



# Hospital separations due to injury and poisoning, Australia 1998–99

*Raymond Cripps, Malinda Steenkamp  
James Harrison*

AIHW

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injury and poisoning, Australia  
1998–99**

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**Raymond Cripps  
Malinda Steenkamp  
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**2002**

Australian Institute of Health and Welfare  
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# Executive summary

This is the first overview report by the National Injury Surveillance Unit on national hospital separations due to injury and poisoning. The report focuses mainly on data for the financial year 1998–99.

‘Separations’ are not equivalent to newly incident cases that result in hospitalisation. This is because some incident cases result in more than one separation.

It should be noted that for 1998–99, NSW, Victoria, Northern Territory and the ACT coded data according to the 10<sup>th</sup> version of the *International Classification of Diseases – Australian Modification*. The remaining four jurisdictions were still using the 9<sup>th</sup> version.

## Main findings

- In 1998–99, there were 403,724 hospital separations due to injury and poisoning. These cases made up 7% of all hospital separations for this year.
- Females made up 42.5% of injury hospitalisations (n=171,774). The male to female rate ratio, based on age-standardised separation rates, was 1.5:1.
- For both sexes, age-specific hospital separation rates increased from birth to the 20–24 year age group and declined thereafter until about age 50 years for males and 40 years for females. In people aged 65 years and above, rates in both genders increased exponentially reaching maximum rates in those aged 85+ years.
- Falls and Other unintentional injuries were the most common cause of injury for both sexes accounting for about 28% and 27% of the injury separations, respectively.
- Fall-related hospitalisations were particularly common in the children 0–14 years and persons aged 65+ years, representing 38% (n=25,689) and 54% (n=52,126) of the injuries in these two groups, respectively.
- With age, hospitalisations due to medical misadventure became proportionally more common, increasing from about 23% of the hospitalisations in the 35–64 year age group to 27% in those aged 65 years and above.
- Hospitalisations due to Intentional self-harm made up about 5% of injury hospitalisations, with the proportion highest in the 20–34 year age group (i.e. around 10%).

- Overall, male rates were higher than female rates for all external causes except for Poisoning, pharmaceuticals (X40–X44), Falls (W00–W19) and Intentional, self-harm (X60–X84 and Y87.0).
- In the case of Falls, male rates were higher than female rates at ages less than 65 years, but elderly female rates were more than double elderly male rates.
- Rates of Intentional self-harm were higher in females less than 65 years of age than males. However, in age groups 65 years and above, rates in males were higher than females for Intentional self-harm.
- The transition from ICD-9-CM to ICD-10-AM coding affected the reporting of Place of occurrence.
- For 30% of cases in those four jurisdictions that coded data directly to ICD-10-AM during 1998–99, Place of occurrence was not reported. Of the remaining hospital separations cases where Place was reported, about 42% (n=68,352) had Place reported as Other specified place and Unspecified place.
- For those cases where more specific data were available, injury most often occurred in and around the home with 53,272 (33.0%) of the cases being injured there. There were some differences between the genders and age groups.
- For the jurisdictions that coded data directly to ICD-9-CM, 9% of cases did not provide any data on Place. Of those that did provide relevant data, about 50% (n=77,934) coded to Other specified place or Place not specified.
- Activity of the injured person at the time of occurrence of the external cause is a new code in the ICD-10-AM classification. For the four States using the ICD-9-CM classification during 1998–99, no information on activity was reported that could be mapped to the ICD-10-AM Activity categories.
- For the other four jurisdictions, more than 70% of cases were coded to either Other specified activity or Unspecified activity. Where some specific activity during injury occurrence was reported, there appeared to be noticeable gender differences. Males appeared to be particularly at risk of injury while engaged in sports activity or while working for income, whereas for females injuries during leisure and vital activities were more predominant. There also were some age differences.
- During 1998–99, Injury to shoulders and upper limbs were the most common injuries diagnosed and treated in males and females, accounting for about 28% (n=64,366) and 20% (n=34,943) of the cases, respectively.
- The number of cases of Injury to the head and Injury to the hips and lower limbs was similar proportionally in males and



accounted for about 18% each. In females, the number of cases of Injury to the hips and lower limbs was proportionally higher than in males and made up about 23% of the cases diagnosed.

