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Poisoning in children and young people 2012–13

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Authoritative information and statistics to promote better health and wellbeing

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Poisoning in children and young people

2012–13

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
ERP	estimated resident population
HTTL	high threat to life
ICD-10-AM	International statistical classification of diseases and related health problems, 10th revision, Australian modification
LOS	length of stay
METeOR	Metadata Online Registry (AIHW)
MLOS	mean length of stay
NCCH	National Centre for Classification in Health
nec	not elsewhere classified
NHMD	National Hospital Morbidity Database
NISU	National Injury Surveillance Unit
NMDS	National Minimum Data Set

Summary

The aim of this report is to provide information about children and young people aged 0–24 who were hospitalised as a result of poisoning by pharmaceuticals or other substances in Australia. Over 30% of all hospitalised cases of poisoning during 2012–13 involved children and young people aged 0–24 (12,451 cases).

For all types of poisoning combined, age-standardised rates were much higher for girls and young women (223 cases per 100,000 population) compared with boys and young men (109). On average, children and young people spent 2 days in hospital per episode of care, with girls aged 10–14 spending nearly 3 days on average. High threat to life (HTTL) cases were rare (fewer than 1% overall) and mainly infants (<12 months; 2% HTTL cases).

Poisoning by pharmaceuticals

There were 10,620 hospitalised cases of poisoning by pharmaceuticals in 2012–13. Rates were highest among girls aged 15–17 (589 cases per 100,000). The lowest rates were for infants (20 per 100,000) and children aged 5–9 years (9 per 100,000).

The largest group (3,935; 37%) of cases were caused by non-opioid analgesics (for example, ibuprofen and paracetamol) with 84% of the cases due to 4-Aminophenol derivatives such as paracetamol. Psychotropic drugs (for example, tricyclic and tetracyclic antidepressants, antipsychotics and neuroleptics) were the second most common (30%).

For children aged 1–4, there was a much wider range of pharmaceuticals responsible for poisoning compared with other age groups. For the 3 oldest age groups, episodes were dominated by non-opioid analgesics and psychotropic drugs. For those young people aged 10–14, 15–17 and 18–24, poisoning by non-opioid analgesics accounted for 56%, 53% and 29%, respectively, while poisoning by psychotropic drugs accounted for 21%, 27% and 36%, respectively.

Poisoning by other substances

Among children and young people, there were 1,831 hospitalised cases of poisoning by other substances in 2012–13, at a rate of 24 per 100,000 population. Poisoning by other substances occurred mainly in children aged 1–4 (23%) and young people aged 18–24 (37%). Among children aged 1–4, the rate of poisoning was higher among boys (43) compared with girls (27). The most common cause of poisoning by other substances among children and young people was contact with venomous animals (749 cases); insect bites (54%) and spider bites (22%) accounted for the majority of these envenomations.

Intentional self-harm

Almost two-thirds (63%) of poisoning cases among children and young people aged 10–24 were due to intentional self-harm, but this was more common in the older age groups examined (15–17 and 18–24 years). In these groups, intentional self-harm accounted for the largest proportion of hospitalised poisoning among both sexes, though the rates of intentional self-poisoning were higher among females in each age group.

1 Introduction

The aim of this report is to provide information about children and young people aged 0–24 who were hospitalised as a result of poisoning in Australia.

Age and injury are closely linked at some periods of life (AIHW 2012; AIHW: Pointer 2014). Poisoning injuries provide a salient example of how patterns and rates of injury in childhood vary in ways that have often been considered to reflect development (see, for example, Flavin et al. 2006 and MacInnes & Stone 2008). In the report *Injury in children and young people 2011–12* (AIHW: Pointer 2014), rates of poisoning-related cases were found to be highest among toddlers (1–4 years). Rates were also high among adolescents and young adults (15–17 and 18–24 years, respectively).

The high rate of poisoning among toddlers largely results from exposure to substances as very young children become more mobile. The ability of toddlers to explore their surroundings increases opportunities to access a range of substances that can be harmful if ingested (Beirens et al. 2006; Schmertmann et al. 2014).

At the other end of the age spectrum, poisoning in adolescents and young adults often occurs as a result of deliberate self-harm, particularly among girls and young women, and via recreational use (Fadum et al. 2014; Graudins 2015).

The International Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) (NCCH 2010) provides information on the intent of a poisoning episode, together with broad categories of substances reported as the external cause of the poisoning. More specific information about the type of substances involved is available in the principal diagnosis codes. This report uses both sources of information, although the external cause codes are used primarily as an indicator of intent.

Types of substances causing poisoning

Analyses in this report are of hospitalised cases of poisoning with a principal diagnosis in the range T36–T50 *Poisoning by drugs, medicaments, and biological substances* or T51–T65 *Toxic effects of substances chiefly nonmedicinal as to source*.

Poisoning by drugs, medicaments, and biological substances, referred to as 'poisoning by pharmaceuticals' in this report, includes the wrong drug given or taken in error, adverse effects of prescribed drugs taken in combination with self-prescribed drugs and intoxication. Table A1 (Appendix A: Data issues) presents the ICD-10-AM categories included in *Poisoning by drugs, medicaments, and biological substances* along with a lay description of each category and some examples of types of pharmaceuticals covered by that category.

Most of the substances included in the ICD section on *Poisoning by drugs, medicaments, and biological substances* are predominantly used in medical care, variously requiring a medical prescription to be dispensed or available without a prescription. Some of the substances are also used recreationally. The hospitalisation data used here do not provide information on how the person obtained or accessed the substance.

Toxic effects of substances chiefly nonmedicinal as to source, referred to as 'poisoning by other substances' in this report, includes inhalation of gases, fumes and vapours, contact with venomous animals as well as ingestion of various toxic substances. Other substances covers a

wide variety of substances including venom from animals and alcohol. Also included are many substances found in cleaning products such as soaps and detergents in the home.

Mechanism of poisoning

Poisonings from medications can occur in a number of ways. Poisoning can result from dosing errors (for example, too much drug ingested in 1 dose or giving doses too close together too often), and unintentional exposure (for example, unintentional poisoning due to a toddler ingesting prescription drugs for another member of the family) (Blake et al. 2014; Sood et al. 2013) and intentional overdosing—self-inflicted and assault (Nielsen et al. 2013).

Poisoning by prescription and over-the-counter drugs can also occur when certain medications are taken together. For example, when a person takes the wrong drug or combination of drugs, or in the wrong amount, it may lead to poisoning. Polydrug use is not examined in the present report due to limitations of the data.

Poisoning by other substances is much more common in young children, while poisoning by alcohol is more often seen in adolescents and young adults (AIHW 2014b; AIHW: Pointer 2014; Schmertmann et al. 2012). For adolescents and young adults, poisoning by alcohol can be intentional or unintentional. As young people progress through adolescence and into young adulthood, exposure to alcohol increases, as do the risks associated with drinking (see, for example, AIHW 2014b).

For very young children (aged 0–4), poisoning by other substances has been shown to be influenced heavily by developmental stage (Beirens et al. 2006; Schmertmann et al. 2014). Toddlers are keen explorers of their environments and places such as low-level kitchen and laundry cupboards are often used to store other substances such as cleaning products. At these low heights, other substances are more easily accessible to curious toddlers than medicines, which tend to be stored in higher places (Rosenberg et al. 2011).

Toxic effects from envenomation includes reactions to bee, wasp and other insect stings and snake and spider bites. Reactions to envenomation can range from minor local reactions (redness and itchiness) to anaphylaxis (Tan & Campbell 2013) and death.

Age groups

The age groups used in this report are based on relevant age groups in the National Injury Prevention and Safety Promotion Plan: Children (0–4 and 5–14 years) and Youth and young adults (15–24 years) (NPHP 2005), with additional subdivisions made as follows:

- less than 12 months (Infancy)
- 1–4 years (Early childhood)
- 5–9 years (Middle childhood)
- 10–14 years (Late childhood)
- 15–17 years (Adolescence)
- 18–24 years (Young adulthood).

The relationship between the age bands and developmental stages has been discussed previously in the *Hospitalised injury in children and young people 2011–12* report (AIHW: Pointer 2014).

Methods and data sources

This report uses data from the National Hospital Morbidity Database (NHMD) covering the period 1 July 2012 to 30 June 2013 to provide information on children and young people in Australia who were hospitalised as a result of poisoning by pharmaceuticals or other substances.

Diagnosis and external cause information for the hospital separations reported here were classified according to the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) (NCCH 2010). It comprises classifications of diseases and external causes of injuries and poisoning, based on the World Health Organization's version of ICD-10. The ICD-10-AM classification is hierarchical, with 20 summary disease chapters that are divided into a large number of more specific disease groupings.

The report does not include poisoning cases that presented to the emergency departments of Australian hospitals or visits to general practitioners. Data from the former are available in the National Non-admitted Patient Emergency Department Care Database, but further investigation of its usefulness and limitations is needed before routine reporting.

Deaths that occur as a result of poisoning are only included where the child or young person died in hospital after an admission. Reporting on other deaths is out of scope for this report.

Fortunately, in Australia hospitalisations for poisoning among infants (<12 months) are relatively infrequent. In 2012–13, there were 106 cases of infants hospitalised due to poisoning. Due to the small number of cases in this age group, presentation of rates of poisoning for infants were only included in the Overview (Chapter 2).

Additionally, readers are cautioned that in some instances throughout this report rates of poisoning were based on fewer than 100 cases. This is particularly so for analyses describing the type of poisoning by remoteness of usual residence. In some instances, certain age categories have been excluded due to small case numbers, and in other instances note has been made in the text of the small case numbers represented.

Due to the relatively small number of cases of poisoning among Aboriginal and Torres Strait Islander children and young people each year, analyses were not included. Some information on poisoning among Aboriginal and Torres Strait Islander children and young people can be found in the AIHW report *Hospitalised injury in Aboriginal and Torres Strait Islander children and young people 2011–13* (AIHW: Pointer 2015).

What data were reported?

In addition to counts and other basic descriptive statistics, this report presents crude (age-specific) and age-standardised rates. Information about the calculation and use of rates can be found in Appendix A.

Records that met all of the following criteria were included in this report:

- hospital separations occurring in Australia from 1 July 2012 to 30 June 2013
- age at the time of admission 0–24
- principal diagnosis in the ICD-10-AM range T36–T65 *Poisoning by drugs, medicaments and biological substances* from Chapter XIX Injury, poisoning and certain other consequences of external causes.

In tables and charts, unless stated otherwise, separations for which age and sex were not reported were included in totals.

Important terms regarding the data used in this report are summarised in Boxes 1.1 to 1.3 and further information on data and methods is provided in Appendix A.

Box 1.1: Summary of terms relating to hospitalised injury

Statistics on admitted patients are compiled when an admitted patient (a patient who undergoes a hospital's formal admission process) completes an episode of admitted patient care and 'separates' from the hospital. This is because most of the data on the use of hospitals by admitted patients are based on information available at the end of the patients' episodes of care, rather than at the beginning. The length of stay and the procedures carried out are then known and the diagnostic information is more accurate.

Separation is the term used to refer to the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

The **principal diagnosis** is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care.

An **external cause** is defined as the environmental event, circumstance or condition that was the cause of injury or poisoning. Whenever a patient has a principal or additional diagnosis of an injury or poisoning, an external cause code should be recorded. External cause codes include information on whether the poisoning was accidental or intentional.

The **separation records** included in this report are those that have a principal diagnosis code in the ICD-10-AM range T36–T65. Records are included whether caused unintentionally ('accidents') or intentionally (intentional self-harm, or assault). Records where intent was not determined are also included. The diagnosis codes T36–T65 do not include adverse effects of treatment by pharmaceuticals when the correct substance was properly administered (e.g. effects attributed to 'hypersensitivity').

Injury cases are estimated as the number of injury separations, less those records where the mode of admission was 'inward transfer'. Inward transfers are omitted to reduce over-counting (see Appendix A for details).

The **mean length of stay** is the average number of days each patient stayed in hospital. This is calculated by dividing the total number of patient days for **injury separations** by the number of **injury cases,** estimated as above. Patients who were admitted and discharged from hospital on the same day are counted as staying for 1 day other than where indicated in the text.

Injuries can be classified according to the likelihood that a patient with that injury will die in hospital. The method used refers to cases with predicted mortality risk of about 6% or higher as having a **high threat to life** (Stephenson et al. 2003). Injuries of this severity are likely to have a large impact on the patient, often with persisting problems and ongoing need for health-care services. This report contains information on the proportion of cases of injury that were classified as high threat to life.

Box 1.2: Ascertainment of intentional self-harm

According to inclusion notes in ICD-10-AM, cases should be assigned codes in the range X60–X84 if they are purposely self-inflicted poisoning or injury, suicide or attempted suicide (NCCH 2010). Determining whether an injury was due to intentional self-harm is not always straightforward. Cases may appear to be intentional self-harm, but inconclusiveness of available information may preclude them being coded as such. In this situation, the case can be coded to an 'undetermined intent' category (for example, Y17, *Poisoning by and exposure to other gases and vapours, undetermined intent*).

Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries, or because their motives were ambiguous.

In very young children, ascertaining whether an injury was due to intentional self-harm can be difficult and may involve a parent or caregiver's perception of the intent. Ability to form an intention to inflict self-harm, and to understand the implications of doing so, requires a degree of maturation that is absent in infancy and early childhood. It is not possible to differentiate between acts of self-injury and acts of self-harm with suicidal intent within the NHMD, but it is likely that an unknown proportion of cases of intentional self-harm in late childhood and at older ages are self-injurious in nature rather than suicidal in intent. The age at which self-inflicted acts can be interpreted as intentional self-harm is not well defined and is the subject of debate. Such sources of uncertainty about the assignment of intent limit the certainty of any estimates of intentional self-harm based on routine hospital data. For these reasons, in this report, cases of intentional self-harm are suppressed in age groups younger than 10 years.

Box 1.3: Drug names

Throughout this report substances identified as the principal diagnosis of a poisoning episode are referred to by the name assigned by the ICD-10-AM. Many of these substances also have colloquial or common names. For example, in the category *Poisoning by nonopioid analgesics, antipyretics and antirheumatics* (T39), *4-Aminophenol derivatives* (T39.1) are listed as 1 of 6 specified classes of substance. One form of 4-Aminophenol derivatives is more commonly known as paracetamol. In addition, a number of principal diagnoses have 2 or more substances included under a generic description. For example, in the category *Poisoning by narcotics and psychodysleptics (hallucinogens)* (T40), *Other opioids* (T40.2) contains cases of poisoning by codeine or morphine. Neither substance is individually identifiable. Where practicable, a note of the common name of a substance is made within the text.

A list of ICD-10-AM categories included in T36–T50 *Poisoning by drugs, medicaments, and biological substances*, along with a lay description of each category and some examples of types of drugs, is provided in Appendix A: Data issues.

Structure of this report

Chapter 2 provides an overview of children and young people hospitalised as a result of poisoning in Australia. The information provided includes number of poisoning cases by age and sex, length of stay and whether they would have been associated with a high threat to life. The chapter also includes a description of the place of occurrence of the episode of poisoning and the remoteness of the place of usual residence of the patient.

Chapter 3 provides information on the types of substances responsible for hospitalised cases due to poisoning by pharmaceuticals.

Chapter 4 provides information on the types of substances responsible for hospitalised cases due to poisoning by other substances.

Chapter 5 describes aspects of the intent associated with cases of poisoning and looks at both intentional and unintentional causes of poisoning.

Appendix A: Data issues provides summary information on the NHMD, notes on the presentation of data, the population estimates used to calculate population rates, analysis methods, and information on data quality.

Appendix B: Additional tables consists of tables underpinning selected figures presented in the report.

2 Overview

Age and sex

There were 39,167 hospital separations due to poisoning in Australia during 2012–13 (Table 2.1). Excluding transfers from other acute hospitals, there were an estimated 37,417 cases. Over 30% of these cases (12,451) occurred in children and young people aged 0–24 at the time of admission.

Almost twice as many girls and young women were hospitalised compared with boys and young men. Rates were twice as high in girls and young women compared with boys and young men.

Table 2.1: Key indicators for poisoning (T36–T65) cases, by sex, Australia, 2012–13

	Children and young people (0–24 years)			All ages		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Separations from hospital due to poisoning	4,488	8,541	13,029	16,076	23,091	39,167
Injury cases due to poisoning	4,290	8,161	12,451	15,366	22,051	37,417
Age-standardised rate/100,000 population	109	223	165	135	196	165

The greatest proportion of poisoning cases occurred in the 18–24 year age group (49%) (Table 2.2). Small numbers of cases occurred in children less than 12 months and in 5–9 year olds. There were differences in the relative contributions of each age group for each sex. For example, for females, the 15–17 age group contributed 32% of all 0–24 female injury hospitalisation cases whereas for males the 15–17 group contributed 16%. In contrast, the male 1–4 and 5–9 groups (23% combined) contributed greater proportions of total 0–24 male injury cases than did the corresponding female groups (9% combined).

Table 2.2: Poisoning (T36–T65) cases in children and young people, by age and sex, 2012–13

	Males		Females		Persons	
Age group	**Number**	**%**	**Number**	**%**	**Number**	**%**
<12 months	46	1.1	60	0.7	106	0.9
1–4	780	18.2	607	7.4	1,387	11.1
5–9	208	4.8	128	1.6	336	2.7
10–14	245	5.7	1,001	12.3	1,246	10.0
15–17	696	16.2	2,596	31.8	3,292	26.4
18–24	2,315	54.0	3,769	46.2	6,084	48.9
Total	**4,290**	**100**	**8,161**	**100**	**12,451**	**100**

Figure 2.1 presents age-specific rates of poisoning for males and females by age group. The rate was very similar for boys and girls in the 3 youngest age groups. The difference between boys and girls was more apparent at 10–14 years and the rate for girls (619 cases per 100,000 population) was almost quadruple that for boys at 15–17 years (157).

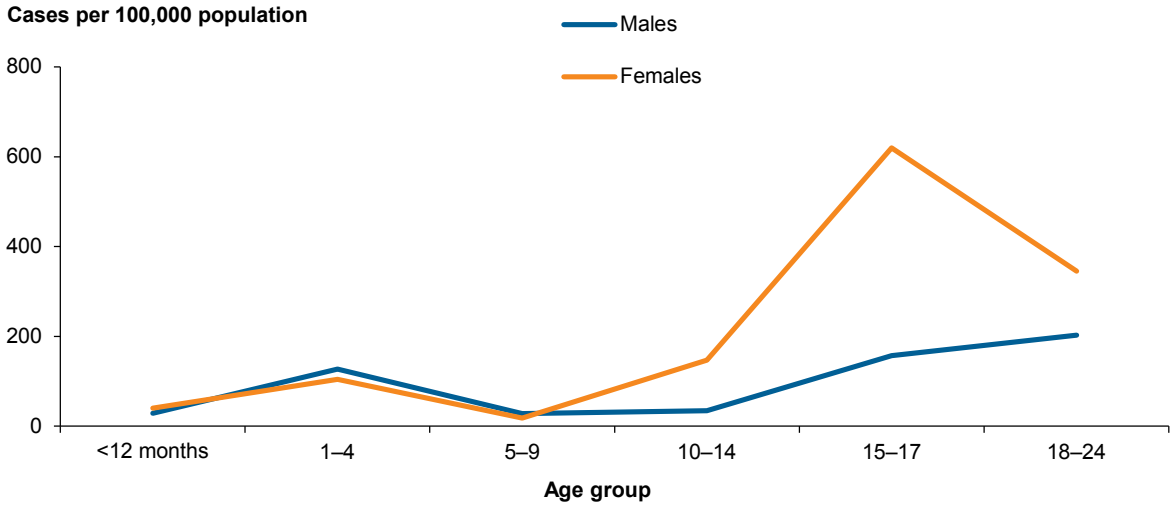


Figure 2.1: Age-specific rates of poisoning (T36–T65) cases in children and young people, by sex, 2012–13

Length of stay

Mean length of stay (MLOS) for an episode of poisoning increased with age (Table 2.3, Figure 2.2).

