

12 Substance use morbidity and mortality

This chapter presents information on the impact of substance use on the health of young people. The increase in substance use amongst young people (see Chapter 13) has been accompanied by increases in substance use morbidity and mortality related to substance use. Various health ill-effects stem from the use of alcohol, tobacco, 'other' drugs and medicinal substances (including illicit drugs, and prescription drugs used for non-medical purposes) and combinations of these. Harmful substance use increases exposure to illness and disease, injury, violence, crime and social alienation. Some examples of the many causes of disease and death related to the use of these substances are:

- The ill-effects of tobacco use can include coronary heart disease, several cancers including lung, mouth and cervical, stroke, chronic lung disease, peptic ulcer, low birthweight and perinatal death (AIHW 1998:142; English et al. 1995:404, 441, 462).
- Excess alcohol consumption is associated with coronary heart disease, liver and pancreatic disease, stroke, high blood pressure, cancers of the digestive system, other cancers, road traffic and other accidents, mental illness and violence (AIHW 1998: 142; English et al. 1995:78, 82, 102).
- There are many health ill-effects associated with the non-medical use of prescription drugs (such as steroids and analgesics) and illicit substances. English et al. (1995:504) highlight three contributing factors. Firstly, there is the morbidity and mortality due to the toxicity of the drugs or their pharmaceutical actions. Secondly, the mode of drug administration can be a cause of morbidity and mortality; for example, HIV, hepatitis, septicaemia, and tetanus infection can result from non-sterile equipment. Thirdly, environmental factors such as exposure to crime, violence and poor standards of living are cited.

The all-cause morbidity rate for 12-24 year olds was 15,520 per 100,000 whereas the total drug-related morbidity rate was only 14 per 100,000. The all-cause mortality rate for 12-24 year olds was 60 per 100,000 whereas the total drug-related death rate was 14 per 100,000. A prominent finding of this chapter is that the rate of alcohol-related hospitalisations (77 per 100,000) for 14 to 24 year olds was similar to the rate of hospitalisations due to drug dependency (72.1 per 100,000). In addition, alcohol-related mortality (6 per 100,000 when attributable estimates of alcohol-related road traffic accidents are calculated from the 1997 mortality database and added to recorded alcohol-related deaths) was similar to mortality due to drug dependency (5 per 100,000). It should be noted, however, that although these rates were similar, the prevalence of use of these drugs differs greatly (as is shown in Chapter 13). The morbidity rate for parasuicide and self-inflicted poisoning by drugs and medicinal substances was high for 12 to 24 year olds (142 per 100,000), but the mortality rate was low (1 per 100,000).

Most data in this chapter come from the AIHW Mortality Database and the AIHW National Hospital Morbidity Database. Aetiological fractions from the Federal Office of Road Safety and English et al. (1995) are also included in relation to alcohol-related and tobacco related mortality. These aetiological fractions estimate the proportion of morbidity or mortality in the youth population that is causally attributable to exposure to substance use. The AIHW is currently updating English et al. (1995) aetiological fractions of drug caused morbidity and mortality in Australia (this report is scheduled to be released in early 2000).

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Drug-related hospitalisations

This section presents an overview of drug-related morbidity of young people. Data were extracted from the AIHW National Hospital Morbidity Database using ICD-9-CM (see Appendix 3 for further details). Information is presented on hospital admissions where the principal reason for hospitalisation was drug-related, as well as other admissions with additional diagnoses associated with drugs. It is important to remember that the figures relate to the number of hospital episodes, not to the number of individuals hospitalised.

Principal diagnosis and external cause

Presented in this section is information on hospitalisations of young people aged between 12 and 24 years where the principal diagnosis was drug-related, or the external cause of injury/poisoning was drug-related.

