

Drug withdrawal

Table A27 Rates of principal drug withdrawal hospital separations per million persons among 15-54 year olds, 1993-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1993/94	75.04	32.52	43.84	60.91	47.51	29.98	17.79	25.86	52.22
1994/95	67.70	26.27	42.77	43.00	37.89	26.25	86.90	15.37	46.10
1995/96	77.45	38.85	55.61	62.01	61.99	33.75	59.54	30.45	58.92
1996/97	94.41	49.47	62.84	48.74	72.27	37.61	49.60	10.17	68.21
1997/98	107.64	61.02	70.42	73.40	70.29	45.35	48.95	20.36	79.03
1998/99	117.88	60.89	77.97	121.57	106.96	34.26	56.33	20.31	91.06
1999/00	108.71	77.85	69.31	86.02	119.44	30.59	71.60	25.27	89.26
2000/01	109.66	76.97	50.72	76.51	101.09	19.24	15.85	5.01	82.08
2001/02	60.55	45.59	43.79	63.71	57.78	23.23	47.60	20.09	51.90
2002/03	60.61	39.89	35.54	53.11	70.52	250.54	55.99	20.08	54.68
2003/04	87.77	51.82	38.53	80.22	60.07	371.92	16.01	20.16	70.50

Table A28: Rates of principal opioid withdrawal hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	96.30	68.71	52.35	63.63	106.77	15.30	71.60	15.16	76.13
2000/01	95.25	65.77	33.02	58.86	78.73	11.54	7.92	5.01	67.30
2001/02	47.00	36.62	28.25	41.30	35.56	7.74	47.60	15.06	37.84
2002/03	47.37	27.78	23.54	23.61	47.60	158.03	47.99	15.06	38.16
2003/04	61.41	40.19	25.84	53.09	41.78	191.71	8.01	15.12	48.25

Table A29: National rates of principal opioid withdrawal separations per million persons by age, 1999-2004

	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
1999/00	35.66	152.90	75.05	32.98	10.35
2000/01	27.72	135.45	67.59	35.24	9.09
2001/02	6.23	66.90	52.75	21.46	5.87
2002/03	8.02	68.60	44.95	25.20	7.70
2003/04	10.47	72.73	68.48	33.98	12.29

Drug withdrawal (continued)

Table A30: Rates of principal cocaine withdrawal hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	0.54	0.37	0.48	0.00	0.00	0.00	0.00	0.00	0.36
2000/01	1.60	0.72	0.96	2.35	0.00	0.00	0.00	0.00	1.08
2001/02	1.59	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.62
2002/03	0.26	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.18
2003/04	1.05	0.35	0.00	1.18	0.00	0.00	0.00	0.00	0.53

Table A31: Rates of principal amphetamine withdrawal hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	6.47	3.29	11.63	14.14	8.14	11.47	0.00	10.11	7.51
2000/01	8.00	4.34	12.44	10.59	17.89	3.85	7.92	0.00	8.87
2001/02	6.90	3.23	12.24	14.16	20.45	3.87	0.00	5.02	8.72
2002/03	7.41	3.92	7.39	21.25	18.51	26.98	0.00	5.02	9.01
2003/04	13.71	3.53	7.71	16.52	13.06	65.18	8.01	0.00	11.03

Table A32: Rates of principal cannabis withdrawal hospital separations per million persons among 15-54 year olds, 1999-2004

Year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	National
1999/00	5.40	5.48	4.85	8.25	4.52	3.82	0.00	0.00	5.25
2000/01	4.80	6.14	4.31	4.71	4.47	3.85	0.00	0.00	4.84
2001/02	5.05	5.74	2.82	8.26	1.78	11.61	0.00	0.00	4.72
2002/03	5.56	8.19	4.15	8.26	3.53	65.52	8.00	0.00	7.24
2003/04	11.60	7.76	4.99	9.44	5.22	115.03	0.00	5.04	10.68

APPENDIX B – PERCENTAGES OF PRINCIPAL DIAGNOSES ACCOMPANYING DRUG-RELATED MENTIONS

Table B1: Percentage of principal diagnoses accompanying opioid mentions

Year	Opioids	Mental disorders	Other drug and alcohol problems	Pregnancy complications	Injury	Poisoning	Other*
1993/94	34.84	4.87	6.86	9.50	6.00	9.13	28.80
1994/95	35.17	5.34	6.30	8.93	5.90	9.60	28.75
1995/96	34.86	7.10	6.55	7.49	5.09	8.36	30.55
1996/97	31.71	9.69	8.08	7.83	4.76	16.55	21.38
1997/98	34.23	10.81	6.72	7.94	5.21	8.51	26.59
1998/99	38.69	11.40	6.79	6.61	5.06	8.69	22.76
1999/00	38.77	11.69	6.11	6.80	4.99	8.10	23.53
2000/01	36.08	11.60	6.53	7.60	5.52	9.12	23.55
2001/02	27.71	12.85	6.73	11.03	5.99	10.48	25.21
2002/03	28.60	12.78	6.72	9.89	4.98	13.16	23.87
2003/04	28.91	12.75	7.40	9.78	4.87	13.34	22.95

*'Other' refers to a broad spectrum of other problems such as diseases of the circulatory system, the respiratory system, the nervous system and the digestive system.