Table 2.3: Length of stay for poisoning (T36–T65): case counts, total patient days and mean length of stay in children and young people, 2012–13

	Males			Females			Persons		
Age group	Cases	Total patient days	MLOS	Cases	Total patient days	MLOS	Cases	Total patient days	MLOS
<12 months	46	62	1.3	60	69	1.2	106	131	1.2
1–4	780	927	1.2	607	740	1.2	1,387	1,667	1.2
5–9	208	254	1.2	128	163	1.3	336	417	1.2
10–14	245	423	1.7	1,001	2,807	2.8	1,246	3,230	2.6
15–17	696	1,341	1.9	2,596	6,210	2.4	3,292	7,551	2.3
18–24	2,315	4,887	2.1	3,769	8,445	2.2	6,084	13,332	2.2
Total	**4,290**	**7,894**	**1.8**	**8,161**	**18,434**	**2.3**	**12,451**	**26,328**	**2.1**

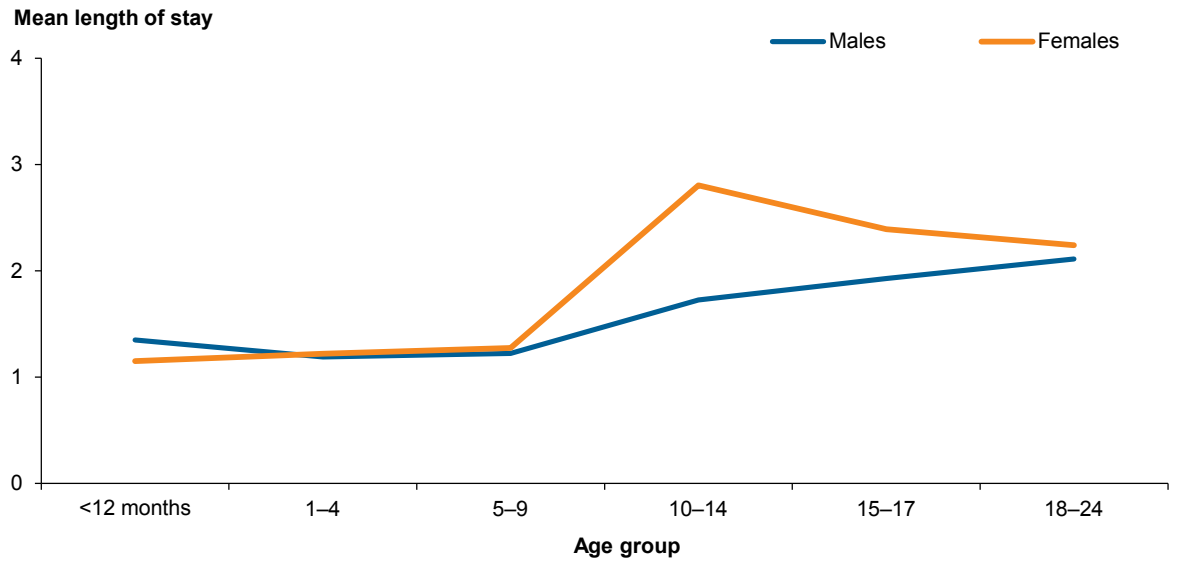


Figure 2.2: Mean length of stay for poisoning (T36–T65) cases in children and young people, by sex, 2012–13

For all children and young people, discharge occurred on the same day as admission for a third (35%) of all poisoning separations. Older children and young adults were discharged from hospital on the same day less often than younger children and infants. For example, half of all separations for infants (51%) resulted in discharge from hospital on the same day compared with 36% of separations for young adults (18–24).

High threat to life

Overall, fewer than 1% of cases of poisoning in children and young people were considered a high threat to life (HTTL; Table 2.4). A higher proportion of male cases (1.2%) were HTTL compared with females (0.4%). The highest proportion (4.3%) of HTTL cases was seen in infant boys. No other age group had greater than 2% of cases in the HTTL category. There were 2 deaths in hospital recorded for children and young people in 2012–13.

Table 2.4: High threat to life[(a)] poisoning (T36–T65) cases in children and young people, 2012–13

	Males			Females			Persons		
Age group	Number	% HTTL	Died	Number	% HTTL	Died	Number	% HTTL	Died
<12 months	46	4.3	0	60	0.0	0	106	1.9	0
1–4	780	0.8	0	607	1.2	0	1,387	0.9	0
5–9	208	0.0	0	128	0.0	0	336	0.0	0
10–14	245	0.8	0	1,001	0.6	0	1,246	0.6	0
15–17	696	1.0	0	2,596	0.3	0	3,292	0.5	0
18–24	2,315	1.6	0	3,769	0.3	2	6,084	0.8	2
Total	**4,290**	**1.2**	**0**	**8,161**	**0.4**	**2**	**12,451**	**0.7**	**2**

(a) High threat to life cases defined as ICISS <0.941 (Stephenson et al. 2003) see Box 1.1.

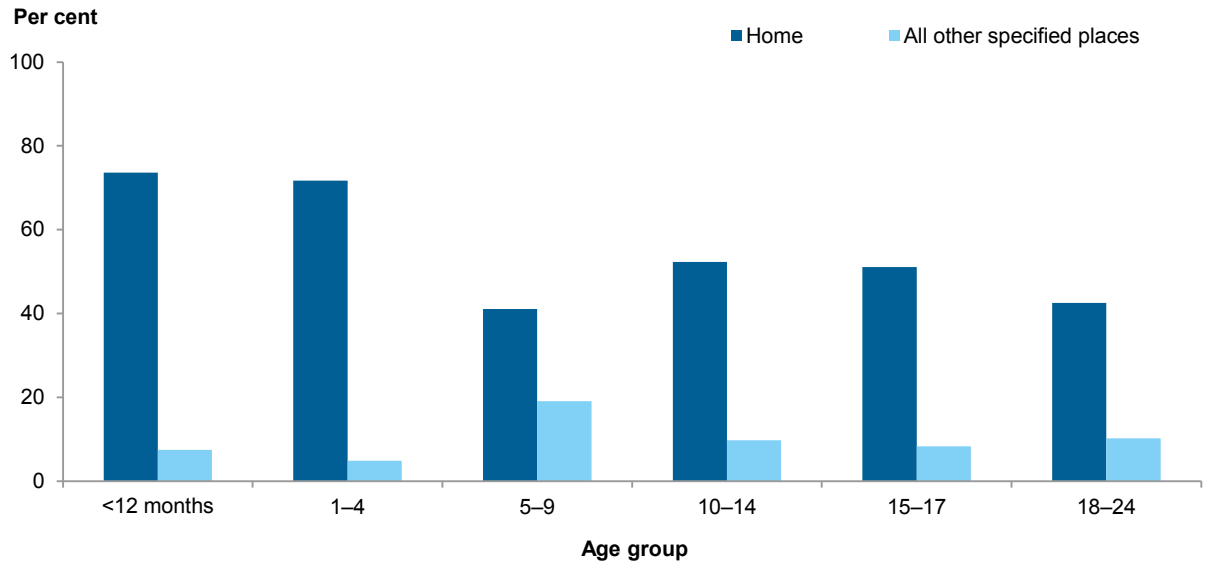
Place of injury

Where specific information was available, almost all cases of poisoning in children and young people were reported to have occurred in the home (Table 2.5). This was true for males (79%) and females (86%). Place of occurrence was not specified in 41% of poisoning cases in children and young people.

Table 2.5: Place of occurrence of poisoning (T36–T65) cases in children and young people, 2012–13

	Males		Females		Persons	
Place of occurrence	**Number**	**%**	**Number**	**%**	**Number**	**%**
Home	1,931	45.0	4,202	51.5	6,133	49.3
Residential institution	28	0.7	54	0.7	82	0.7
School, other institution and public administration area	145	3.4	319	3.9	464	3.7
Sports and athletics area	17	0.4	7	0.1	24	0.2
Street and highway	32	0.7	30	0.4	62	0.5
Trade and service area	99	2.3	94	1.2	193	1.6
Industrial and construction area	11	0.3	3	0.0	14	0.1
Farm	8	0.2	6	0.1	14	0.1
Other specified place of occurrence	170	4.0	148	1.8	318	2.6
Unspecified or not reported	1,849	43.1	3,298	40.4	5,147	41.3
Total	**4,290**	**100**	**8,161**	**100**	**12,451**	**100**

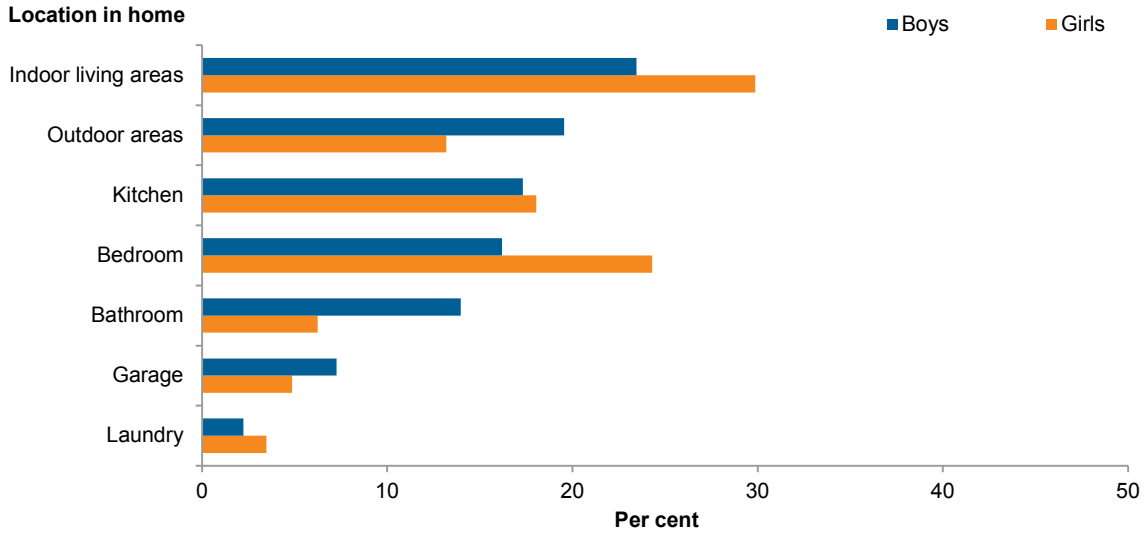
The home was the predominant place of occurrence within each of the age groups (Figure 2.3) but higher proportions of home-based poisoning were seen in the 2 youngest age groups.



Note: Location was unspecified in 41% of cases.

Figure 2.3: Place of occurrence for poisoning (T36–T65) cases in children and young people, by age, 2012–13

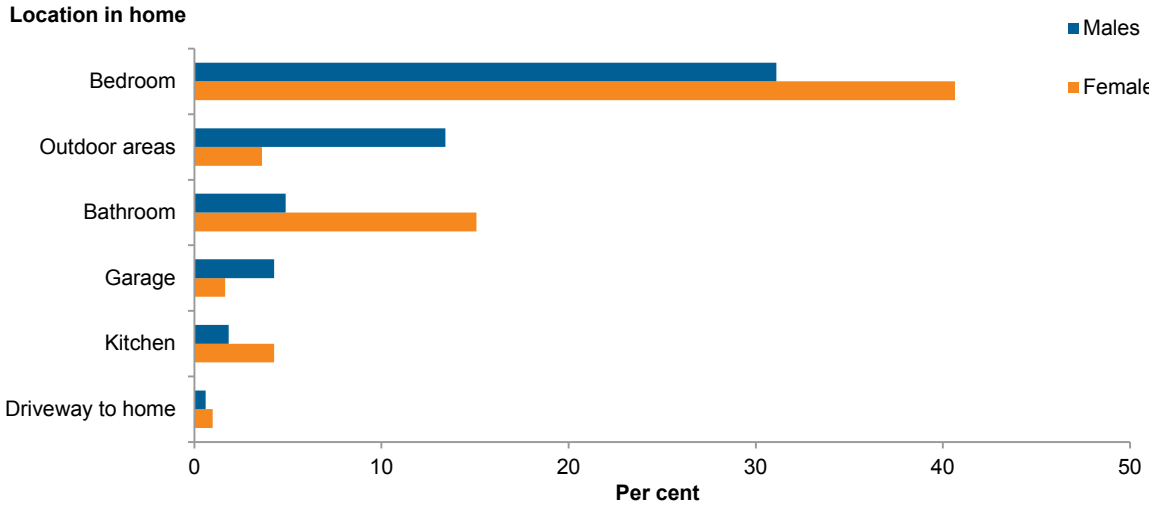
A closer look at specified locations within the home where poisoning took place among 1–4 year olds (323 cases) shows that the most common location was indoor living areas for both boys (24%) and girls (30%) (Figure 2.4). A high proportion of poisoning injuries in specified locations within the home also occurred in the bedroom for girls (24%). For boys, the second highest proportion of injuries occurred in outdoor areas (20%).



Note: Other and unspecified place in home cases (68%) excluded from the analysis.

Figure 2.4: Locations in the home for poisoning (T36–T65) cases in children aged 1–4, by sex, 2012–13

Among young adults (aged 18–24) 469 cases occurred within specified places in the home (Figure 2.5). The majority of poisoning occurred in the bedroom for both males (31%) and females (41%).



Note: Other and unspecified place in home cases (82%) excluded from the analysis.

Figure 2.5: Locations in the home for poisoning (T36–T65) cases in young adults aged 18–24, by sex, 2012–13

Remoteness of usual residence

Patterns and rates of injury change with increasing remoteness (AIHW 2008). The age-standardised rate of injury in children and young people due to poisoning increased with increasing remoteness up to a point (Table 2.6). The highest rate occurred in *Remote* regions (236 cases per 100,000), while children and young people hospitalised as a result of poisoning resident of *Very remote* regions (177 per 100,000 population) had the second to lowest rate. The lowest rate of poisoning was seen in *Major cities* (150 cases per 100,000).

Table 2.6: Poisoning (T36–T65) cases, by remoteness of usual residence for children and young people, 2012–13

	Remoteness of usual residence					
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Total**[(a)]
Poisoning cases	8,106	2,492	1,324	241	134	12,451
Proportion poisoning cases (%)	65	20	11	2	1	100
Age-standardised rate (cases per 100,000 population)	150	186	205	236	177	165

(a) Includes 154 cases where remoteness was not reported or residence was reported as an external territory.

Caution should be exercised in interpreting the rates of poisoning by remoteness of usual residence due to combinations of age and remoteness of usual residence resulting in some counts of fewer than 100 cases. This is particularly the case in *Remote* and *Very remote* regions.

Rates for females hospitalised as a result of poisoning were much higher than males in all remoteness zones other than *Very remote* regions (Figure 2.6). Age-standardised rates of poisoning were more than twice as high among females (332 cases per 100,000) living in *Remote* regions compared with males (153 cases per 100,000). This was also true in *Major cities* were the rate of poisoning among females was 208 cases per 100,000 compared with 94 cases per 100,000 for males.

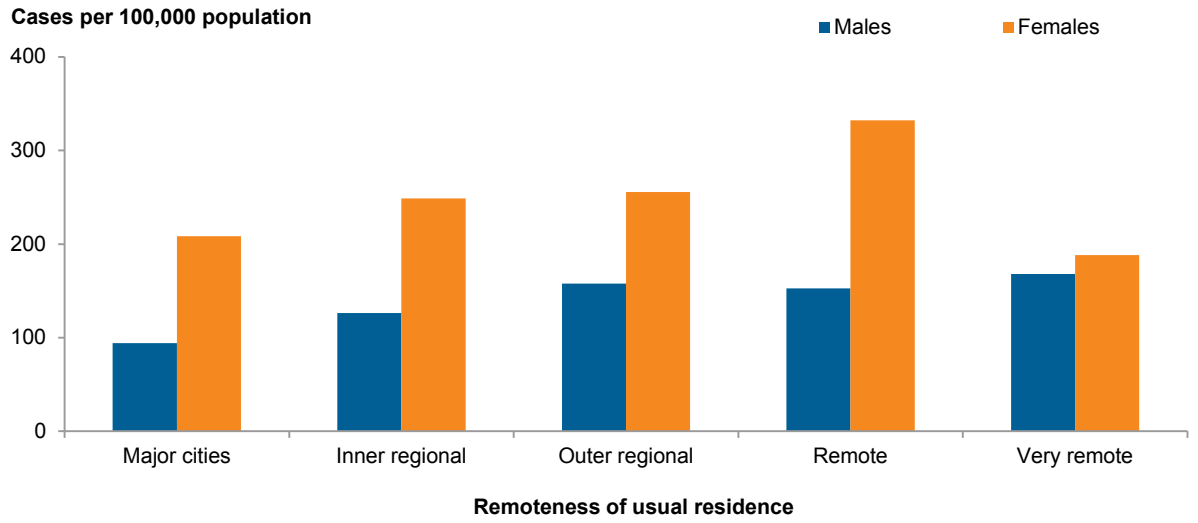
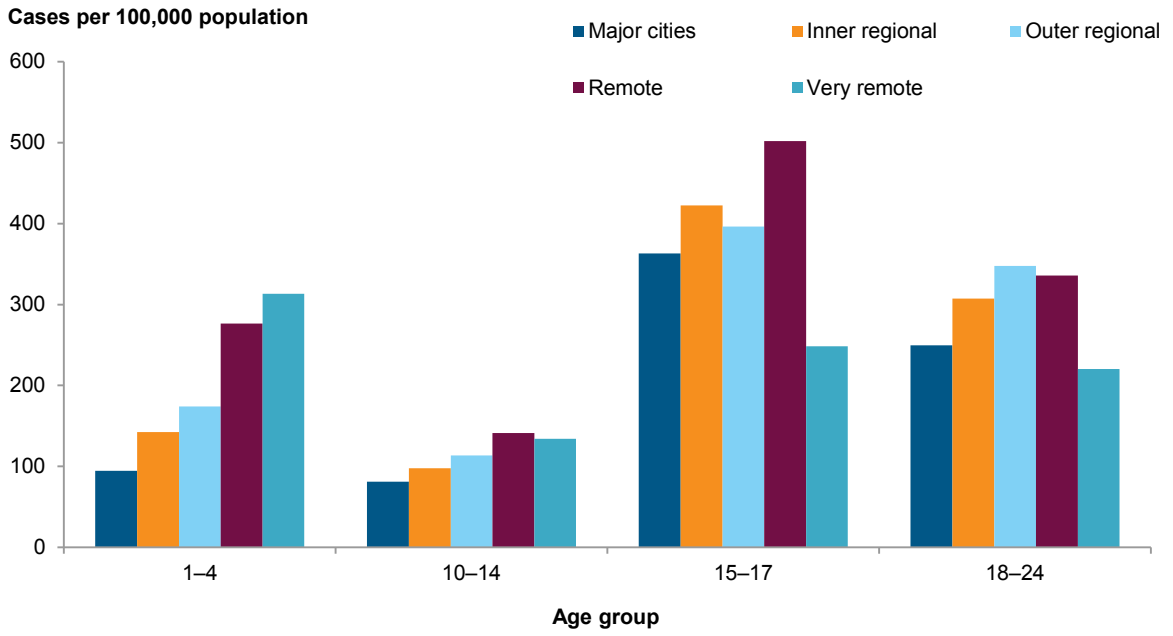


Figure 2.6: Poisoning (T36–T65) cases, by remoteness of usual residence for children and young people, by sex, 2012–13

The distribution of poisoning cases by age group shows a similar pattern according to age, with higher age-specific rates in all regions for children aged 1–4 and young people aged 15–17 (Figure 2.7). Increasing rates by increasing remoteness of usual residence can be seen for children in the 4 youngest age groups.



Note: Rates for infants (<12 months) and children aged 5–9 are not shown due to small case numbers.

Figure 2.7: Poisoning (T36–T65) cases, by remoteness of usual residence for children and young people, by age, 2012–13

In contrast, 15–17 year olds had much higher rates of poisoning among females (672 cases per 100,000) than males (169 cases per 100,000), particularly in *Remote* and *Very remote* regions where the rate is 4 times higher (Figure 2.8).

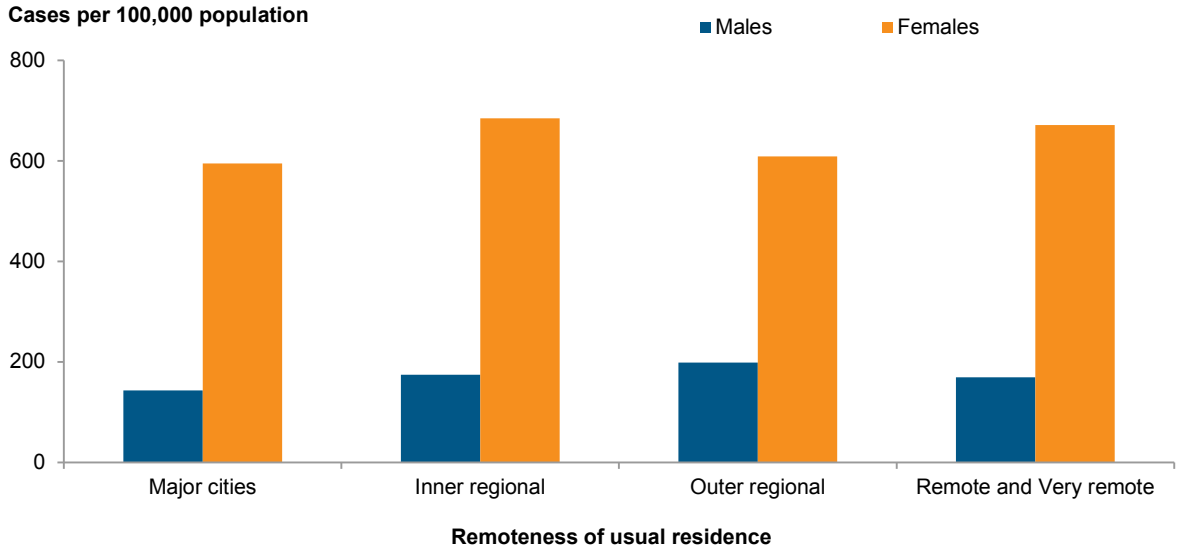


Figure 2.8: Poisoning (T36–T65) cases, by remoteness of usual residence for children aged 15–17, by sex, 2012–13

3 Poisoning by pharmaceuticals

There were an estimated 10,620 hospitalised cases of poisoning by pharmaceuticals (T36–T50) in children and young people during 2012–13 (Table 3.1). More females (91%) were hospitalised as a result of poisoning by pharmaceuticals compared with males (75%). The rate of poisoning by pharmaceuticals for females (202 cases per 100,000 population) was more than twice that of males (82).