Table 12.1: Drug-related principal reason^(a) for hospitalisation, 1997–98

Principal diagnosis/external cause	Age (years)					
	Number			Rate per 100,000		
	12–19	20–24	Total	12–19	20–24	Total
<i>Drug dependence (304)</i>	906	1,585	2,491	43.3	116.5	72.1
Morphine type (304.0)	539	1,109	1,648	25.8	81.5	47.7
Combinations of morphine-type drug with any other (304.7)	57	149	206	2.7	10.9	6.0
<i>Non-dependent abuse of drugs (305)</i>	250	353	603	11.9	25.9	17.5
Morphine type (305.5)	66	63	129	3.2	4.6	3.7
Other, mixed or unspecified (305.9)	64	161	225	3.1	11.8	6.5
<i>Accidental poisoning by drugs and medicinal substances (E850.0–E858.9)</i>	1,561	1,532	3,093	74.6	112.6	89.5
Analgesics, antipyretics and antirheumatics (E850)	609	578	1,187	29.1	42.5	34.4
Other psychotropic agents (E854)	333	350	683	15.9	25.7	19.8
Tranquillisers (E853)	262	349	611	12.5	25.6	17.7
<i>Suicide and self-inflicted poisoning by drugs and medicinal substances (E950.0–E950.5)</i>	2,489	2,418	4,907	118.9	177.7	142.1
Analgesics, antipyretics and antirheumatics (E950.0)	1,077	727	1,804	51.5	53.4	52.2
Other specified drugs and medicaments (E950.4)	462	374	836	22.1	27.5	24.2
<i>Poisoning by drugs or medicinal substances undetermined whether accidentally or purposely (E980.0–E980.5)</i>	57	62	119	2.7	4.6	3.4
Total (drugs and medicinal substances)	5,263	5,950	11,213	251.5	437.2	324.6
Alcohol-related ^(a)	1,477	1,166	2,643	70.6	85.7	76.5

(a) ICD-9-CM codes 305 Alcohol abuse, 571.0–571.3 Alcoholic liver cirrhosis, 291 Alcoholic psychosis, 303 Alcohol dependence, 357.5 Alcoholic poly neuropathy, 425.5 Alcoholic cardiomyopathy, 535.5 Alcoholic gastritis, 980.0 Ethanol toxicity, 980.1 Methanol toxicity, E860.0 Alcoholic beverage poisoning, E860.1 and E860.2 Other ethanol and methanol poisoning.

Source: AIHW National Hospital Morbidity Database.

- Parasuicide and self-inflicted poisoning by drugs and medicinal substances was the most common drug-related reason for hospitalisation. The hospitalisation rate for parasuicide and self-inflicted poisoning by drugs and medicinal substances was

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higher for 20 to 24 year olds (178 per 100,000) than for 12 to 19 year olds (119 per 100,000).

- Accidental poisoning by drugs and medicinal substances caused the second highest number of hospitalisations with a drug-related principal diagnosis. The hospitalisation rate for young people aged 20 to 24 years (113 per 100,000) was 1.5 times higher than the rate for 12 to 19 year olds (75 per 100,000).
- The greatest difference in hospitalisation rates between the age groups was recorded for drug dependency. Whereas, the rate for young people aged 20 to 24 years was 117 per 100,000, the rate for those aged 12 to 19 years was 43 per 100,000. Morphine-type drug dependence and combinations of morphine with other drugs accounted for more than half of these hospitalisations.
- The alcohol-related hospitalisation rate for young people was 77 per 100,000. The morbidity rate for 20 to 24 year olds (86 per 100,000) was higher than for 12 to 19 year olds (71 per 100,000). These figures are underestimates of true alcohol-related morbidity. For example, they would not include the hospital admission of a passenger involved in a motor vehicle accident where the driver had high blood alcohol concentration level.
- Hospitalisations of young people due to cigarette smoking were not significant (seven episodes). This could be because history of cigarette smoking was not recorded or because the health ill-effects appear later in life.

Additional diagnosis

This section explores hospitalisations where the principal reason was not drug-related, but contributing factors were drug-related. Therefore, all hospitalisations are included except those with a drug-related principal diagnosis and external cause. As one hospitalisation can have more than one additional diagnosis, a hospital admission may be included in more than one group in Table 12.2.