Table B2: Percentage of principal diagnoses accompanying cocaine mentions

Year	Cocaine	Mental disorders	Other drug and alcohol problems	Pregnancy complications	Injury	Poisoning	Other*
1993/94	12.57	12.87	25.15	7.19	8.68	10.48	23.05
1994/95	9.71	17.56	29.13	3.93	4.75	12.19	22.73
1995/96	7.15	22.28	30.73	1.95	6.02	8.78	23.09
1996/97	6.72	17.70	34.92	2.13	2.95	7.05	28.52
1997/98	8.15	25.28	26.40	2.81	6.32	7.16	23.88
1998/99	14.45	18.41	30.69	2.36	4.44	10.48	19.17
1999/00	9.48	17.67	35.34	1.97	4.15	11.35	20.04
2000/01	13.15	17.65	30.39	0.98	4.74	11.44	21.65
2001/02	17.23	15.80	28.07	2.77	5.38	7.56	23.19
2002/03	9.08	18.80	33.06	2.92	6.00	11.18	18.96
2003/04	21.87	21.46	26.13	1.93	3.03	8.80	16.78

*'Other' refers to a broad spectrum of other problems such as diseases of the circulatory system, the respiratory system, the nervous system and the digestive system.

Table B3: Percentage of principal diagnoses accompanying amphetamine mentions

Year	Amphetamine	Mental disorders	Other drug and alcohol problems	Pregnancy complications	Injury	Poisoning	Other*
1993/94	25.77	15.02	16.76	6.25	6.17	11.19	18.85
1994/95	20.64	18.40	17.88	6.65	6.24	12.60	17.59
1995/96	16.49	23.10	21.15	6.44	5.56	10.08	17.17
1996/97	16.13	26.55	22.52	4.36	4.00	8.20	18.24
1997/98	14.18	31.48	22.31	4.73	4.32	8.72	14.27
1998/99	17.00	30.12	21.91	4.10	4.60	9.25	13.02
1999/00	19.15	31.65	18.11	4.53	4.79	7.89	13.87
2000/01	17.90	34.03	16.38	4.28	4.87	8.54	13.98
2001/02	19.94	35.59	15.56	3.84	4.64	7.45	12.98
2002/03	18.96	35.30	15.95	4.12	4.24	6.65	14.78
2003/04	20.05	37.90	16.19	3.29	4.52	6.65	11.40

*'Other' refers to a broad spectrum of other problems such as diseases of the circulatory system, the respiratory system, the nervous system and the digestive system.

Table B4: Percentage of principal diagnoses accompanying cannabis mentions

Year	Cannabis	Mental disorders	Other drug and alcohol problems	Pregnancy complications	Injury	Poisoning	Other*
1993/94	9.62	32.66	18.08	7.10	6.62	9.05	16.87
1994/95	7.35	33.42	19.89	7.38	6.25	8.61	17.09
1995/96	6.43	37.65	17.67	6.93	5.64	7.18	18.50
1996/97	5.70	45.76	19.34	4.80	4.10	5.53	14.77
1997/98	4.92	49.78	17.15	5.43	4.03	5.81	12.88
1998/99	5.20	48.92	19.08	5.26	4.56	5.61	11.37
1999/00	5.31	49.38	17.94	5.59	4.28	5.10	12.40
2000/01	6.09	50.57	16.73	5.35	4.41	5.44	11.40
2001/02	7.02	51.39	15.04	5.59	4.11	4.86	11.99
2002/03	6.40	50.14	15.38	6.62	4.02	4.34	13.10
2003/04	6.08	52.58	16.96	6.65	3.58	4.36	9.80

*'Other' refers to a broad spectrum of other problems such as diseases of the circulatory system, the respiratory system, the nervous system and the digestive system.

GLOSSARY

<i>Additional diagnosis</i>	Conditions or complaints either coexisting with the principal diagnosis or arising during the episode of care.
<i>Amphetamine-related hospital separations</i>	Hospital separations where amphetamines were recorded as the principal diagnosis.
<i>Amphetamine mentions</i>	Hospital separations where amphetamines were recorded as either the principal or as an additional diagnosis.
<i>Cannabis-related hospital separations</i>	Hospital separations where cannabis was recorded as the principal diagnosis.
<i>Cannabis mentions</i>	Hospital separations where cannabis was recorded as either the principal or as an additional diagnosis.
<i>Cocaine-related hospital separations</i>	Hospital separations where cocaine was recorded as the principal diagnosis.
<i>Cocaine mentions</i>	Hospital separations where cocaine was recorded as either the principal or as an additional diagnosis.
<i>Drug-related psychosis separations</i>	Hospital separations where drug-induced psychosis (as per coding in the ICD-9-CM and ICD-10-AM) was recorded as the principal diagnosis.
<i>Drug withdrawal separations</i>	Hospital separations where drug withdrawal (as per coding in the ICD-9-CM and ICD-10-AM) was recorded as the principal diagnosis.
<i>Hospital separation</i>	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.
<i>Opioid-related hospital separations</i>	Hospital separations where opioids were recorded as the principal diagnosis.
<i>Opioid mentions</i>	Hospital separations where opioids were recorded as either the principal or as an additional diagnosis.
<i>Principal diagnosis</i>	The diagnosis established at the time of separation as being primarily responsible for occasioning an episode of admitted patient care.