Table 3.1: Key indicators for poisoning by pharmaceuticals (T36–T50) cases in children and young people, by sex, Australia, 2012–13

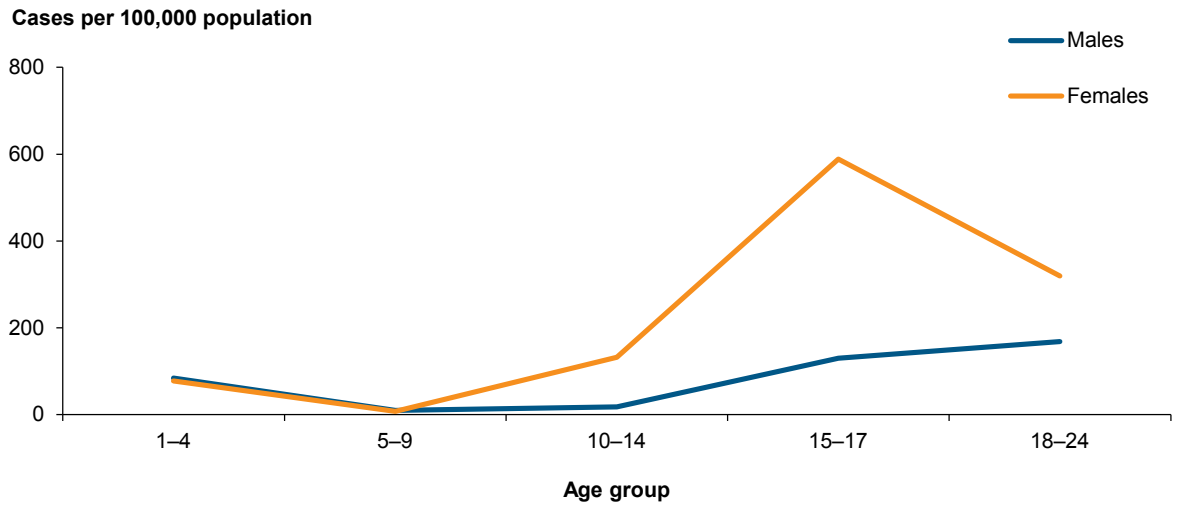
	Poisoning, pharmaceuticals (T36–T50)			All poisoning cases in children and young people (T36–T65)		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Injury cases due to poisoning	3,235	7,385	10,620	4,290	8,161	12,451
Per cent of all poisoning cases in children and young people (T36–T65)	75	91	85			
Age-standardised rate (cases per 100,000 population)	82	202	140	109	223	165

Cases of poisoning by pharmaceuticals were more prominent in the 2 older age groups: 29% and 51% were aged 15–17 and 18–24, respectively; this was true for both males and females (Table 3.2). In the younger age groups (under 15 years) differences between boys and girls were more apparent. For example, 16% of boys hospitalised as a result of poisoning by pharmaceuticals were aged 1–4. Girls in the same age group (1–4) made up just 6% of cases of all young girls hospitalised due to poisoning by pharmaceuticals.

Table 3.2: Poisoning by pharmaceuticals (T36–T50) cases in children and young people, by age and sex, 2012–13

	Males		Females		Persons	
Age group	**Number**	**%**	**Number**	**%**	**Number**	**%**
<12 months	27	0.8	35	0.5	62	0.6
1–4	514	15.9	449	6.1	963	9.1
5–9	72	2.2	51	0.7	123	1.2
10–14	127	3.9	896	12.1	1,023	9.6
15–17	575	17.8	2,468	33.4	3,043	28.7
18–24	1,920	59.4	3,486	47.2	5,406	50.9
Total	**3,235**	**100**	**7,385**	**100**	**10,620**	**100**

Figure 3.1 presents age-specific rates of poisoning by pharmaceuticals for males and females by age group. The rate was very similar for boys and girls in the 3 youngest age groups. The difference between boys and girls was apparent at age 10–14 and was even greater at 15–17. Within this age group, the rate of poisoning by pharmaceuticals among girls was 589 cases per 100,000 population compared with 130 among boys. While the rate of poisoning by pharmaceuticals was higher among young women at 18–24 years, the difference with their male counterparts was less.



Note: Rates for infants (<12 months) are not shown due to small case numbers.

Figure 3.1: Age specific rates of poisoning by pharmaceuticals (T36–T50) cases in children and young people, 2012–13

Length of stay

Mean length of stay (MLOS) for an episode of poisoning by pharmaceuticals is shown in Figure 3.2. For the 3 youngest age groups, MLOS averaged 1 day, with little difference between girls and boys. From 10–14 years, MLOS was highest among girls at 3 days per episode. There were 6 cases of poisoning by pharmaceuticals that resulted in lengths of stay of 100 or more days. All but 1 of these cases was female and all were aged 14 or over.

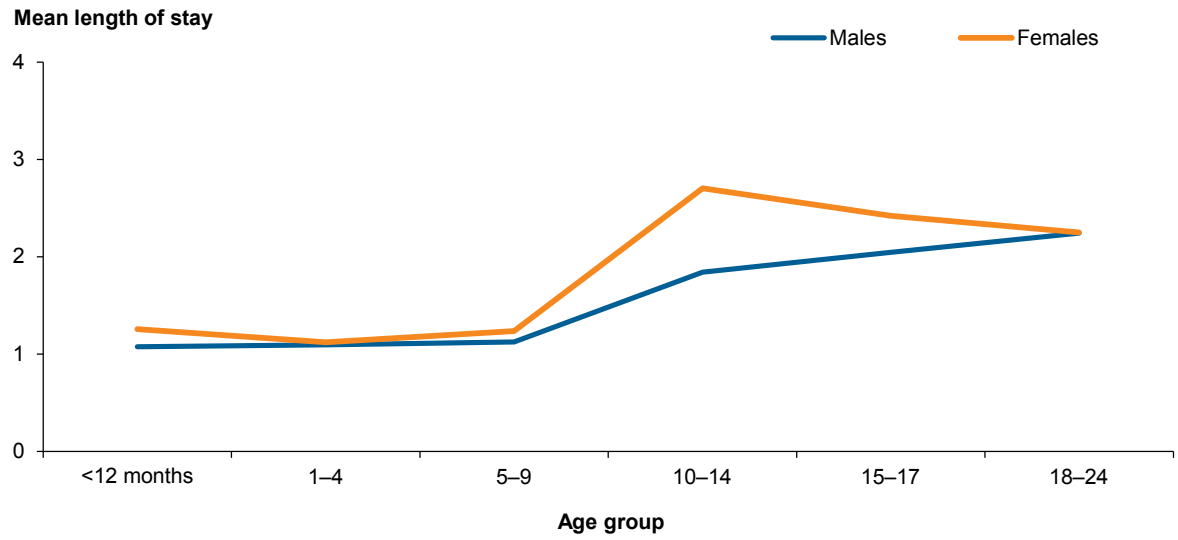


Figure 3.2: Mean length of stay for poisoning by pharmaceuticals (T36–T50) cases in children and young people, by sex, 2012–13

Discharge occurred on the same day as admission for a third of all poisoning by pharmaceuticals separations (33%) for all children and young people. Older children and young adults were discharged from hospital on the same day less often than younger children and infants. For example, half of all separations for infants (49%) resulted in

discharge from hospital on the same day compared with 34% of separations for young adults (aged 18–24). There were 2 deaths due to poisoning by pharmaceuticals.

Type of pharmaceutical

As shown in Table 3.3, the majority (37%) of hospitalised cases caused by poisoning by pharmaceuticals were poisoning by non-opioid analgesics (for example, anti-inflammatory drugs (non-steroidal anti-inflammatory drugs or NSAIDs) such as ibuprofen) and paracetamol), antipyretics (for example, aspirin and acetaminophen) and antirheumatics (some of which are used to treat arthritis). Psychotropic drugs (for example, tricyclic and tetracyclic antidepressants, antipsychotics and neuroleptics) were the second most common substances (30%) causing hospitalisations in children and young people, with antiepileptic, sedative-hypnotic and antiparkinsonism drugs (13%) the third.

Differences between males and females were evident, with the largest proportion of cases due to poisoning by pharmaceuticals in males caused by psychotropic drugs (32%) while in females it was non-opioid analgesics, antipyretics and antirheumatics (43%). In addition, higher proportions for males were due to poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs (15% versus 11%) and narcotics and psychodysleptics (10% versus 4%).

Table 3.3: Poisoning by pharmaceuticals (T36–T50) cases in children and young people, by sex and type of substance, 2012–13

	Males		Females		Persons	
Poisoning by	**Number**	**%**	**Number**	**%**	**Number**	**%**
Non-opioid analgesics, antipyretics and antirheumatics	771	23.8	3,164	42.8	3,935	37.1
Psychotropic drugs	1,022	31.6	2,152	29.1	3,174	29.9
Antiepileptic, sedative-hypnotic and antiparkinsonism drugs	485	15.0	844	11.4	1,329	12.5
Narcotics and psychodysleptics (hallucinogens)	312	9.6	307	4.2	619	5.8
Diuretics and other and unspecified drugs, medicaments and biological substances	127	3.9	171	2.3	298	2.8
Primarily systemic and haematological agents	79	2.4	153	2.1	232	2.2
Agents primarily affecting the cardiovascular system	108	3.3	118	1.6	226	2.1
Hormones and their synthetic substitutes and antagonists	66	2.0	129	1.7	195	1.8
Drugs primarily affecting the autonomic nervous system	72	2.2	96	1.3	168	1.6
Topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs	52	1.6	61	0.8	113	1.1
Anaesthetics and therapeutic gases	68	2.1	44	0.6	112	1.1
Systemic antibiotics antirheumatics	26	0.8	59	0.8	85	0.8
Agents primarily acting on smooth and skeletal muscles and the respiratory system	28	0.9	36	0.5	64	0.6
Agents primarily affecting the gastrointestinal system	10	0.3	37	0.5	47	0.4
Other systemic anti-infectives and antiparasitics	9	0.3	14	0.2	23	0.2
Total	**3,235**	**100**	**7,385**	**100**	**10,620**	**100**

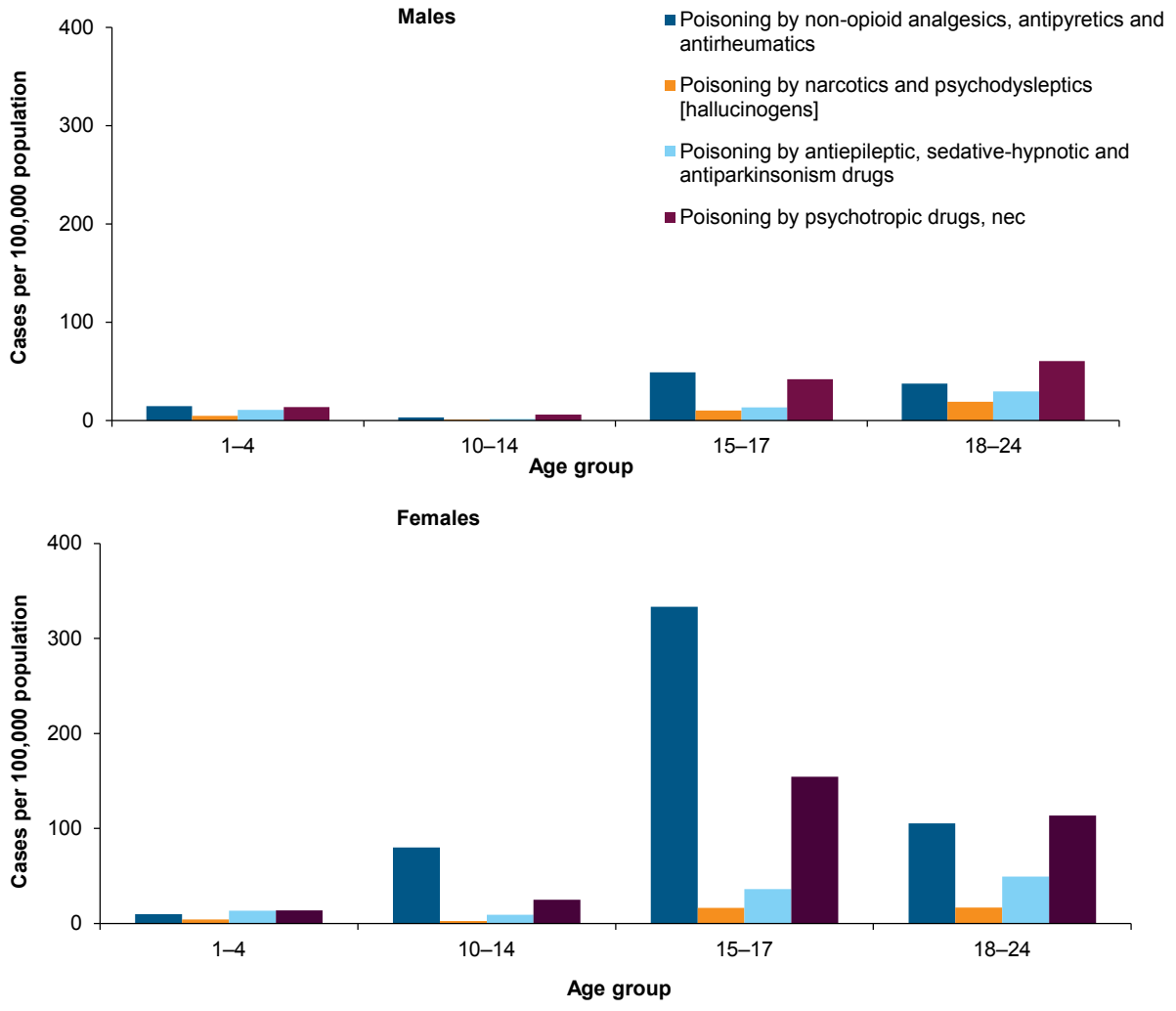
The distribution of poisoning by pharmaceuticals by age can be seen in Table 3.4. There were far fewer cases among infants (<12 months) and children aged 5–9 for all of the substances listed. For children aged 1–4, there was a much wider range of substances responsible for hospitalisation due to poisoning by pharmaceuticals. In addition, children in this age group had the highest number of cases of poisoning by pharmaceuticals primarily affecting the autonomic nervous system (69), cardiovascular system (89), gastrointestinal system (18), and topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs (79).

For children and young people in the 3 oldest age groups, hospitalisation caused by poisoning by pharmaceuticals was dominated by psychotropic drugs and non-opioid analgesics. For those aged 10–14, 15–17 and 18–24, poisoning by non-opioid analgesics accounted for 56%, 53% and 29% of all substances, respectively, and poisoning by psychotropic drugs accounted for 21%, 27% and 36% of cases, respectively.

Table 3.4: Poisoning by pharmaceuticals (T36–T50) cases in children and young people, by age and type of substance, 2012–13

	<12 months		1–4		5–9		10–14		15–17		18–24		Total	
Poisoning by	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Non-opioid analgesics, antipyretics and antirheumatics	9	14.5	148	15.4	14	11.4	569	55.6	1,615	53.1	1,580	29.2	3,935	37.1
Psychotropic drugs	11	17.7	165	17.1	20	16.3	214	20.9	834	27.4	1,930	35.7	3,174	29.9
Antiepileptic, sedative-hypnotic and antiparkinsonism drugs	5	8.1	146	15.2	16	13	75	7.3	211	6.9	876	16.2	1,329	12.5
Narcotics and psychodysleptics (hallucinogens)	8	12.9	55	5.7	13	10.6	26	2.5	115	3.8	402	7.4	619	5.8
Diuretics and other and unspecified drugs, medicaments and biological substances	2	3.2	58	6	8	6.5	28	2.7	53	1.7	149	2.8	298	2.8
Primarily systemic and haematological agents	3	4.8	62	6.4	7	5.7	16	1.6	51	1.7	93	1.7	232	2.2
Agents primarily affecting the cardiovascular system	5	8.1	89	9.2	26	21.1	33	3.2	35	1.2	38	0.7	226	2.1
Hormones and their synthetic substitutes and antagonists	3	4.8	37	3.8	9	7.3	25	2.4	35	1.2	86	1.6	195	1.8
Drugs primarily affecting the autonomic nervous system	2	3.2	69	7.2	6	4.9	10	1	25	0.8	56	1	168	1.6
Topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs	8	12.9	79	8.2	1	0.8	5	0.5	9	0.3	11	0.2	113	1.1
Anaesthetics and therapeutic gases	2	3.2	8	0.8	0	0	0	0	4	0.1	98	1.8	112	1.1
Systemic antibiotics antirheumatics	1	1.6	3	0.3	1	0.8	9	0.9	32	1.1	39	0.7	85	0.8
Agents primarily acting on smooth and skeletal muscles and the respiratory system	1	1.6	19	2	2	1.6	4	0.4	12	0.4	26	0.5	64	0.6
Agents primarily affecting the gastrointestinal system	2	3.2	18	1.9	0	0	6	0.6	7	0.2	14	0.3	47	0.4
Other systemic anti-infectives and antiparasitics	0	0	7	0.7	0	0	3	0.3	5	0.2	8	0.1	23	0.2
Total	**62**	**100**	**963**	**100**	**123**	**100**	**1,023**	**100**	**3,043**	**100**	**5,406**	**100**	**10,620**	**100**

For the 4 most frequent types of substances, the rates of hospitalised poisoning is shown in Figure 3.3. Rates of poisoning by non-opioid analgesics, antipyretics and antirheumatics were much higher in girls (334 cases per 100,000 population) aged 15–17 compared with boys (49) of the same age. Poisoning by psychotropic drugs was also higher in girls: 154 and 42 cases per 100,000, respectively. A more detailed analysis of poisoning by these substances follows.



Note: Rates for infants (<12 months) and 5–9 year olds not shown due to small case numbers.

Figure 3.3: Age-specific rates of selected poisoning by pharmaceuticals (T36–T50) cases in children and young people, by sex, 2012–13

Poisoning by non-opioid analgesics, antipyretics and antirheumatics

Of the 3,935 cases of hospitalised poisoning by non-opioid analgesics, antipyretics and antirheumatics, both males and females had equally high proportions of poisoning by 4-Aminophenol derivatives (for example, paracetamol) (84%), however the number of cases for females was much higher compared with males (Figure 3.4). There were also many more cases of females poisoned by nonsteroidal anti-inflammatory drugs.