Table 12.2: Hospitalisations with drug-related additional diagnoses^(a), 12 to 24 years, 1997–98

Additional diagnosis	Number
Poisoning by drugs (960.0–979.9)	3,376
Accidental poisoning by drugs (E850.0–E858.9)	834
Non-dependent abuse of drugs (305.0–305.9)	0
Drug dependence (304.0–304.9)	0
Poisoning by drugs undetermined whether accidentally or purposely (E980.0–E980.5)	20
Total^(b)	4,230

(a) Excludes cases with a drug-related principal diagnosis or external cause.

(b) Hospitalisations may be included in more than one group.

Source: AIHW National Hospital Morbidity Database.

- Poisoning by drugs and medicinal substances was the most frequent drug-related additional diagnosis. In 1997–98, there were 3,376 poisonings by drugs and medicinal substances as a contributing cause of hospitalisation when the principal diagnosis or external cause was not drug-related, a rate of 98 per 100,000 young people.
- Drug dependence, non-dependent abuse of drugs and parasuicide and self-inflicted poisoning by drugs were not recorded as contributing to any hospitalisations when the principal diagnosis was not drug-related.

All drug-related hospitalisations

Table 12.3: Drug-related hospitalisations, 12–24 year olds, 1997–98

Sub-group	Number	Rate per 100,000
Principal diagnosis/external cause related to drug and medicinal substances	11,213	324.6
Other admissions with drugs and medicinal substances as a contributing cause	4,230	122.4
Total drug-related hospitalisations	15,443	446.8

Source: AIHW National Hospital Morbidity Database.

- Hospitalisations with a drug-related principal diagnosis or external cause totalled 11,213 for young people (see also Table 12.1). There were 4,230 hospitalisations with drug-related additional diagnoses (in cases where the principal diagnosis or external cause was not drug-related; see also Table 12.2). Together, these figures provide the total number of drug-related hospitalisations of young people.
- The drug-related hospitalisation rate for young people was 447 per 100,000 in 1997–98, 3% of the all cause hospitalisation rate for this age group, which was 15,505 per 100,000.

Mortality

This section presents an overview of drug-related youth mortality. Data on deaths from ‘other’ drugs and medicaments were extracted from the AIHW Mortality Database using ICD-9 (see Appendix 3 for details). Previously, information on the underlying cause of death only was available, but, the recent inclusion of multiple causes of death in the database has enabled a wider picture of drug-related deaths to be seen. In this analysis, the underlying cause of death (‘the disease or injury which initiated the train of morbid events leading directly to death’) is presented separately. Data are also presented on other deaths where ‘drug-related morbid conditions, diseases and injuries contributed to the death’ (excluding deaths with a drug-related underlying cause). Total drug-related deaths excluding alcohol and tobacco is calculated from these components. An estimate of tobacco-related mortality is obtained from aetiological fractions (providing an estimate of relative risk) and alcohol-related mortality is obtained from other sources.

Drug dependence was the most common underlying cause of death amongst young people, however, there were many more deaths in other age groups. For example, from a total of 600 deaths across all ages, 266 were in the age group 25 to 34 years (see Chapter 9 for details).

Alcohol and tobacco

Deaths of young people by alcohol-related causes¹ are underestimated in the deaths database. According to these data, in 1997 there were seven deaths of young people aged between 12 and 24 years with an alcohol-related underlying cause of death. There were 119 deaths with alcohol-related causes of death listed on the death certificate (as either an underlying or contributing cause). Only a few of these deaths were associated with motor vehicle accidents. Data held by the Federal Office of Road Safety (FORS) suggest that non-inclusion of motor vehicle accidents results in an underunderestimate of the true alcohol-related mortality.

According to the Federal Office of Road Safety (FORS, unpublished data), 28% of driver/rider motor vehicle accident deaths in 1996 amongst males aged 16 to 19 years had a blood alcohol concentration greater than or equal to 0.10 g/100ml. In comparison, the figure for females was 8%. Greater proportions of driver/rider motor vehicle accident deaths amongst those aged 20 to 29 years had blood alcohol concentrations greater or equal to 0.10 g/100 ml. For males the figure was 37% and for females it was 16% (FORS unpublished data). These figures do not include deaths of passengers or occupants of other vehicles involved in alcohol-related accidents.