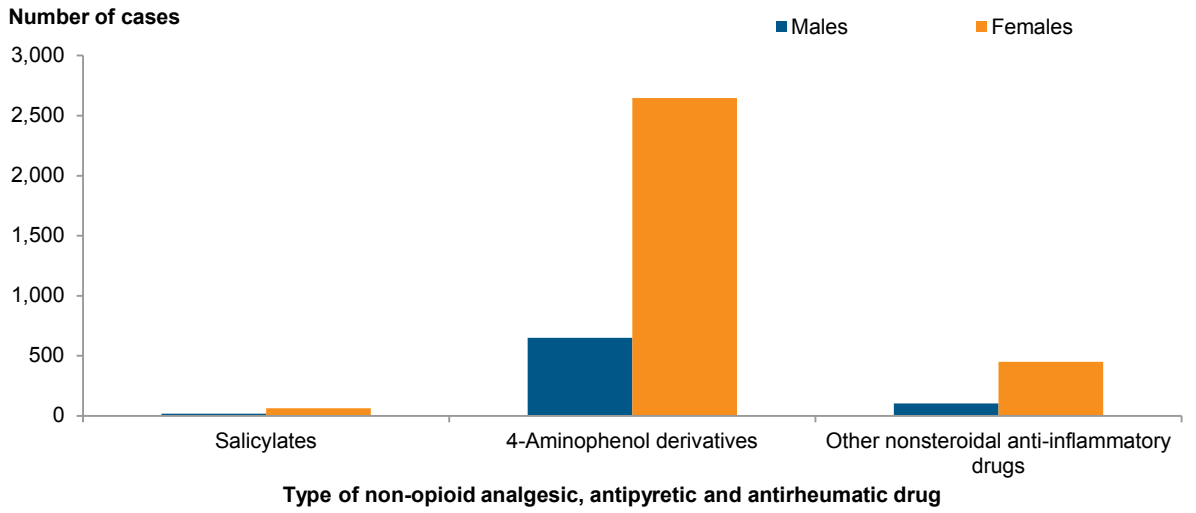
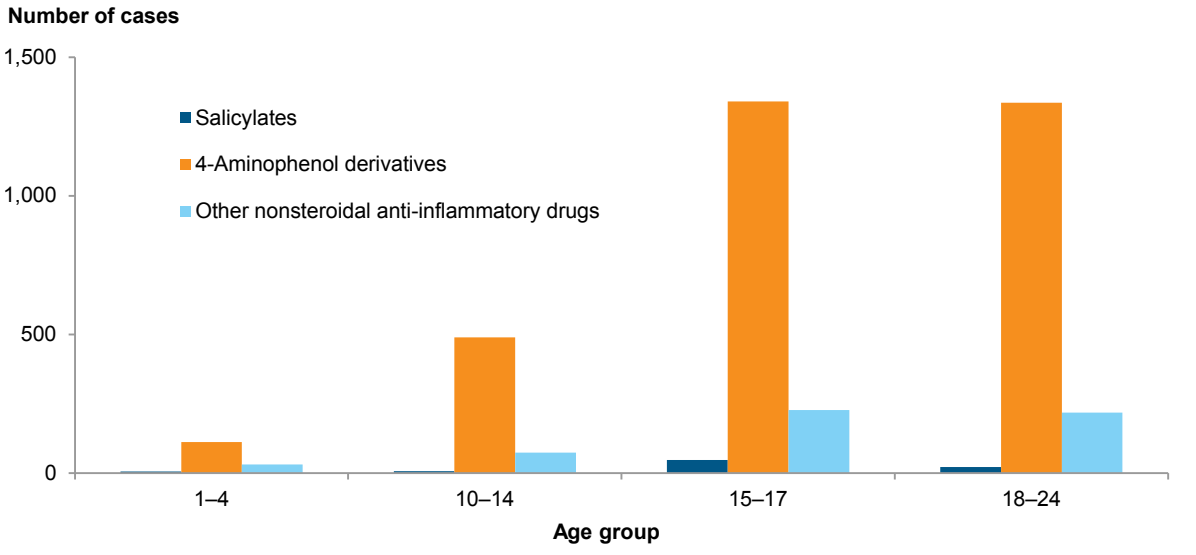


Figure 3.4: Number of cases of selected poisoning by non-opioid analgesics, antipyretics and antirheumatics (T39) in children and young people, by sex, 2012–13

Poisoning due to 4-Aminophenol derivatives such as paracetamol was more common among young people aged 15–17 (1,340 cases, 41%) and 18–24 (1,336 cases, 41%), with 82% of all cases of poisoning by paracetamol occurring in these 2 age categories. Similarly, poisoning by other nonsteroidal anti-inflammatory drugs mainly occurred in the 2 older age groups, although the number of case numbers for those aged 15–17 (227 cases) and 18–24 (218) were much smaller (Figure 3.5). While a much smaller proportion of poisoning by 4-Aminophenol derivatives occurred in children aged 10–14, *Poisoning by non-opioid analgesics, antipyretics and antirheumatics* accounted for over half (56%, 569 cases) of all cases of poisoning of children aged 10–14 and 86% (489 cases) of these were due to 4-Aminophenol derivatives such as paracetamol.



Note: Results for infants (<12 months) and 5–9 year olds not shown due to small case numbers.

Figure 3.5: Number of cases of selected poisoning by non-opioid analgesics, antipyretics and antirheumatics (T39) in children and young people, by age, 2012–13

Poisoning by psychotropic drugs

For the majority of the 3,174 cases of hospitalised poisoning by psychotropic drugs, detail was not available on the specific type of psychotropic drug responsible. Females had higher proportions of cases due to *Other and unspecified antidepressants* (45%) and *Other and unspecified antipsychotics and neuroleptics* (30%) (Figure 3.6). Males had high proportions of cases due to *Psychostimulants with potential for use disorder* (34%) and *Other and unspecified antidepressants* (30%).

Of the cases due to poisoning by *Psychostimulants with potential for use disorder* (606 cases), 76 involved Methylamphetamine, Metamphetamine or Methamphetamine (43 male, 33 females) and 165 cases involved Ecstasy and MDMA (101 males, 64 females).

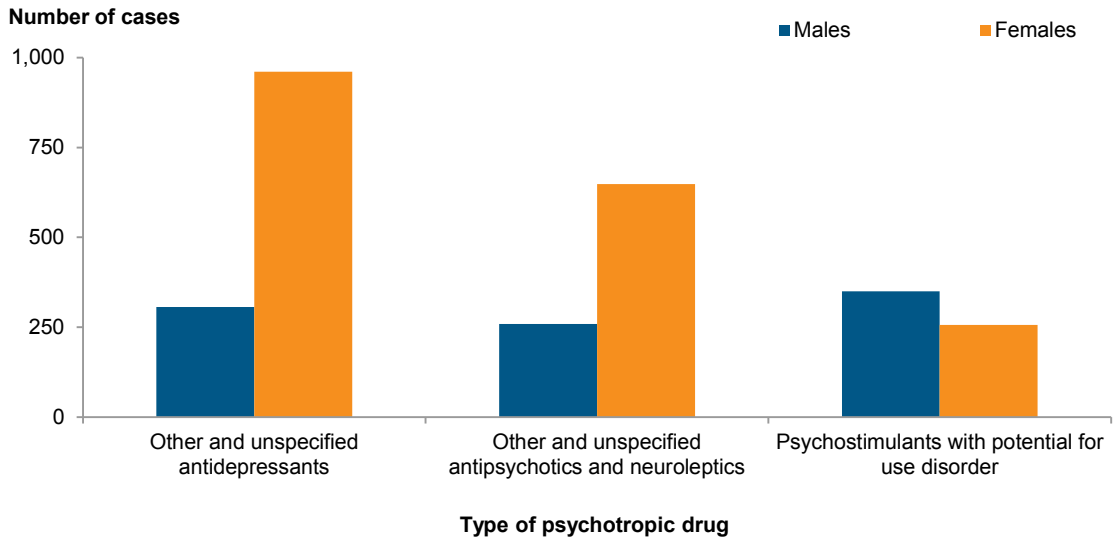
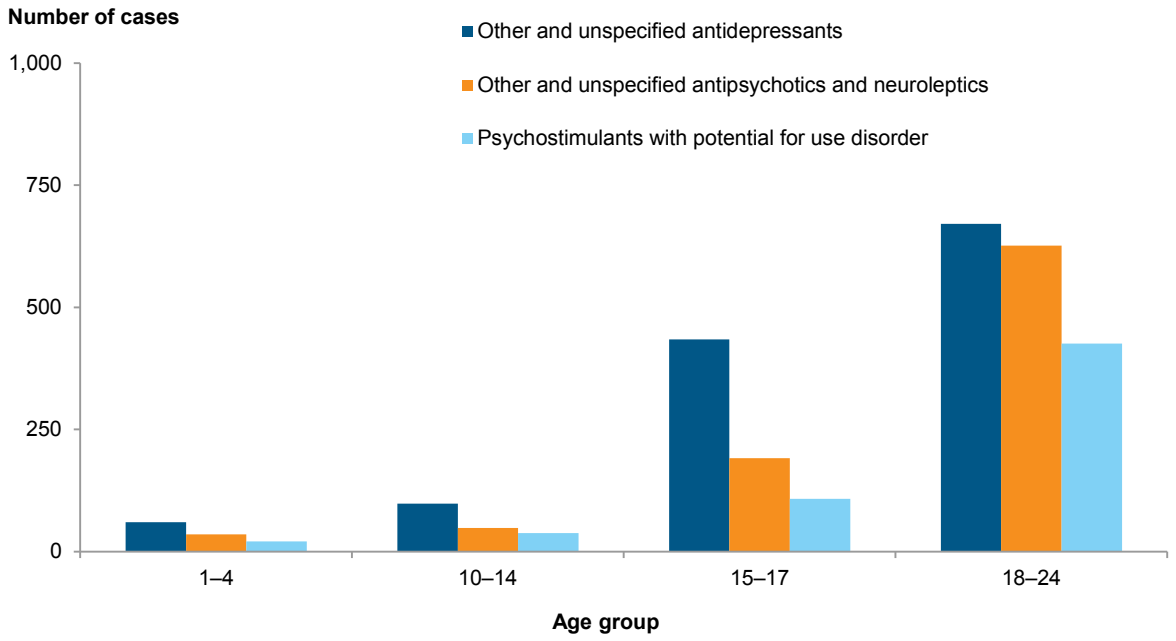


Figure 3.6: Number of cases of poisoning by selected psychotropic drugs, not elsewhere classified (T43) in children and young people, by sex, 2012–13

Poisoning by selected psychotropic drugs occurred primarily in young adults aged 18–24 (Figure 3.7). Poisoning by psychostimulants with potential for use disorder was more common in the 18–24 age group. In contrast there was a higher proportion of poisoning due to *Other and unspecified antidepressants* among 15–17 year olds.

A small proportion (5%) of poisoning by *Other and unspecified antidepressants* occurred in children aged 1–4, but *Poisoning by psychotropic drugs* accounted for the highest proportion (17%, 165 cases) of all poisoning cases in this age group and 36% (60 cases) of these were due to *Other and unspecified antidepressants*.



Note: Results for infants (<12 months) and 5–9 year olds not shown due to small case numbers.

Figure 3.7: Number of cases of selected poisoning by psychotropic drugs, not elsewhere classified (T43) in children and young people, by age, 2012–13

Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs

Of the 1,329 cases of poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs, the majority were caused by benzodiazepines (969 cases); this was true of males (75%) and females (72%), but with many more female cases than males (Figure 3.8).

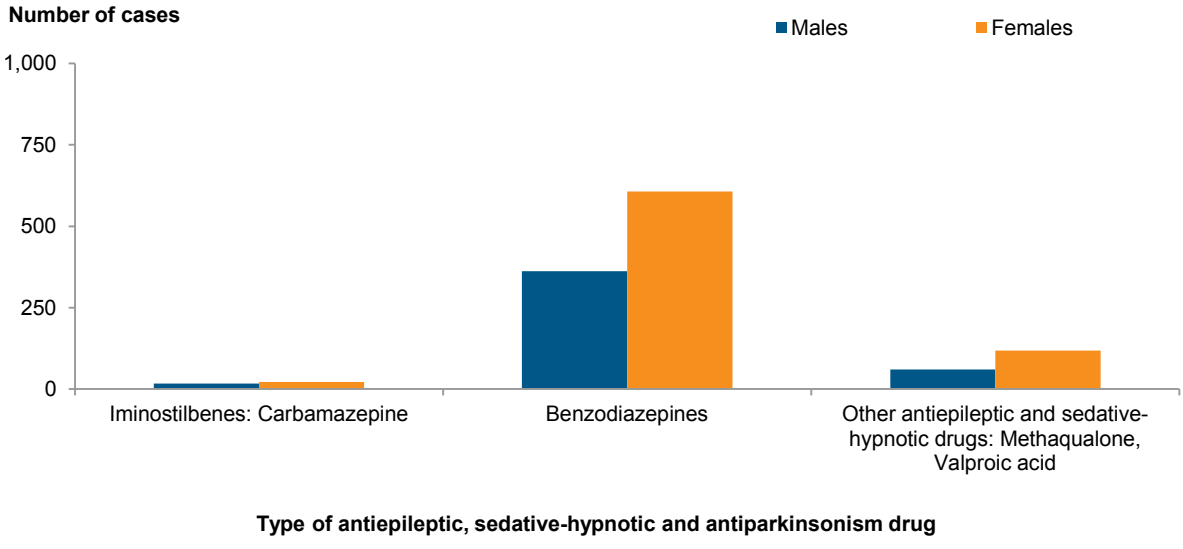
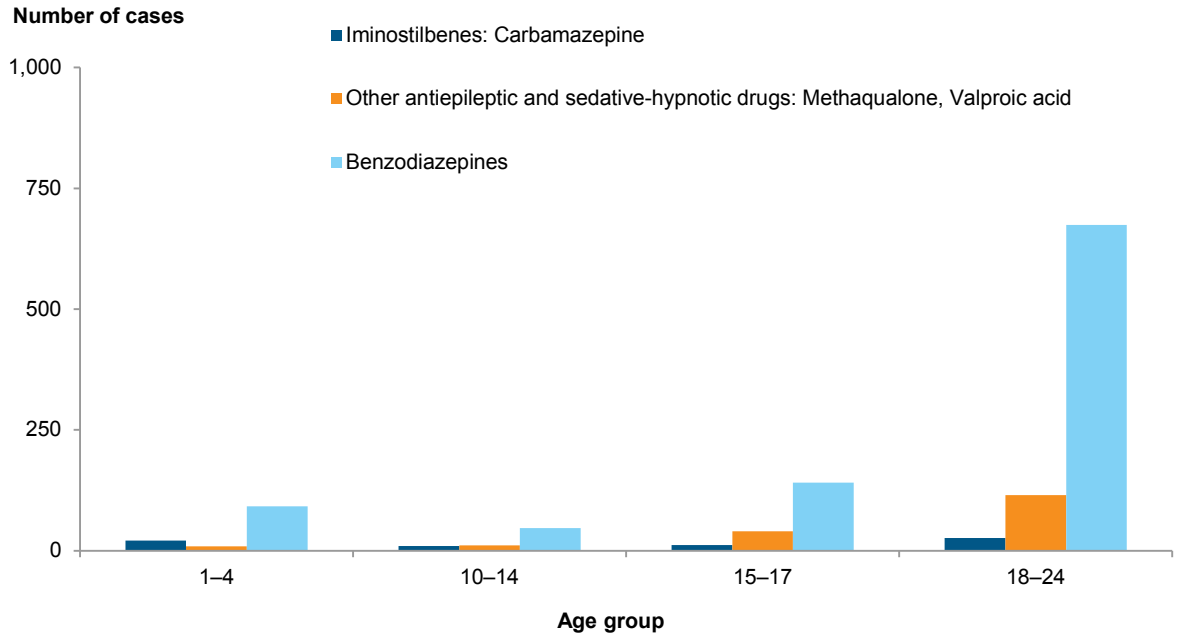


Figure 3.8: Number of cases of selected poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs (T42) in children and young people, by sex, 2012–13

Overall, poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs occurred primarily in young adults aged 18–24 (Figure 3.9). Cases due to benzodiazepine poisoning occurred mostly among 18–24 year olds (70%). Poisoning by Iminostilbenes such as Carbamazepine (an anticonvulsant and mood-stabilizing drug used primarily in the treatment of epilepsy and bipolar disorder) was seen in all age groups other than infants, and was more common in children aged 1–4 (30%) and young adults aged 18–24 (37%). Of the 146 cases of poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs in children aged 1–4, 92 (63%) were due to benzodiazepines.



Note: Results for infants (<12 months) and 5–9 year olds not shown due to small case numbers.

Figure 3.9: Number of cases of selected poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs (T42) in children and young people, by age, 2012–13

Poisoning by narcotics and psychodysleptics (hallucinogens)

There were 619 cases of hospitalised poisoning by narcotics and psychodysleptics (hallucinogens) (Figure 3.10). Although there were similar numbers of males (312) and females (307) hospitalised as a result of poisoning by narcotics and psychodysleptics, they differed in terms of the specific substances reported (Figure 3.10). The proportion of hospitalised poisoning by other opioids was greater in females (58%) than males (28%), but the proportion of cannabis-related poisonings was greater in males (21%) compared with females (7%). There were relatively few cases due to poisoning by heroin for males (10%; 32 cases) and females (6%; 17 cases).

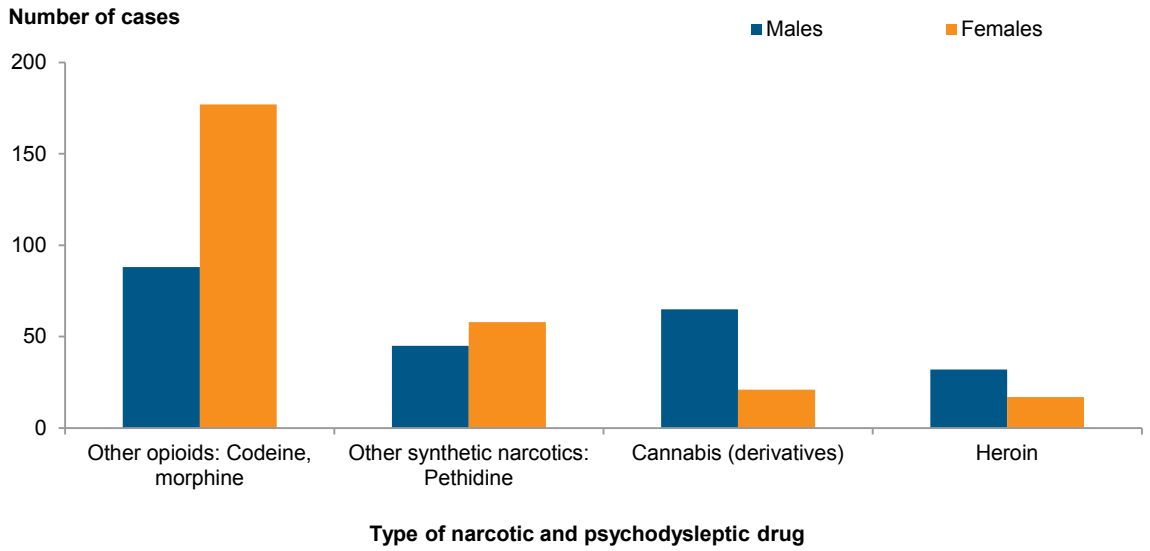
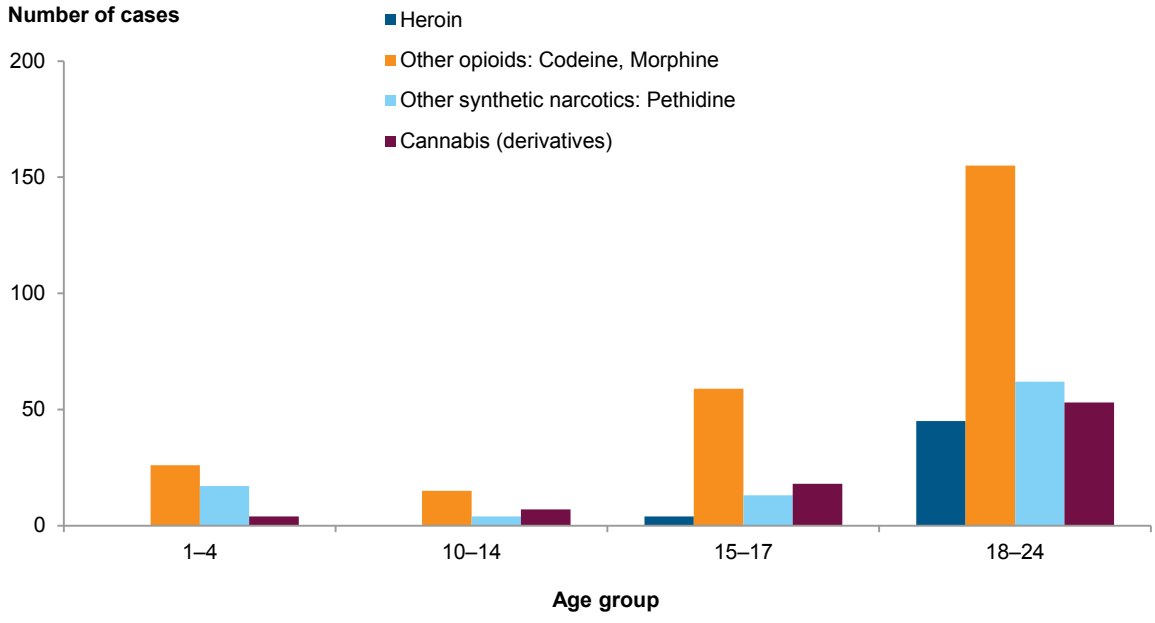


Figure 3.10: Number of cases of selected poisoning by narcotics and psychodysleptics [hallucinogens] (T40) in children and young people, by sex, 2012–13

Hospitalised poisoning by selected narcotics and psychodysleptics (hallucinogens) occurred primarily in young adults aged 18–24 (Figure 3.11). Cases due to heroin poisoning occurred almost exclusively (92%) in this age group (45 of 49 cases).



Note: Results for infants (<12 months) and 5–9 year olds not shown due to small case numbers.

Figure 3.11: Number of cases of selected poisoning by narcotics and psychodysleptics [hallucinogens] (T40) in children and young people, by age, 2012–13

4 Poisoning by other substances

During 2012–13, there were an estimated 1,831 hospitalised cases of poisoning by other substances (T51–T65) equating to 15% of all hospital separations due to poisoning in children and young people (Table 4.1). A higher proportion of males were hospitalised due to poisoning by other substances compared with females. The rate of poisoning for males (27 cases per 100,000 population) was higher than that for females (21).

Table 4.1: Key indicators for poisoning by other substances (T51–T65) cases in children and young people, by sex, Australia, 2012–13

	Poisoning by other substances (T51–T65)			All poisoning cases in children and young people (T36–T65)		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Injury cases due to poisoning	1,055	776	1,831	4,290	8,161	12,451
Per cent of all poisoning cases (T36–T65)	24.6	9.5	14.7			
Age-standardised rate (cases per 100,000 population)	27	21	24	109	223	165

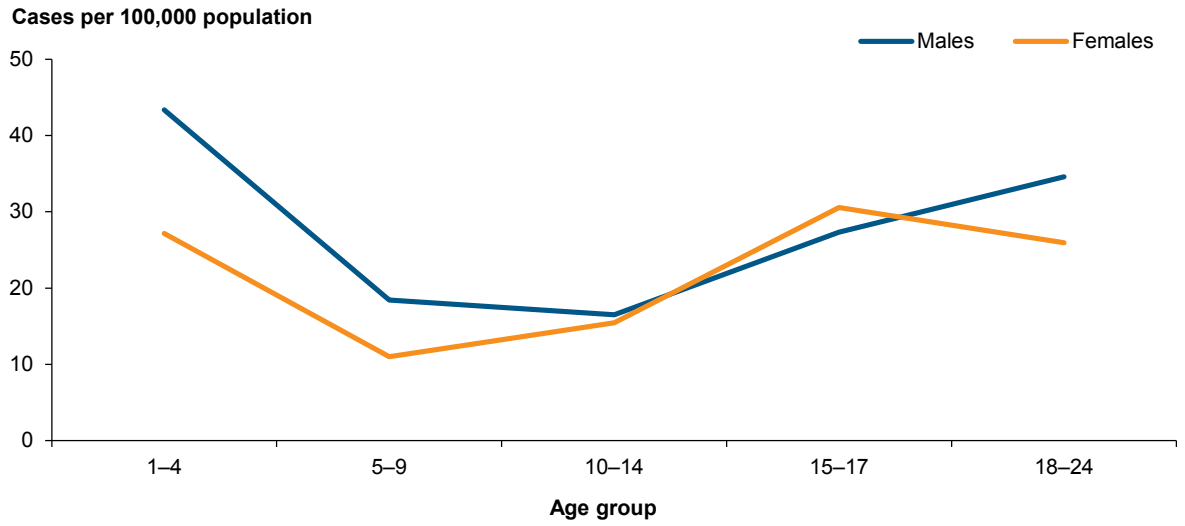
Cases of poisoning by other substances were more common in young adults aged 18–24 (37%); this was true of young men (37%) and young women (37%) (Table 4.2). The second most common age for poisoning by other substances was 1–4 (23%).

Table 4.2: Poisoning by other substances (T51–T65) cases in children and young people, by age and sex, 2012–13

	Males		Females		Persons	
Age group	**Number**	**%**	**Number**	**%**	**Number**	**%**
<12 months	19	1.8	25	3.2	44	2.4
1–4	266	25.2	158	20.4	424	23.2
5–9	136	12.9	77	9.9	213	11.6
10–14	118	11.2	105	13.5	223	12.2
15–17	121	11.5	128	16.5	249	13.6
18–24	395	37.4	283	36.5	678	37.0
Total	**1,055**	**100**	**776**	**100**	**1,831**	**100**

Figure 4.1 presents age-specific rates of poisoning by other substances for males and females by age group. Unlike poisoning by pharmaceuticals, where high rates were seen predominantly in the oldest age group, rates of poisoning by other substances were highest in children aged 1–4 followed by 15–17 and 18–24 year olds.

For children aged 1–4, rates of poisoning by other substances were higher among boys (43 cases per 100,000 per population) compared with girls (27). Similarly, for 18–24 year olds, rates among young males (35) were higher compared with young females (26). Rates were only higher in girls at age 15–17.



Note: Rates for infants (<12 months) are not shown due to small case numbers.

Figure 4.1: Age specific rates of poisoning by other substances (T51–T65) cases in children and young people, 2012–13

Length of stay

Mean length of stay (MLOS) for an episode of poisoning by other substances (T51–T65) is shown in Figure 4.2. For the 3 youngest age groups, MLOS averaged 1 day, with little difference between boys and girls. For children aged 10–14 MLOS among girls was an average of 3 days. Within the 10–14 age group, there were a small number of cases with long lengths of stay that affected the average; they were due to toxic effects of box jellyfish stings.

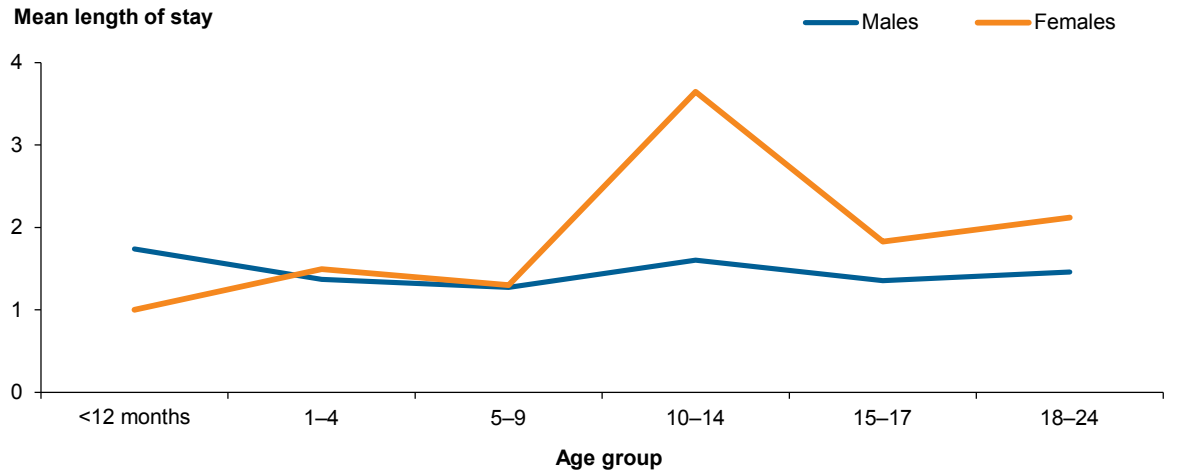


Figure 4.2: Mean length of stay for poisoning by other substances (T51–T65) cases in children and young people, by age and sex, 2012–13

Discharge occurred on the same day as admission for almost half of all toxic effects separations (48%) for all children and young people. There was little difference in same-day discharge according to age.

Type of substance

As shown in Table 4.3 the majority of poisoning by other substances cases were the result of contact with venomous animals (41%); this was true of both males (45%) and females (35%). Similar proportions of cases overall were the result of the toxic effects of alcohol (10%) and corrosive substances (10%), although girls and young women had higher proportions of cases due to corrosive substances.

Table 4.3: Poisoning by other substances (T51–T65) cases in children and young people, by sex and type of substance, 2012–13

	Males		Females		Persons	
Toxic effect of:	**Number**	**%**	**Number**	**%**	**Number**	**%**
Contact with venomous animals	479	45.4	270	34.8	749	40.9
Alcohol	98	9.3	81	10.4	179	9.8
Corrosive substances	72	6.8	104	13.4	176	9.6
Other and unspecified substances	72	6.8	78	10.1	150	8.2
Organic solvents	91	8.6	58	7.5	149	8.1
Other noxious substances eaten as food	73	6.9	36	4.6	109	6.0
Other gases, fumes and vapours	50	4.7	37	4.8	87	4.8
Pesticides	47	4.5	36	4.6	83	4.5
Carbon monoxide	29	2.7	19	2.4	48	2.6
Metals	18	1.7	27	3.5	45	2.5
Soaps and detergents	14	1.3	19	2.4	33	1.8
Halogen derivatives of aliphatic and aromatic hydrocarbons	9	0.9	5	0.6	14	0.8
Noxious substances eaten as seafood	0	0.0	6	0.8	6	0.3
Other inorganic substances	3	0.3	0	0.0	3	0.2
Total	**1,055**	**100**	**776**	**100**	**1,831**	**100**

The distribution of poisoning by other substances by age can be seen in Table 4.4. Poisoning due to contact with venomous animals was the most common reason for hospitalisation in each age group other than infants. The largest proportion of cases occurred in 5–9 year olds, where 78% of all poisoning by other substances cases were the result of contact with a venomous animal.

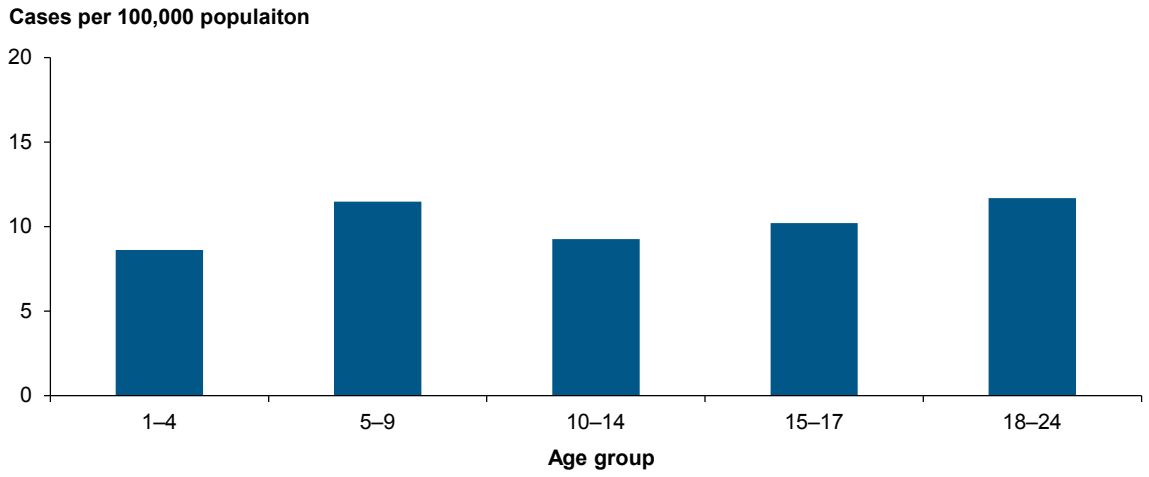
For children and young people aged 15–17 and 18–24, alcohol poisoning was the second most common reason (16%), with poisoning by corrosive substances coming third for both age groups (15% and 9%, respectively). Poisoning by organic solvents was responsible for the largest (20% cases) proportion of hospitalised cases among children aged 1–4.

Table 4.4: Poisoning by other substances (T51–T65) cases in children and young people, by age and type of substance, 2012–13

	<12 months		1–4		5–9		10–14		15–17		18–24		Total	
Poisoning by	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Contact with venomous animals	3	6.8	103	24.3	165	77.5	129	57.8	88	35.3	261	38.5	749	40.9
Alcohol	4	9.1	15	3.5	1	0.5	11	4.9	40	16.1	108	15.9	179	9.8
Corrosive substances	3	6.8	47	11.1	6	2.8	22	9.9	38	15.3	60	8.8	176	9.6
Other and unspecified substances	12	27.3	64	15.1	8	3.8	14	6.3	19	7.6	33	4.9	150	8.2
Organic solvents	2	4.5	84	19.8	4	1.9	14	6.3	18	7.2	27	4	149	8.1
Other noxious substances eaten as food	3	6.8	29	6.8	12	5.6	5	2.2	17	6.8	43	6.3	109	6
Other gases, fumes and vapours	9	20.5	9	2.1	2	0.9	7	3.1	8	3.2	52	7.7	87	4.8
Pesticides	5	11.4	34	8	5	2.3	6	2.7	5	2	28	4.1	83	4.5
Carbon monoxide	0	0	4	0.9	6	2.8	4	1.8	4	1.6	30	4.4	48	2.6
Metals	0	0	10	2.4	3	1.4	3	1.3	8	3.2	21	3.1	45	2.5
Soaps and detergents	3	6.8	13	3.1	1	0.5	6	2.7	2	0.8	8	1.2	33	1.8
Halogen derivatives of aliphatic and aromatic hydrocarbons	0	0	10	2.4	0	0	2	0.9	2	0.8	0	0	14	0.8
Noxious substances eaten as seafood	0	0	0	0	0	0	0	0	0	0	6	0.9	6	0.3
Other inorganic substances	0	0	2	0.5	0	0	0	0	0	0	1	0.1	3	0.2
Total	**44**	**100**	**424**	**100**	**213**	**100**	**223**	**100**	**249**	**100**	**678**	**100**	**1,831**	**100**

Poisoning due to contact with venomous animals

There were 749 cases of poisoning that occurred due to contact with venomous animals. The highest rate of contact with venomous animals occurred among 19–24 year olds (12 cases per 100,000 population) (Figure 4.3).



Note: Rates for infants (<12 months) are not shown due to small case numbers.

Figure 4.3: Age-specific rates of poisoning due to of contact with venomous animals cases in children and young people, by age, 2012–13

Additional information on the type of animal was available for almost cases (96%) (Figure 4.4). The toxic effects of venomous arthropods bites accounted for the largest proportion of cases (54%, 401 cases) and spider bites accounted for a further 22% (165 cases). There were 65 (9%) cases of snake bite (52 males, 13 females) with small numbers of cases in each age group other than in infants where no cases were recorded.

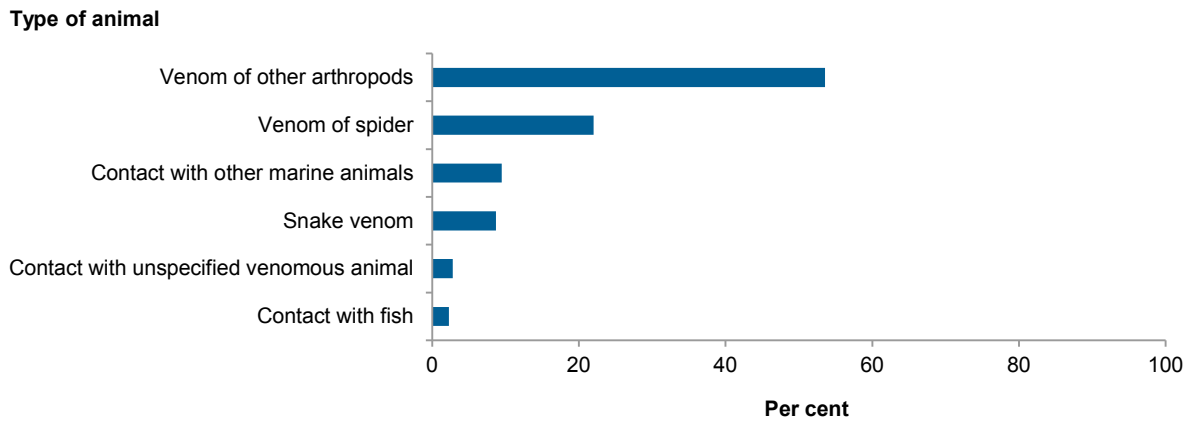


Figure 4.4: Poisoning due to contact with venomous animals in children and young people, proportion of cases by selected type of animal, 2012–13

The residual group 'venom of other arthropods' includes 288 cases of *Contact with hornets, wasps and bees* (X23); the majority of cases were caused by bee stings (249). Stings by wasps and bees occurred in each age range and were more common among children aged 5–9 (53% or 88 cases of wasp and bee stings combined) and young adults aged 18–24 (65% or 91 cases of wasp and bee stings combined) (Figure 4.5).

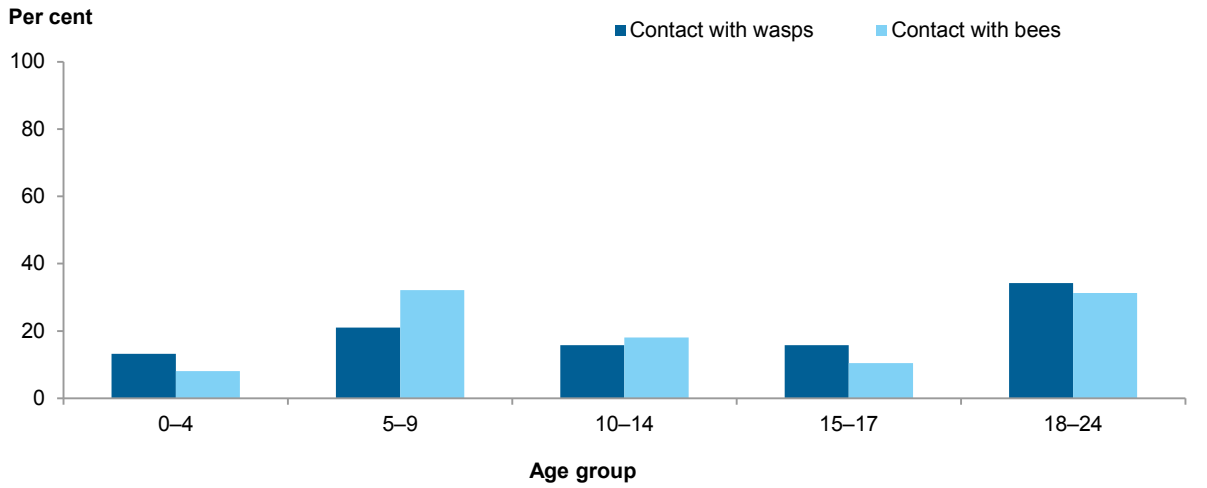


Figure 4.5: Proportion of *Contact with hornets, wasps and bees* cases in children and young people, by type of arthropod, 2012–13

There were 165 cases of *Contact with spiders* (X21); a third of which were unspecified (56). Of the 3 specified types of spider the majority of cases occurred as a result of the bite of a red back spider (94 cases). The majority of spider bites occurred in the 18–24 age group (76 cases).

There were 71 cases of *Contact with venomous marine animals and plants* (X26), which included jellyfish (box, Irukandji, other and other and unspecified jellyfish) (58 cases), Portuguese Man-o-war and bluebottle (2 cases), stonefish (2 cases) and stingray envenomation (2 cases).

There were 65 cases of *Contact with venomous snakes and lizards* (X20). Brown (18 cases), tiger (11 cases) and black (9 cases) snakes caused the greatest number of cases of snake envenomation in children and young people. Taipan, death adder and sea snake bites accounted for a further 8 cases combined. The majority of cases due to poisoning by venomous snakes occurred among 18–24 year olds (28 cases).

5 Intent

Cases of hospitalised poisoning can be unintentional, the result of deliberate self-harm or assault. Sometimes intent is unknown or undetermined. Determining whether an injury occurred due to intentional self-harm in children younger than 10 years is especially problematic (see Box 1.2). In this chapter, cases of intentional self-harm in children younger than 10 years are not included.

Table 5.1 shows the number of cases of poisoning in children and young people according to the intent of the episode and by sex. In 2012–13, 63% of poisoning cases among children and young people aged 10–24 were due to intentional self-harm. Larger proportions of girls and young women (73%) were hospitalised due to intentional self-harm compared with boys and young men (44%).

Unintentional or accidental poisoning was the second largest category of intent (30%) but, in contrast to cases of intentional self-harm, a larger proportion of cases occur in males (47%) compared with females (21%).

Table 5.1: Poisoning (T36–T65) cases in children and young people, by sex and intent, 2012–13

	Males		Females		Persons	
Intent	**Number**	**%**	**Number**	**%**	**Number**	**%**
Intentional self-harm	1,869	43.6	5,961	73.1	7,830	62.9
Assault	24	0.6	23	0.3	47	0.4
Unintentional	2,014	47.0	1,689	20.7	3,703	29.8
Undetermined	383	8.9	489	6.0	871	7.0
Total[(a)]	**4,290**	**100**	**8,162**	**100**	**12,451**	**100**

(a) Intentional self-harm for children younger than 10 are included as 'undetermined' in this table (see Box 1.2).

This chapter examines cases of poisoning by intent. Intentional self-harm is more common in older age groups, so detailed analysis was restricted to 15–17 (2,714 cases) and 18–24 year olds (4,211 cases).