Alcohol is highly associated with pedestrian accident deaths amongst young people, however, the number of pedestrian deaths is lower than deaths from motor vehicle accidents. In 1996, 69% of male and 50% of female pedestrian accident deaths amongst young people aged between 16 and 19 years had a blood alcohol concentration of greater than or equal to 0.10 g/100 ml. For those aged 20 to 29 years, the proportion of alcohol-related pedestrian accident deaths amongst females dropped to 11%, but for males it remained high at 58% (FORS, unpublished data).

The aetiological fractions estimating relative risk (English et al 1995) show that cigarette smoking is not a significant cause of death amongst young people. Deaths associated with cigarette smoking usually occur at older ages.

Other drugs

Information on 'other' drugs presented in this section includes illicit drugs and prescription drugs used for non-medical purposes.

Underlying cause of death

The underlying cause of death is coded using the International Classification of Diseases (ICD-9), including codes which pertain to 'other' drug-related underlying cause of death for young people or external causes (the circumstances of the accident or violence which produced the fatal injury).

1. ICD-9 codes 305 Alcohol abuse, 571.0-571.3 Alcoholic liver cirrhosis, 291 Alcoholic psychosis, 303 Alcohol dependence, 357.5 Alcoholic poly neuropathy, 425.5 Alcoholic cardiomyopathy, 535.5 Alcoholic gastritis, 980.0 Ethanol toxicity, 980.1 Methanol toxicity, E860.0 Alcoholic beverage poisoning, E860.1 and E860.2 Other ethanol and methanol poisoning.

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Table 12.4: Underlying causes of drug-related deaths by age group, 1997

Cause of death	Number			Rate per 100,000		
	12–19 years	20–24 years	Total	12–19 years	20–24 years	Total
Drug dependence (304.0–304.9)	38	106	144	1.8	7.7	4.2
Morphine type (304.0)	22	82	104	1.1	6.0	3.0
Combinations of morphine type drug with any other (304.7)	10	18	28	0.5	1.3	0.8
Non-dependent abuse of drugs (305.0–305.9)	0	1	1	0.0	0.1	0.0
Accidental poisoning by drugs and medicinal substances (E850.0–E858.9)	12	26	38	0.6	1.9	1.1
Opiates and related narcotics (850.0)	6	13	19	0.3	0.9	0.5
Suicide and self-inflicted poisoning by drugs and medicinal substances (E950.0–E950.5)	12	25	37	0.6	1.8	1.1
Analgesics, antipyretics and antirheumatics (E950.0)	5	4	9	0.2	0.3	0.3
Tranquillisers and other psychotropic agents (E950.3)	1	9	10	0.0	0.7	0.3
Other specified drugs and medicaments (E950.4)	5	9	14	0.2	0.7	0.4
Poisoning by drugs and medicinal substances undetermined whether accidentally or purposely (E980.0–E980.5)	9	10	19	0.4	0.7	0.5
Analgesics, antipyretics and antirheumatics (E980.0)	5	4	9	0.2	0.3	0.3
Other specified drugs and medicaments (E980.4)	3	3	6	0.1	0.2	0.2
Total	71	168	239	3.4	12.2	6.9

Source: AIHW Mortality Database.

- Drug-related underlying causes of death represent 11% of all deaths of young people. Further, those aged between 20 and 24 years account for 70% of these deaths.
- In 1997, drug dependency was the most common underlying cause of drug-related mortality for young people (60% of drug-related deaths). Morphine-type drugs (which include heroin) and combinations of morphine-type drugs with any other caused 92% of drug dependency deaths. The mortality rate due to drug dependency for young people aged 20 to 24 years (7.7 per 100,000) was four times higher than the rate for 12 to 19 year olds (1.8 per 100,000).
- Accidental poisoning by drugs accounted for 16% of drug-related underlying causes of mortality for young people. Half of the accidental poisonings by drugs were caused by opiates and related narcotics. The mortality rate for young people aged 20–24 (1.9 per 100,000) was three times higher than the rate for 12 to 19 year olds (0.6 per 100,000).
- Suicide and self-inflicted injury accounted for 15% of drug-related underlying cause of death among young people. Almost half (47%) of suicides due to self-inflicted poisoning were caused by analgesics, antipyretics and antirheumatics. The mortality rate for young people aged 20–24 was 1.8 deaths per 100,000, compared with 0.6 deaths per 100,000 for 12 to 19 year olds.
- In 1997, the youngest person with a drug-related underlying cause of death was aged 14 years.

Additional deaths with drugs as contributing factors

This section gives information on the deaths of young people where drugs contributed to the death but were not the underlying cause. Table 12.5 shows the number of times drug-related causes of death (which were not the underlying cause) have been listed on the death certificates of young people aged between 12 and 24 years. One death may have several different drug-related causes, for example an accidental or violent death may be classified according to the external cause as well as to the injury.

Table 12.5: Drug-related causes listed on death certificates where the underlying cause was not drug-related, 12–24 year olds, 1997

Cause of death	Number
Drug dependence (304.0–304.9)	25
Non-dependent abuse of drugs (305.0–305.9)	33
Poisoning drugs and medicinal substances (960.0–979.9)	225
Accidental poisoning by drugs and medicinal substances (E850.0–E858.9)	128
Poisoning by drugs and medicinal substances undetermined whether accidentally or purposely (E980.0–E980.5)	2
Total^(a)	252

(a) Total number of additional drug-related deaths excluding those with an underlying drug-related cause of death (included in Table 12.4).

Source: AIHW National Mortality database.

- Numbers do not add to total deaths as death certificates mention one or more drug-related contributing causes. For example, all of the 128 death certificates that listed accidental poisoning by drugs and medicinal substances as a contributing cause also listed poisoning by drugs and medicinal substances as a contributing cause.
- Poisoning by drugs and medicinal substances was the most frequent drug-related contributing factor in deaths with non drug-related underlying causes, occurring in 225 deaths of 12 to 24 year olds in 1997.
- Accidental poisoning by drugs and medicinal substances was the second most frequent drug-related contributing factor in deaths with non drug-related underlying causes (128 deaths).
- Suicide and self-inflicted injury does not feature as a multiple cause of death – in all such cases it was listed as the underlying cause of death.

All drug-related deaths

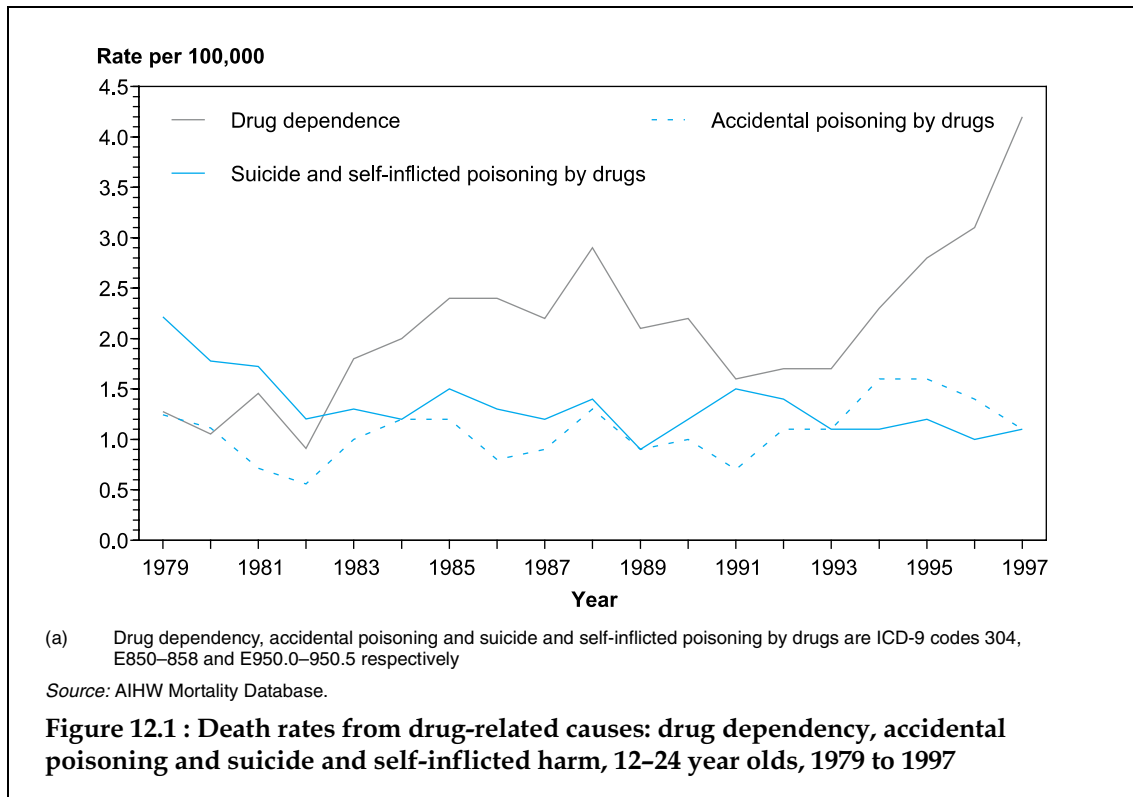
Table 12.6: Drug-related mortality summary statistics, 12–24 year olds, 1997