Intentional self-poisoning

For the 2 oldest age groups, intentional self-harm accounted for the largest proportion of cases of hospitalised poisoning among both sexes. Approximately 80% of cases of poisoning among girls and young women in each age group were the result of intentional self-harm episodes. Among young men aged 15–17, 65% of poisoning cases were due to intentional self-harm; this was 58% for men aged 18–24.

Age-specific rates of intentional self-poisoning for the 2 oldest groups are shown in Figure 5.1. Rates of intentional self-poisoning were higher among females in each age group. At age 15–17, the rate of intentional self-poisoning among girls was 540 cases per 100,000 population compared with 102 cases per 100,000 for boys in the same age group. At age 18–24, the gap in rates between women and men was less.

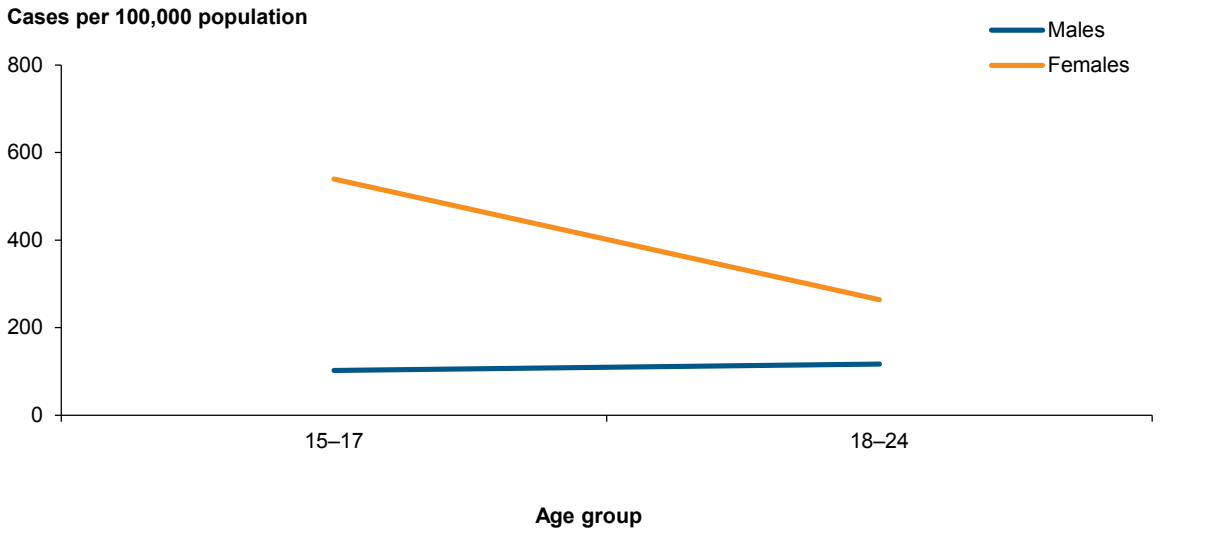


Figure 5.1: Age-specific rates of poisoning due to intentional self-harm in children and young people, 2012–13

Poisoning by pharmaceuticals

The types of substances involved for children and young people hospitalised as a result of intentional self-poisoning by pharmaceuticals were mainly confined to 3 major groups (Figure 5.2). Non-opioid analgesics were a common cause of poisoning among males and females hospitalised for intentional self-harm by poisoning, particularly girls aged 15–17 (1,265 cases). Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs were common in both males and females aged 18–24. Poisoning for self-harm using psychotropic drugs increased with age for both males and females; the highest case numbers occurred at age 18–24 for males (441 cases) and females (993 cases).

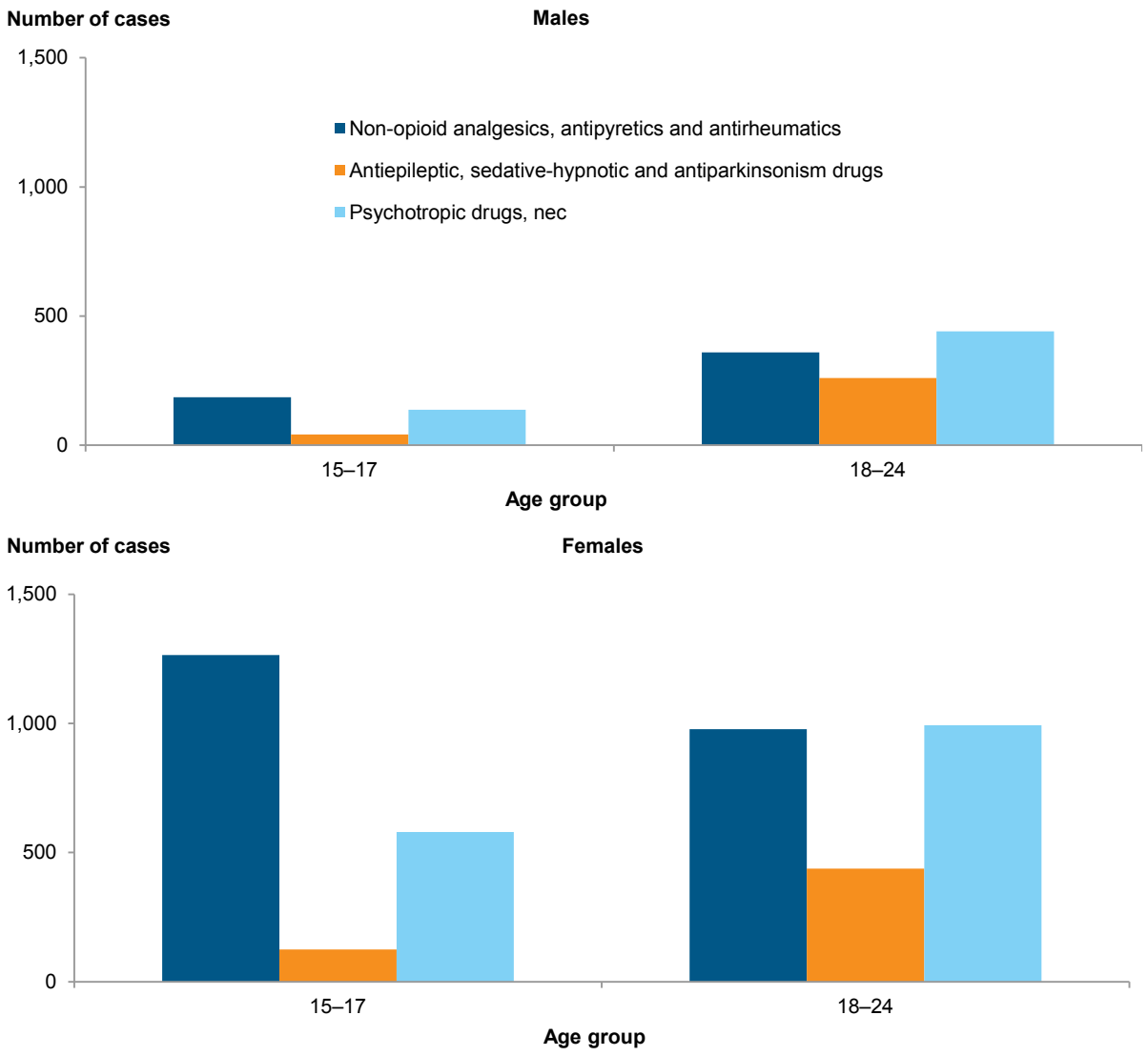


Figure 5.2: Selected Poisoning by drugs, medicaments, and biological substances (T36–T50) intentional self-harm cases in children and young people, by age and sex, 2012–13

An examination of the specific types of non-opioid analgesics involved in cases of intentional self-harm poisoning for males and females found that paracetamol (4-Aminophenol derivatives) was the most commonly identified substance, used in over 80% (2,340) of cases of intentional self-poisoning cases among children and young people aged 17–24.

Length of stay

Mean length of stay (MLOS) for an episode of intentional 4-Aminophenol derivatives poisoning is shown in Figure 5.3. There was very little difference between males and females in the 2 age groups, with each group averaging close to 3 days in hospital per episode of care.

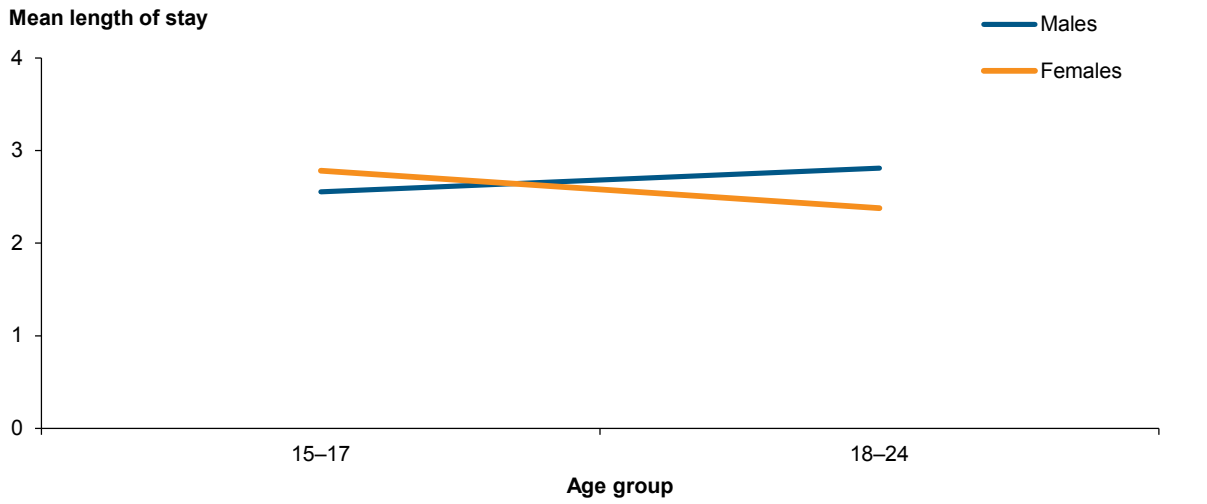


Figure 5.3: Mean length of stay for intentional 4-Aminophenol derivatives poisoning (T39.1) cases in children and young people excluding same day admissions, by sex, 2012–13

Discharge occurred on the same day as admission for around a quarter (23%) of all intentional 4-Aminophenol derivatives self-poisoning separations for children and young people aged 15–24. This was lower than the overall poisoning by drugs same day discharge rate of 35%. Same-day discharges tended to increase with age for males (22% and 29% of separations for those aged 15–17 and 18–24, respectively) and decrease for females (23% and 20%, respectively.

Poisoning by other substances

Intentional self-harm by poisoning due to other substances is much less common than intentional self-harm by poisoning by pharmaceuticals. In 2012–13, there were 261 cases among 15–24 year olds.

The types of poisoning involved for young people hospitalised due to intentional exposure to other substances are shown in Table 5.2. For both males and females, the largest proportion of substances were corrosive agents (19% and 26%, respectively) followed by alcohol (19% and 18%, respectively). Carbon monoxide accounted for a larger proportion of cases of intentional poisoning by other substances in males (19%) compared with females (4%).

Table 5.2: Intentional poisoning (T51–T65) cases in children and young people (15–24), by sex and type of substance, 2012–13

	Males		Females		Persons	
Poisoning by	**Number**	**%**	**Number**	**%**	**Number**	**%**
Alcohol	20	19.4	29	18.4	49	18.8
Organic solvents	10	9.7	17	10.8	27	10.3
Corrosive substances	20	19.4	49	31.0	69	26.4
Soaps and detergents	3	2.9	5	3.2	8	3.1
Metals	7	6.8	17	10.8	24	9.2
Carbon monoxide	20	19.4	7	4.4	27	10.3
Other gases, fumes and vapours	3	2.9	3	1.9	6	2.3
Pesticides	9	8.7	13	8.2	22	8.4
Noxious substances eaten as seafood	0	0.0	1	0.6	1	0.4
Other noxious substances eaten as food	5	4.9	2	1.3	7	2.7
Other and unspecified substances	6	5.8	15	9.5	21	8.0
Total	103	100	158	100	261	100

The number of cases of intentional self-harm by alcohol and corrosive substance exposure in the 2 oldest age groups is shown in Figure 5.4. In 18–24 year olds, the number of cases for intentional self-harm by alcohol (34) was double that of 15–17 year olds (15). The number of intentional self-harm by corrosive substances was also higher for 18–24 year olds compared with those aged 15–17.

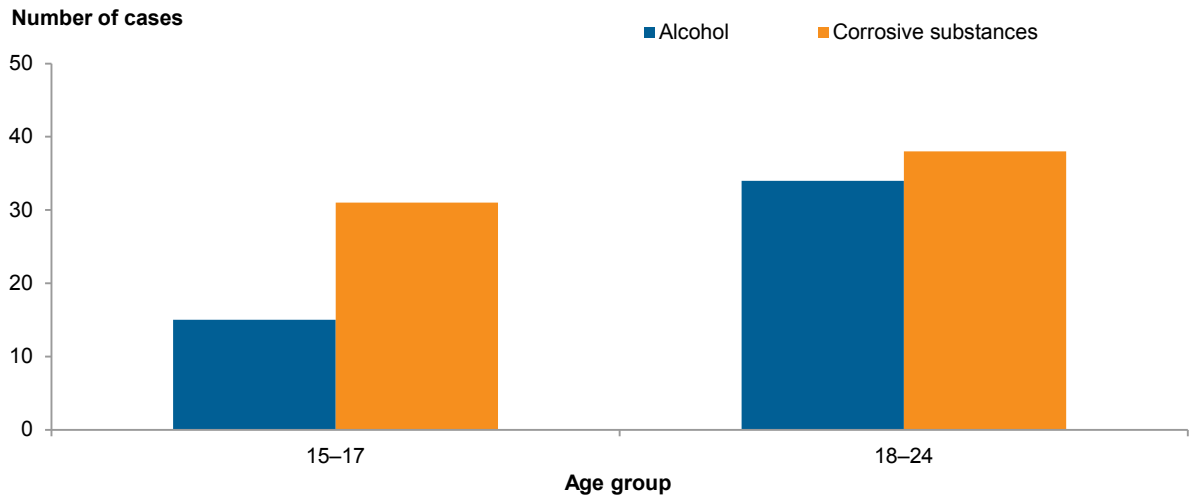


Figure 5.4: Number of cases of intentional poisoning by alcohol and corrosive substances in children and young people, by age, 2012–13

Length of stay

Among 15–24 year olds, just over a third (38%) of all cases of self-harm due to intentional poisoning by other substances were discharged from hospital on the same day as admission. This was true for intentional self-harm episodes due to the effects of corrosive substances (33%) and alcohol (34%). Mean lengths of stay did vary as a result of intentional poisoning by other substances and age, with higher lengths of stay among 18–24 year olds (Figure 5.5).

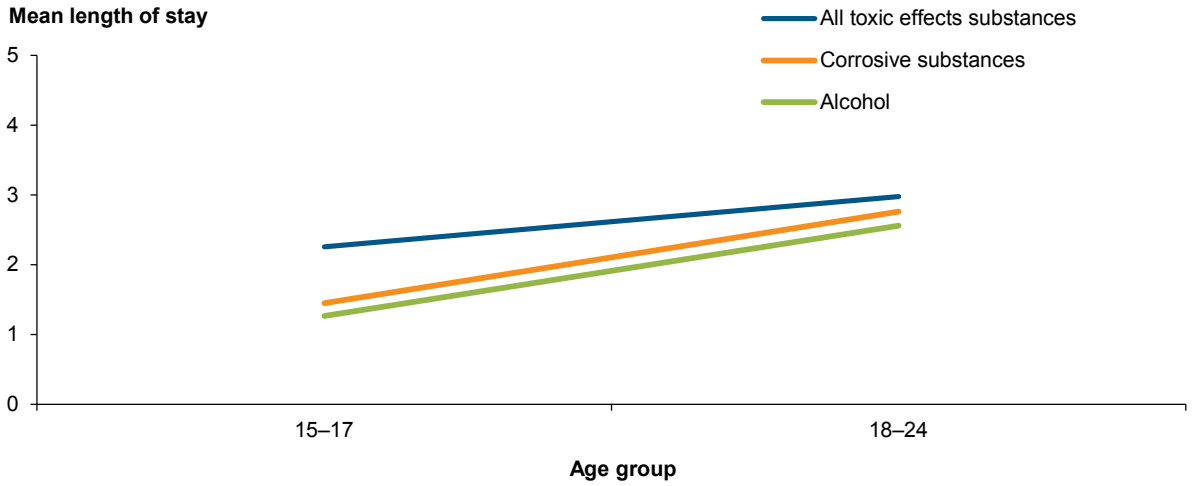


Figure 5.5: Mean length of stay for selected intentional poisoning by other substances (T51–65) cases in children and young people, by age, 2012–13

Unintentional poisoning

In each of the 3 youngest age groups, almost all cases of poisoning were unintentional (Figure 5.6). Unintentional causes decrease as a proportion of all types of intent from age 10–14 onwards. In the older age groups, a greater proportion of boys and young men are hospitalised due to unintentional poisoning compared with girls and young women; the difference is greatest at 10–14, (57% for boys compared with 14% for girls).

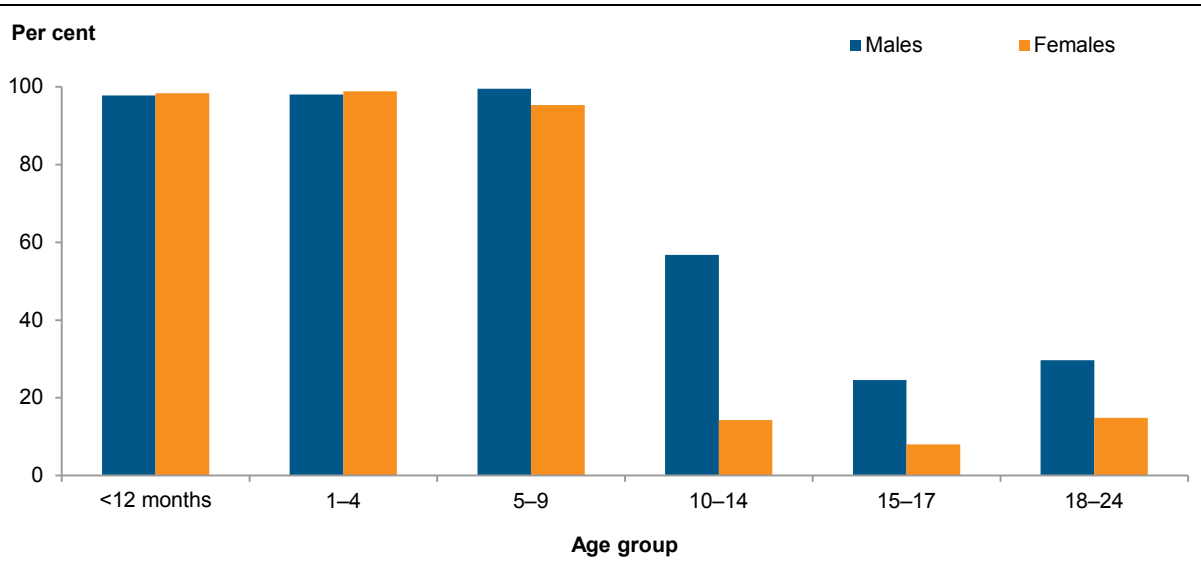
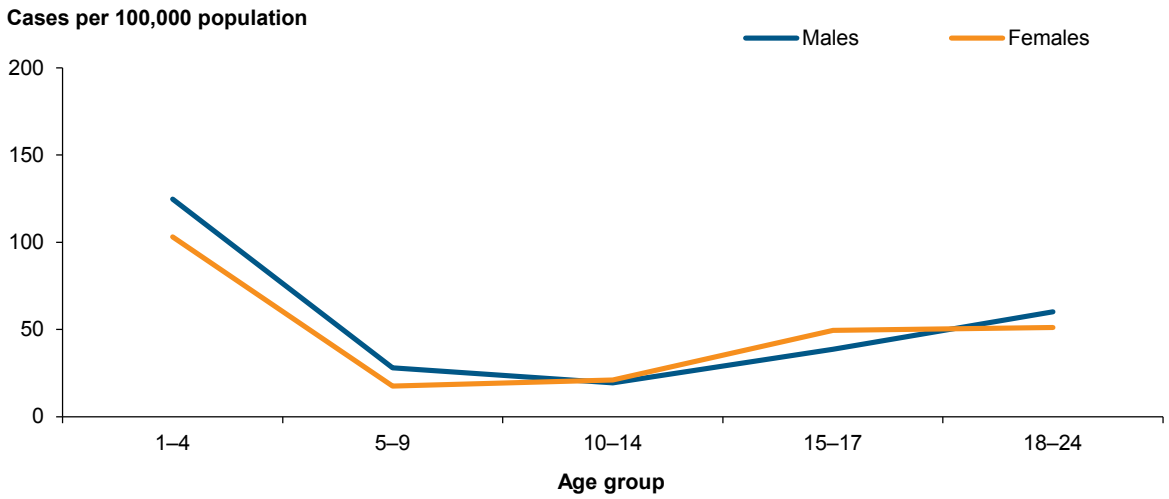


Figure 5.6: Proportion of unintentional poisoning (T36–T65) cases, by age and sex, 2012–13

Age-specific rates of unintentional poisoning for each age group are shown in Figure 5.7. Rates of unintentional poisoning were similar for males and females in each age group. Rates were highest among children aged 1–4, at 125 cases per 100,000 population for boys and 103 cases for girls.