Cause of death	Number of deaths	Rate per 100,000 population
Underlying cause of death related to drug and medicinal substances	239	6.9
Other deaths with drugs as a contributing cause	252	7.3
Total drug-related deaths	491	14.2

Source: AIHW National Mortality database.

- Drug-related underlying causes of death were responsible for 239 deaths of young people (see Table 12.4). There were 252 additional deaths where drug-related causes contributed to death (in cases where the underlying cause was not drug-related, see Table 12.5). Together, these figures provide the total number of youth deaths associated with drugs.
- The mortality rate for young people associated with drugs and medicinal substances was 15 per 100,000, and all-cause mortality was 60 per 100,000. Thus mortality associated with drugs represented 24% of all deaths of young people.

As mentioned above, the wider range of drug-related mortality information has become available only for 1997 data. From this it was found that drug dependency (ICD-9 code 304) accounted for 60% of drug-related underlying cause mortality and 10% of other deaths with drugs as a contributing cause. Trends in drug-related mortality prior to 1997 can be estimated by using the drug dependency cause of death, accidental poisoning by drugs and suicide and self-inflicted poisoning by drugs as indicators of drug-related deaths.



- The mortality rates for drug dependence, suicide and self-inflicted poisoning by drugs and accidental poisoning by drugs have fluctuated over the period 1979 to 1997. Drug dependence recorded the greatest rise in mortality rate and also the greatest fluctuations in yearly rates. The mortality rate for drug dependence reached an initial peak of almost 3 deaths per 100,000 in 1988 before falling to 1.6 per 100,000 in 1991. Since 1993 it has been rising rapidly to 4.2 deaths per 100,000 in 1997.
- In the late 1970s and early 1980s, the mortality rate for drug dependence was similar to those of suicide and self-inflicted poisoning by drugs and accidental poisoning. In recent years, however, the mortality rate for drug dependence was almost four times higher than for the other two causes of death.
- Over the period, the mortality rate for suicide and self-inflicted poisoning by drugs ranged from 0.9 to 2.2 per 100,000 population and the mortality rate for accidental poisoning by drugs ranged between 0.7 per 100,000 and 1.6 per 100,000.

References

- Australian Institute of Health and Welfare (AIHW) 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. AIHW Cat. No. AUS 10. Canberra: AIHW.
- English et al. 1995. The quantification of drug caused morbidity and mortality in Australia, 1995 edition. Commonwealth Dept of Human Services and Health. Canberra: AGPS.
- National Coding Centre (NCC) 1996. The Australian version of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Sydney: University of Sydney.
- World Health Organization (WHO) 1997. International Classification of Diseases: Manual of the international statistical classification of diseases, injuries and causes of death. (ICD-9). Geneva: WHO.