Note: Rates for infants (<12 months) are not shown due to small case numbers.

Figure 5.7: Age-specific rates of unintentional poisoning (T36–T65) cases in children and young people, 2012–13

Figure 5.8 shows the distribution of poisoning by pharmaceuticals and poisoning by other substances by age group. In the 2 youngest and oldest age categories, cases of poisoning by pharmaceuticals were more common than for children aged 5–9 and 10–14.

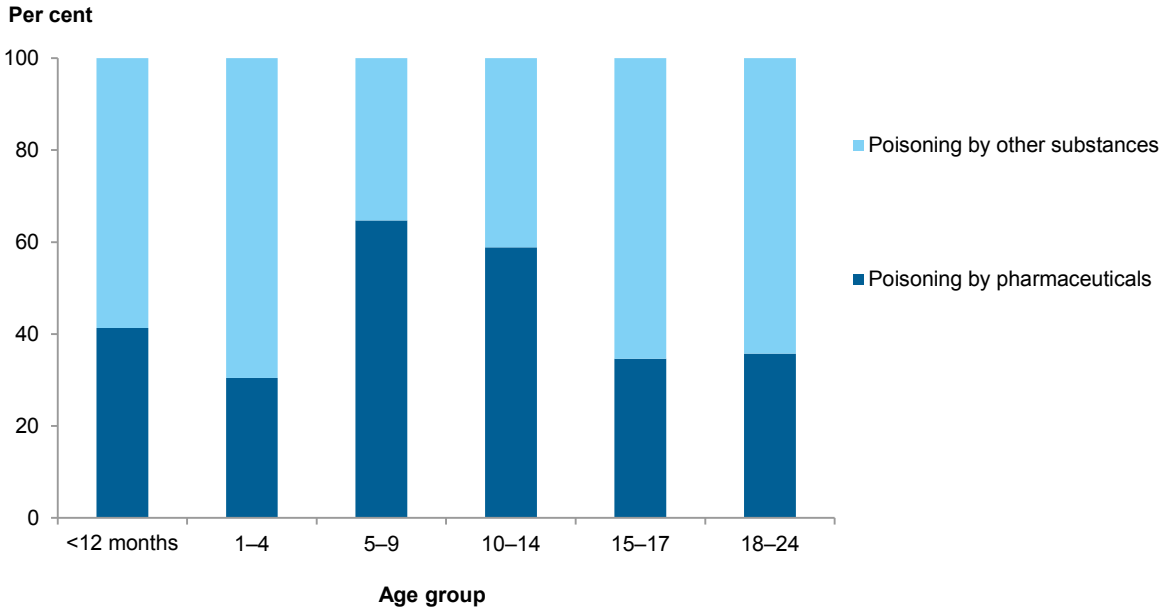


Figure 5.8: Proportion of unintentional poisoning (T36–T65) cases, by type of substance, by age, 2012–13

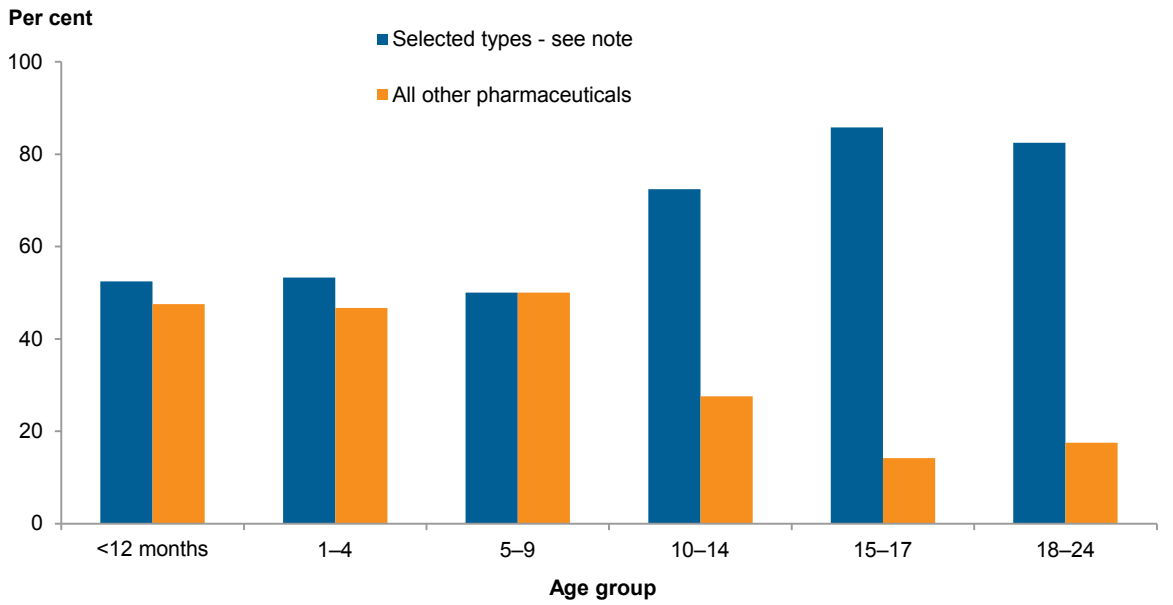
Poisoning by pharmaceuticals

About a fifth (22%) of cases of poisoning by pharmaceuticals were unintentional in nature, with 2,289 such cases out of 10,620 for all intents (Table 5.3). The highest proportion of cases of unintentional poisoning by pharmaceuticals was due to topical agents (81%) followed by drugs acting on smooth and skeletal muscles (59%), and drugs primarily affecting the cardiovascular system (58%).

Table 5.3: Poisoning by pharmaceuticals (T36–T50) cases in children and young people, by intent and type of substance, 2012–13

	Poisoning by drugs (T36–T50) cases		
Poisoning by	**All intents**	**Unintentional**	**Per cent Unintentional**
Topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs	113	92	81
Agents primarily acting on smooth and skeletal muscles and the respiratory system	64	38	59
Agents primarily affecting the cardiovascular system	226	131	58
Drugs primarily affecting the autonomic nervous system	168	87	52
Anaesthetics and therapeutic gases	112	57	51
Agents primarily affecting the gastrointestinal system	47	22	47
Hormones and their synthetic substitutes and antagonists, nec	195	86	44
Other systemic anti-infectives and antiparasitics	23	9	39
Diuretics and other and unspecified drugs, medicaments and biological substances	298	112	38
Systemic and haematological agents	232	86	37
Narcotics and psychodysleptics [hallucinogens]	619	222	36
Antiepileptic, sedative-hypnotic and antiparkinsonism drugs	1,329	307	23
Systemic antibiotics antirheumatics	85	17	20
Psychotropic drugs, nec	3,174	562	18
Non-opioid analgesics, antipyretics and antirheumatics	3,935	461	12
Total	**10,620**	**2,289**	**22**

The 4 most frequently (68% combined) involved types of pharmaceuticals in unintentional poisoning episodes among children and young people were *Poisoning by psychotropic drugs* (T43) (25%), *Poisoning by non-opioid analgesics, antipyretics and antirheumatics* (T39) (20%), *Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs* (T42) (13%), and *Poisoning by narcotics and psychodysleptics (hallucinogens)* (T40) (10%). For the 3 older age groups, these 4 categories combined accounted for around 80% of all cases of unintentional poisoning by pharmaceuticals (Figure 5.9). In contrast, a much broader range of poisons were responsible in younger age groups and these 4 poisons accounted for about 50% of cases in these children.



Note: Selected types of pharmaceuticals includes T39, T40, T42, and T43.

Figure 5.9: Proportion of unintentional poisoning by pharmaceuticals (T36–T50) cases, by type of pharmaceutical and age, 2012–13

Age-specific rates of unintentional poisoning by pharmaceuticals were the highest among children aged 1–4, with 1,365 children hospitalised in 2012–13. Figure 5.10 shows the number of cases of unintentional poisoning by single year of age for this group. Cases of unintentional poisoning by pharmaceuticals were highest among 2 year olds. Among 1 year olds, the most common category (46 cases) was *Poisoning by topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs*. The most common category of poisoning among all other children in the 1–4 age group was by psychotropic drugs, with 84, 32 and 17 cases for 2, 3 and 4 year olds, respectively.

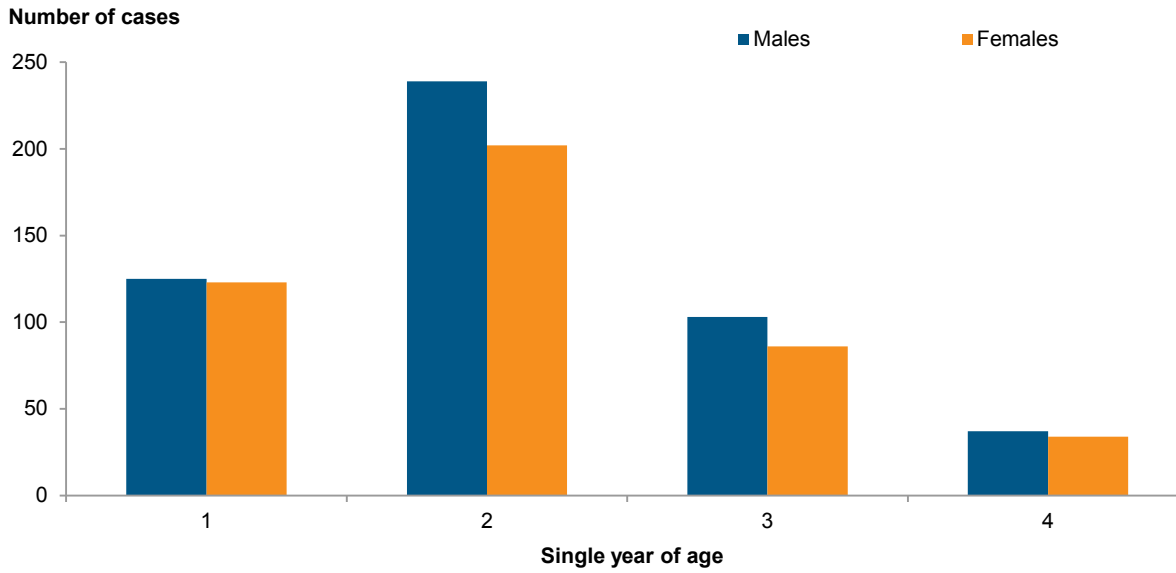


Figure 5.10: Number of unintentional poisoning by pharmaceuticals (T36–T50) cases in 1–4 years, by sex and single year of age, 2012–13

Length of stay

The vast majority of cases of poisoning by pharmaceuticals in children in the 3 youngest age groups were unintentional in nature and information on length of stay has already been presented in Chapter 3. Figure 5.11 shows the lengths of stay analyses for the 3 oldest age groups. There was very little difference between males and females in the 3 age groups, with each group averaging just over 1 day in hospital.

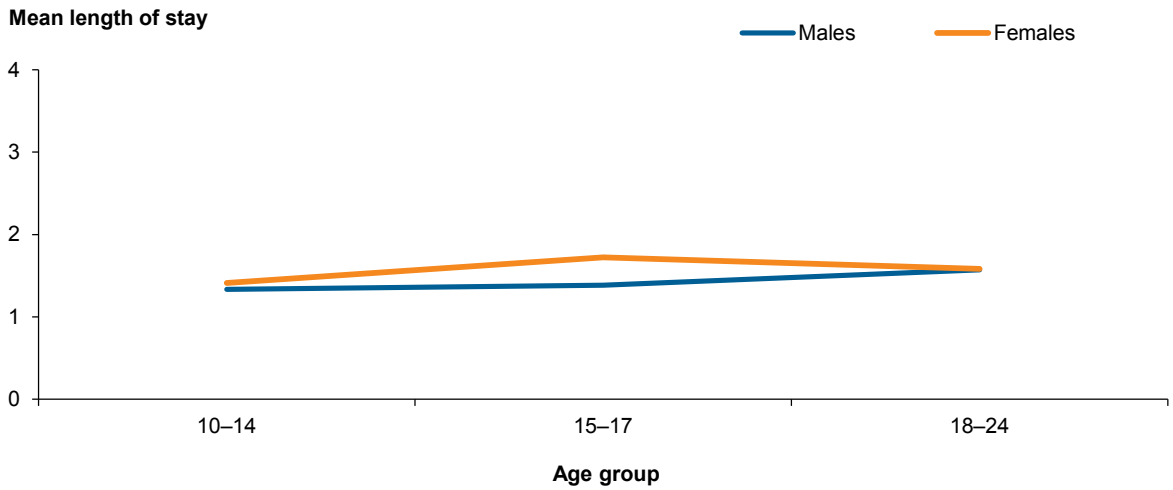


Figure 5.11: Mean length of stay for unintentional poisoning by pharmaceuticals (T36–T50) cases in children and young people, by age and sex, 2012–13

Discharge occurred on the same day as admission for 40% of all unintentional poisoning by pharmaceuticals separations for children and young people aged 10–24. Younger children had fewer same-day discharges: for example, 33% for 10–14 year olds. Slightly fewer males (38%) were discharged on the same day as admission compared with females (43%). Excluding same-day discharges, the majority of all cases of unintentional poisoning by pharmaceuticals were discharged after 1 day.

Poisoning by other substances

The majority (77%) of cases of poisoning by other substances were unintentional in nature, with 1,414 such cases out of 1,831 for all intents (Table 5.4). However, major differences were seen with respect to the proportions of unintentional toxic effects of alcohol (49%), corrosive substances (45%), carbon monoxide (42%), soaps and detergents (58%), metals (38%) and to a lesser extent pesticides (66%).

Table 5.4: Poisoning by other substances (T51–T65) cases in children and young people, by intent and type of substance, 2012–13

	Poisoning by other substances (T51–T65) cases		
Poisoning by	**All intents**	**Unintentional**	**Per cent Unintentional**
Contact with venomous animals	749	748	99.9
Organic solvents	149	109	73.2
Alcohol	179	87	48.6
Other noxious substances eaten as food	109	82	75.2
Corrosive substances	175	78	44.6
Other gases, fumes and vapours	87	78	89.7
Pesticides	83	55	66.3
Carbon monoxide	48	20	41.7
Soaps and detergents	33	19	57.6
Metals	45	17	37.8
Halogen derivatives of aliphatic and aromatic hydrocarbons	14	13	92.9
Other inorganic substances	3	3	100.0
Noxious substances eaten as seafood	6	3	50.0
Other and unspecified substances	150	102	68.0
Total	**1,830**	**1,414**	**77.3**

Cases due to the toxic effects of venomous animals has essentially been covered in Chapter 4. Excluding the toxic effects of venomous animals, 5 substances accounted for 65% of all cases of unintentional poisoning by other substances in children and young people. The distribution of these substances by age is shown in Figure 5.12. A large proportion (77%) of cases of unintentional poisoning by organic solvents (84 cases) and poisoning by corrosive substance (59% or 46 cases) occurred in children aged 1–4, while poisoning by alcohol (53% or 46 cases) and other gases (56% or 44 cases) occurred mostly in 18–24 year olds.

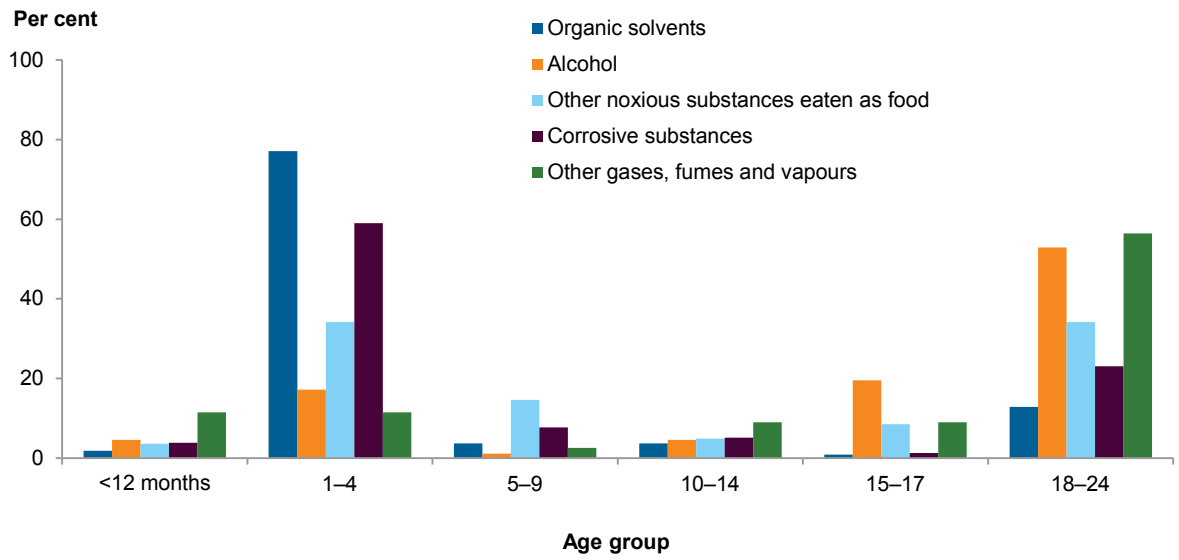


Figure 5.12: Selected unintentional poisoning by other substances (T51–T65) cases in children and young people, by age and type of substance, 2012–13

The majority (57%) of cases of unintentional poisoning due to organic solvents were due to ketone ingestion. Ketones are chemicals used in many household products, and include acetone, which is used in nail polish remover, and in some cleaning solutions and glues. Of the 109 cases of solvent poisoning, 84 (77%) occurred in children aged 1–4 and half were due to ketones. Petroleum products was the second most common (34%) organic solvent causing unintentional poisoning by other substances; again, the higher numbers of cases were for children aged 1–4 year (29 out of 35 cases among all children and young people).

The majority of cases of unintentional poisoning due to the toxic effect of corrosive substances were due to corrosive alkalis (Figure 5.13) Alkalis can be found in household products such as drain and oven cleaners. Of the 43 cases of unintentional alkalis poisoning, 24 (56%) occurred in children aged 1–4. Small numbers of cases were found in each other age group.

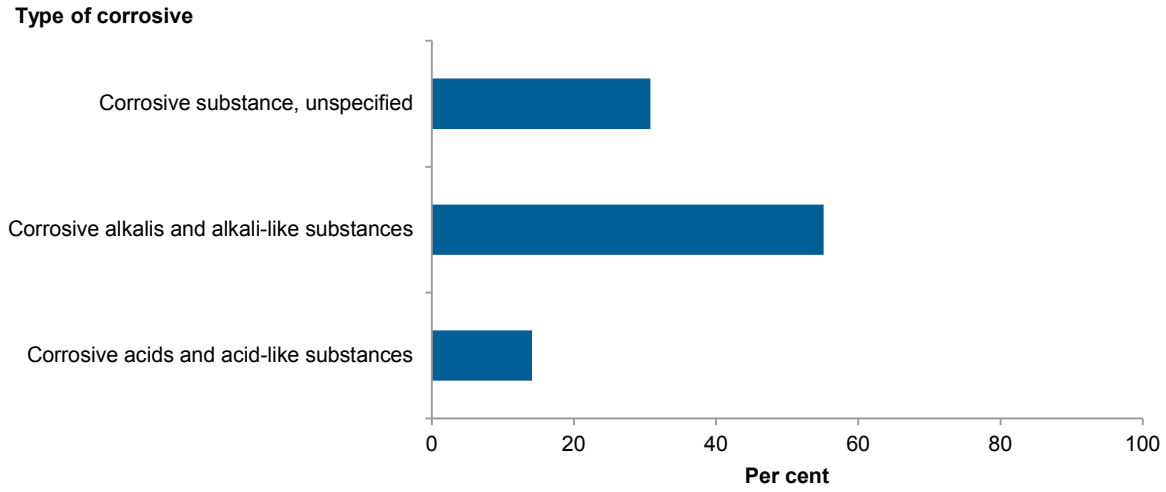


Figure 5.13: Proportion of unintentional toxic effect of corrosive substances cases in children and young people, by type of corrosive substance, 2012–13

More detailed information about the type of alcohol or other gases, fumes and vapours responsible for unintentional poisoning episodes is not available.

Length of stay

Other than in children aged 10–14, there was very little difference between males and females in terms of MLOS, with each age group averaging just over 1 day in hospital per episode of care (Figure 5.14).

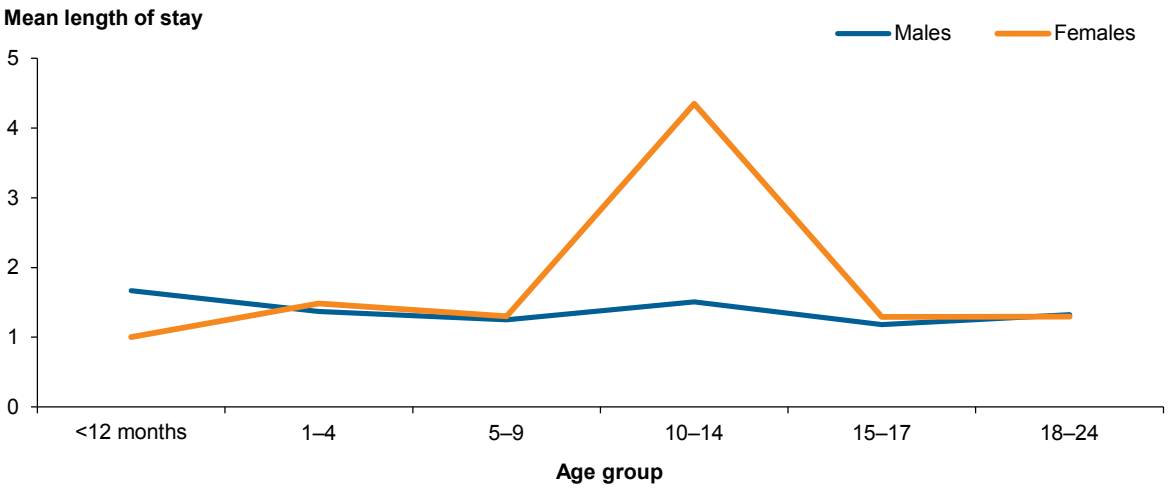


Figure 5.14: Mean length of stay for unintentional poisoning by other substances (T51–T65) cases in children and young people, by sex, 2012–13

Discharge occurred on the same day as admission for 51% of all poisoning by other substances for children and young people with little variation by age group. Excluding same day discharges, the majority of all cases of unintentional poisoning by pharmaceuticals were discharged after 1 day.

Appendix A: Data issues

Data sources

The data on hospital separations were drawn from the Australian Institute of Health and Welfare's (AIHW) National Hospital Morbidity Database (NHMD). Comprehensive information on the quality of the data for 2012–13 is available in *Australian hospital statistics 2012–13* (AIHW 2014a) and in the data quality statement in this appendix. Nearly all injury cases admitted to hospitals in Australia are thought to be included in the NHMD reported data.

In 2012–13, diagnoses and external cause of injury and poisoning were recorded using the seventh edition of the *International statistical classification of diseases and related health problems, 10th revision, Australia modification* (ICD-10-AM) (NCCH 2010).

Estimating incident cases

Each record in the NHMD refers to a single episode of care in a hospital. Some injuries result in more than 1 episode in hospital and, hence, more than 1 NHMD record. This can occur in 2 main ways:

- a person is admitted to one hospital, then transferred to another or has a change in care type (for example, acute to rehabilitation) within the one hospital
- a person has an episode of care in hospital, is discharged home (or to another place of residence) and is then admitted for further treatment for the same injury to the same hospital or another one.

The NHMD does not include information designed to enable the set of records belonging to an injury case to be recognised as such. Hence, there is potential for some incident injury cases to be counted more than once, which exists when a single incident injury case results in 2 or more NHMD records being generated, all of which satisfy the selection criteria being used.

Information in the NHMD enables this problem to be reduced, though not eliminated. The approach used for this report makes use of the *Mode of Admission* variable, which indicates whether the current episode began with inward transfer from another acute care hospital. Episodes of this type (inward transfers) are likely to have been preceded by another episode that also met the case selection criteria for injury cases, so are omitted from our estimated case counts.

This procedure should largely correct for over-estimation of cases due to transfers, but will not correct for over-estimation due to re-admissions.

Poisoning by drugs, medicaments and biological substances

Table A1 presents the ICD-10-AM categories included in T36–T50 *Poisoning by drugs, medicaments, and biological substances* along with a lay description of each category and some examples of types of pharmaceuticals covered by that category.

Table A1: Explanation and examples of substances included in ICD-10 categories T36–T50

ICD-10-AM code	Poisoning by	Lay description/purpose	Examples
T36	Systemic antibiotics	Drugs taken to treat infections by bacteria and fungi.	Penicillins, tetracyclines
T37	Other systemic anti-infectives and antiparasitics	Drugs taken to treat infections by other micro-organisms, viruses and parasites.	Streptomycin, acyclovir
T38	Hormones and their synthetic substitutes and antagonists nec	Hormones are substances produced by glands, which travel in the blood and act to regulate many aspects of behaviour and physiology. Some hormones, and synthetic substances with similar effects, are used as medications. For example, they can be used to treat diabetes, fertility issues, symptoms of menopause and some malignant tumours. Hormone antagonists suppress the effects of hormones.	Insulin, thyroxine, hormone replacement therapies
T39	Non-opioid analgesics, antipyretics and antirheumatics	These substances variously reduce pain, fever inflammation and blood clotting.	Paracetamol, ibuprofen
T40	Narcotics and psychodysleptics (hallucinogens)	Substances with various effects on the brain. Narcotics, mostly opioid analgesics, are used medically to reduce pain, for anaesthesia, to control coughing and for other reasons. They are also addictive, have high potential for fatal overdose and are restricted legally. This category also includes cannabis and related substances and hallucinogens.	Pethidine, heroin, cocaine, cannabis
T41	Anaesthetics and therapeutic gases	Anaesthetics produce reversible loss of consciousness (general anaesthesia) or loss of feeling in a body part (local or regional anaesthesia), allowing surgery without pain. Some anaesthetic agents are also used as recreational drugs. Oxygen is the gas most commonly used for therapeutic purposes.	Lignocaine, nitrous oxide ketamine, oxygen
T42	Antiepileptic, sedative-hypnotic and antiparkinsonism drugs	Includes substances used to prevent seizures, convulsions and tremors, to reduce anxiety and to induce sleep.	Benzodiazepines, barbiturates, valproic acid
T43	Psychotropic drugs nec	Psychotropic or psychoactive substances act on the brain and can alter mood, perception, behaviour and consciousness. This category includes drugs used to treat clinical depression, schizophrenia and other mental illnesses. Some substances in this category are chiefly used non-medically for their psychoactive effects. Other categories, notably T40 to T42, also include psychoactive substances, such as alcohol.	Antidepressants, antipsychotics, MDMA, methylamphetamine
T44	Drugs primarily affecting the autonomic nervous system	The autonomic nervous system regulates functions such as breathing, heart rate and digestion. Substances included in this category stimulate or suppress aspects of autonomic activity.	Atropine, phenylephrine, prazosin, atenolol
T45	Primarily systemic and haematological agents nec	A wide range of substances including medications used against allergies, vomiting, malignant tumours and some diseases of the blood. Also includes most vitamins, blood and blood products.	Cetirizine , cyclosporin, compounds, warfarin
T46	Agents primarily affecting the cardiovascular system	Includes pharmaceuticals that are used to treat diseases of the heart and cardiovascular system, particularly high blood pressure.	Amlodipine, ramipril, clonidine, atorvastatin

(continued)

Table A1 (continued): T36–T50 Poisoning by drugs, medicaments and biological substances lay description and drug examples

ICD-10-AM code	Poisoning by	Lay description/purpose	Examples
T47	Agents primarily affecting the gastrointestinal system	Pharmaceuticals mainly used to treat diseases of the stomach and intestines.	Antacids, laxatives, emetics, anti-diarrhoeal drugs.
T48	Agents primarily acting on smooth and skeletal muscles and the respiratory system	This group includes substances used as medications to cause muscles to contract (e.g. contract the uterus to start labour) or relax (e.g. under anaesthesia), or which affect the respiratory system (e.g. cough suppressant, asthma medications).	Oxytocin, suxamethonium, pholcodine, salbutamol.
T49	Topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs	Medication that is applied to body surfaces, such as the skin or mucous membranes, to treat ailments. Forms of topical medications include creams, foams, gels, lotions and ointments.	Antifungal creams, eye drops, topical dental drugs.
T50	Diuretics and other and unspecified drugs, medicaments and biological substances	Diuretics are used medically to treat conditions including heart failure, high blood pressure, glaucoma and oedema through promoting the production of urine. This category also includes various other types of medications and allows for the coding of cases involving unspecified medications.	Furosemide, allopurinol, naloxone, appetite depressants.

Length of stay

Mean length of stay is calculated by dividing the total number of patient days for injury separations by the estimated number of injury cases. Patients who were admitted and discharged from hospital on the same day are counted as staying for 1 day. In places within this report, information on length of stay is presented with cases admitted and discharged on the same day omitted, as indicated in the text.

Note that length of stay as presented in this report does not include some patient days potentially attributable to injury. In particular, it does not include days for most aspects of injury rehabilitation, which were difficult to assign correctly without information enabling identification of all admitted episodes associated with an injury case.

Rates

All age-specific rates in this report were calculated using, as the denominator, the final estimated resident population (ERP) as at 31 December 2012. Direct standardisation was used to age-standardise rates using the Australian population in 2001 as the standard (ABS 2003).

Where tables of 31 December ERPs were not available but tables of 30 June ERPs were available, population denominators were calculated as the average of 30 June estimates for adjacent years. This method was used to produce denominators for rates by remoteness of usual residence. Australian ERPs for 30 June 2001 (persons, by 5-year age groups to the same oldest group present in the population denominator data) were used as the standardising population throughout the report (ABS 2003).

Classification of remoteness area

Data on geographical location of the patient's usual residence and of the hospital location are defined using the Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS). Data on remoteness area of usual residence are defined using the ABS's ASGS Remoteness Structure 2011 (ABS 2011).

Australia can be divided into several regions, based on their distance from urban centres. This is considered to determine the range and types of services available. In this report, remoteness area refers to the place of usual residence of the person who was admitted to hospital, assigned on the basis of the reported Statistical Local Area (SLA) of residence.

The remoteness areas were specified according to the ABS Australian Standard Geographical Classification (ASGC). Remoteness categories were defined in a manner based on the Accessibility/Remoteness Index of Australia (ARIA). According to this method, remoteness is an index applicable to any point in Australia, based on road distance from urban centres of 5 sizes. The reported areas are defined as the following ranges of the index:

- *Major cities* (for example, Sydney, Geelong, Gold Coast), ARIA index 0 to 0.2
- *Inner regional* (for example, Hobart, Ballarat, Coffs Harbour), ARIA index >0.2 and ≤2.4
- *Outer regional* (for example, Darwin, Cairns, Coonabarabran), ARIA index >2.4 and ≤5.92
- *Remote* (for example, Alice Springs, Broome, Strahan), ARIA index of >5.92 and ≤10.53
- *Very remote* (for example, Coober Pedy, Longreach, Exmouth), ARIA index >10.53.

Most SLAs lie entirely within 1 of the 5 areas. If this was so for all SLAs, then each record could simply be assigned to the area in which its SLA lies. However, some SLAs overlap 2 or more of the areas. Records with these SLAs were assigned to remoteness areas in proportion to the area-specific distribution of the resident population of the SLA according to the 2006 census.

Confidentiality and reliability of data

The AIHW operates under a strict privacy regime which has its basis in section 29 of the *Australian Institute of Health and Welfare Act 1987* (AIHW Act) and the *Privacy Act 1988* (Privacy Act).

Section 29 of the AIHW Act requires that confidentiality of data relating to persons (living and deceased) and organisations be maintained. The Privacy Act governs confidentiality of information about living individuals.

As well as the protection offered by AIHW Act and the Privacy Act, personal information held by the AIHW is covered by a range of other Commonwealth, state and territory legislation.

The AIHW is committed to reporting that maximises the value of information released for users while being statistically reliable and meeting legislative requirements above. To ensure the confidentiality of its data, the AIHW has a range of policies, protocols and processes in place—the AIHW Policy on reporting to manage confidentiality and reliability (AIHW Confidentiality Policy) is one important example, as it deals with how data should be reported to ensure confidentiality.

AIHW Confidentiality Policy, a summary

The AIHW Confidentiality Policy contains 7 guidelines to assist those working with data to apply it to their outputs.

Guideline 1

It is AIHW policy that if the data being considered have already been released publicly at the granularity AIHW intends to release, further confidentialisation is not required.

Guideline 2

Cells in tables where the value of the cell is the same as a row/column/wafer total (that is, all other cells in the row, column or wafer are zero) generally lead to disclosure of an additional attribute. It is AIHW policy that these cells need to be confidentialised unless the attribute that would be disclosed is deemed to be non-sensitive in the context of the data being published.

Guideline 3

It is AIHW policy that data on organisations must be confidentialised if 1 organisation contributes more than 85% of the total, or 2 organisations more than 90%, unless the attribute that would be disclosed is deemed to be non-sensitive in the context of the data being published or the organisation(s) have given consent to release.

Guideline 4

It is AIHW policy that guidelines 2 and 3 need to be applied so as to ensure that attribute confidentiality is maintained within tables and across tables within the same release. That is, when assessing whether a cell needs to be confidentialised, consideration needs to be given to whether there are other cells in that table, or other tables in the release, which may require consequential confidentialisation.

Guideline 5

Rates, averages and other statistics based on denominators of less than 100 are usually not reliable and it is AIHW policy that they should generally not be reported.

Guideline 6

It is AIHW policy that if data suppliers or clients require additional suppression rules be applied to an AIHW release in order to manage confidentiality or reliability, then these should be applied. Where such additional rules are applied they should be described in the release, and it should be noted that this approach is required by the data supplier.

Guideline 7

It is AIHW policy that, if a client wishes to be provided with data output (for example, tables) at a more detailed level than any of the above guidelines would allow, then they may apply to be provided output against which some or all of the above guidelines are not applied. Provision of this more detailed output would be subject to the client signing a confidentiality undertaking and agreeing that any publication of information (including in online data cubes) based on output released to them will comply with this policy.

Errors, inconsistencies and uncertainties

Due to rounding, the sum of the percentages in tables may not equal 100%.

NHMD data are generally abstracted from records, entered and coded in hospitals, passed to state and territory health departments, then to the AIHW before being provided to the National Injury Surveillance Unit (NISU). Processing occurs at each of these steps. Errors and inconsistencies can arise due to the large number of people and processes involved in providing the data. Some variations occur in reporting and coding, although coding standards, national minimum data sets and other mechanisms have reduced this.

Data Quality Statement: National Hospital Morbidity Database

This section provides a summary of key issues relevant to interpretation of the NHMD for 2012–13.

The full AIHW Data Quality Statement for the NHMD is accessible at:

<http://meteor.aihw.gov.au/content/index.phtml/itemId/568730>.

Summary of key issues

- The NHMD is a comprehensive dataset that has records for all separations of admitted patients from essentially all public and private hospitals in Australia.
- A record is included for each separation, not for each patient, so patients who separated more than once in the year have more than one record in the NHMD.
- For 2012–13, almost all public hospitals provided data for the NHMD. The exception was a mothercraft hospital in the Australian Capital Territory. The great majority of private hospitals also provided data, the exceptions being the private day hospital facilities in the Australian Capital Territory, and the single private free-standing day hospital facility in the Northern Territory.
- There is apparent variation between states and territories in the use of statistical discharges and associated assignment of care types. For example, for public hospitals, the proportion of separations ending with a statistical discharge varied from 0.9% to 3.9% across states and territories.
- Variations in admission practices and policies lead to variation among providers in the number of admissions for some conditions.
- Caution should be used in comparing diagnosis, procedure and external cause data over time, as the classifications and coding standards for those data can change over time.

Appendix B: Additional tables

Table B1: Age-specific rates and case counts of poisoning (T36–T65) cases in children and young people, males, Australia, 2012–13

	Poisoning by pharmaceuticals		Poisoning by other substances		All poisoning	
Males	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
<12 months	27	17	19	12	46	29
1–4	514	83.8	266	43.4	780	127.1
5–9	72	9.7	136	18.4	208	28.2
10–14	127	17.8	118	16.5	245	34.3
15–17	575	129.8	121	27.3	696	157.1
18–24	1,920	168.1	395	34.6	2,315	202.7
Total	**3,235**	**84.9**	**1,055**	**27.7**	**4,290**	**112.6**

Table B2: Age-specific rates and case counts of poisoning (T36–T65) cases in children and young people, females, Australia, 2012–13

	Poisoning by pharmaceuticals		Poisoning by other substances		All poisoning	
Females	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
<12 months	35	23.4	25	16.7	60	40.1
1–4	449	77.2	158	27.2	607	104.3
5–9	51	7.3	77	11	128	18.3
10–14	896	131.7	105	15.4	1,001	147.2
15–17	2,468	588.9	128	30.5	2,596	619.4
18–24	3,486	319.5	283	25.9	3,769	345.4
Total	**7,385**	**204**	**776**	**21.4**	**8,161**	**225.4**

Table B3: Age-specific rates and number of cases of poisoning (T36–T65) in children and young people, persons, Australia, 2012–13

	Poisoning by pharmaceuticals		Poisoning by other substances		All poisoning	
Persons	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
<12 months	62	20.1	44	14.3	106	34.4
1–4	963	80.6	424	35.5	1,387	116
5–9	123	8.6	213	14.8	336	23.4
10–14	1,023	73.3	223	16	1,246	89.3
15–17	3,043	353	249	28.9	3,292	381.9
18–24	5,406	242.1	678	30.4	6,084	272.4
Total	**10,620**	**142.9**	**1,831**	**24.6**	**12,451**	**167.5**

Glossary

Definitions in this Glossary contain, where applicable, an identification number from the Metadata Online Registry (METeOR). METeOR is Australia's central repository for health, community services and housing assistance metadata, or 'data about data'. It provides definitions for data for health- and community services-related topics, and specifications for related national minimum data sets (NMDSs)—such as those that form the basis of this report. METeOR can be viewed on the AIHW website at <www.aihw.gov.au>. For further information on the terms used in this report, refer to definitions in the *National health data dictionary,* version 16 (AIHW 2012b).

acute: Having a short and relatively severe course.

acute care: Acute care is care in which the clinical intent or treatment goal is to:

- cure illness or provide definitive treatment of injury
- perform surgery
- relieve symptoms of illness or injury (excluding palliative care)
- reduce severity of an illness or injury
- protect against exacerbation and/or complication of an illness and/or injury which could threaten life or normal function
- perform diagnostic or therapeutic procedures. See **care type**. METeOR identifier: 270174.

acute care hospital: See **establishment type.**

age-standardisation: A set of techniques used to remove, as far as possible, the effects of differences in age when comparing 2 or more populations.

episode of care: The period of admitted patient care between a formal or statistical admission and a formal or statistical separation, characterised by only 1 care type (see care type and separation). METeOR identifiers: 491557 (Care type) and 268956 (Episode of admitted patient care).

establishment type: Type of establishment (defined in terms of legislative approval, service provided and patients treated) for each separately administered establishment. METeOR identifier: 269971.

external cause: The environmental event, circumstance or condition as the cause of injury, poisoning and other adverse effect. METeOR identifier: 514295.

hospital: A health-care facility established under Commonwealth, state or territory legislation as a hospital or a free-standing day procedure unit and authorised to provide treatment and/or care to patients. METeOR identifier: 268971.

International Classification of Diseases (ICD): The World Health Organization's internationally accepted classification of diseases and related health conditions. The 10th revision, Australian modification (ICD-10-AM) is currently in use in Australian hospitals for admitted patients.

length of stay: The length of stay of a patient, excluding leave days, measured in days. Formula: LOS = Separation date minus Admission date minus Total leave days. The calculation is inclusive of admission and separation dates. METeOR identifier: 269982.

mode of admission: The mechanism by which a person begins an episode of care, as represented by a code. METeOR identifier: 269976.

principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care, an episode of residential care or an attendance at the health-care establishment. METeOR identifier: 514273.

private hospital: A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and paramedical practitioners. Acute care and psychiatric hospitals are included, as are private free-standing day hospital facilities. See also **establishment type**.

public hospital: A hospital controlled by a state or territory health authority. Public hospitals offer free diagnostic services, treatment, care and accommodation to all eligible patients. See also **establishment type**.

separation: An episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a stay beginning or ending in a change of type of care (for example, from acute to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care.

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