- Head injuries were diagnosed in 15% of the cases, with males having more than twice as many head injuries diagnosed as females.
- Males and females, aged 0–4 years, young persons aged 15–19 years and those aged 80+ years, had high rates for Head injury, reaching highest levels in old age.
- Overall, males were more than twice as likely to be hospitalised with head injuries as females at all ages (i.e. 442 versus 205 head injury hospital separations per 100,000 population).
- Hospitalisations due to Injuries to the wrist and hand were also very common, but rates were lower than rates for head injuries. Highest rates in both sexes occurred during teenage and early adult years (15–24 years).
- The occurrence of Hip and thigh injuries appeared to be associated with ageing as rates in both sexes began to increase at age 55 years. In those aged 65 years and above, the rates increased exponentially in both sexes, reaching their highest rate in the very old (85 years and above). In general, female rates were higher than male rates at age 60 years and above.
- In 1998–99, the 403,724 separations resulted in a total of 1,711,091 bed days, i.e. an average length of stay (LOS) of 4 days. For 28% (n=114,877) of these separations, discharge occurred on the same day of admission. If the same day cases are removed, the total number of bed days was 1,596,214 for 288,847 separations, i.e. an average of 6 days. About 47% of these admitted patients had a stay of 3 days or more (n=135,354).
- In terms of LOS, Injuries to the hip and thigh were second highest in rank after Complications of surgical & medical care, not elsewhere classified with over 300,000 bed days required for treatment. Females accounted for more than twice the number of bed days due to the prevalence of hip and thigh injuries in this group. These injuries also had the second highest LOS (11 days) followed by Injuries to the abdomen, lower back, lumbar spine & pelvis (8 days).
- Over 84% of all injury cases were discharged to their usual residence. In the case of children, 93% were discharged to their home. For elderly cases (aged 65 years and older), about 68% of cases were discharged to their usual residence.
- Less than 1% (n=3,434) of the cases died in hospital. About 47% of these were female and 70% (n=2,389) were elderly patients.

- About 10% of the cases (n=39,409) were discharged to another acute hospital facility and 45% were elderly cases.
- Age-standardised rates in all States and Territories, except NSW, were significantly different from the national average rate of 1,524 hospital separations per 100,000 population (95% CI=1,518 to 1,529). Rates in Queensland, Western Australia, South Australia and the Northern Territory were significantly higher than the national rate. Rates in Victoria, Tasmania, and the ACT were significantly lower than the national average.

### **NHPA priority areas**

The National Injury Prevention Plan specifies four priority areas for 2001–2003:

#### *Falls among persons aged 65+ years*

- There were 52,126 hospitalisations coded to W00–W19 (Unintentional falls) among the elderly in 1998–99. These made up more than 50% of all hospitalised injuries to the elderly. One-third of the elderly falls were to persons aged 85 years or more.
- In 1998–99, hospitalisation rates for falls among the elderly increased exponentially as age rose. The increase between age groups was steeper for the older age groups.

#### *Falls among children 0–14 years*

- There were 25,689 hospitalised falls among children in 1998–99. These accounted for about 38% of all injuries to children.
- Males aged 5–9 years had the highest rates and made up more than one-third of falls among males aged 0–14 years.

#### *Near drowning*

- There were 608 near drowning cases in 1998–99, i.e. less than 1% of all the injury hospitalisations during this period.
- Of the 608 cases, about 48% (n=292) were to children aged 0–4 years and about 23% (n=99) were to males aged 15–34 years.

#### *Poisoning among children aged 0–4 years*

- There were more than 3,500 hospital separations due to poisoning among children aged 0–4 years in 1998–99. These cases accounted for 15% of all injury to children aged 0–4 years during this period.



# Abbreviations

<b>ABS</b>	<b>Australian Bureau of Statistics</b>
<b>AIHW</b>	<b>Australian Institute of Health and Welfare</b>
<b>DHAC</b>	<b>Department of Health and Aged Care</b>
<b>ICD-9</b>	<b>9<sup>th</sup> Revision of the International Classification of Diseases</b>
<b>ICD-9-CM</b>	<b>9<sup>th</sup> Revision of the International Classification of Diseases, Clinic Modification</b>
<b>ICD-10</b>	<b>10<sup>th</sup> Revision of the International Classification of Diseases</b>
<b>ICD-10-AM</b>	<b>10<sup>th</sup> Revision of the International Classification of Diseases, Australian Modification</b>
<b>LOS</b>	<b>Length of stay</b>
<b>nec</b>	<b>Not elsewhere classified</b>
<b>NHDD</b>	<b>National Health Data Dictionary</b>
<b>NHMD</b>	<b>National Hospital Morbidity Database</b>
<b>NHPA</b>	<b>National Health Priority Area</b>
<b>NISU</b>	<b>National Injury Surveillance Unit</b>
<b>RCIS</b>	<b>Research Centre for Injury Studies</b>



# 1 Introduction

## 1.1 Hospital separations data

This is the first overview report by the National Injury Surveillance Unit on national hospital separations due to injury and poisoning. It is foreseen that an annual update of this report will appear with the latest data available at the time of writing. In this report the focus is on data for the financial year 1998–99, although some data for the period commencing 1993–94 are also presented.

Hospital separations data are from the AIHW National Hospital Morbidity Database (NHMD). A ‘separation’ refers to an episode of 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 to rehabilitation). It is also defined as 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 (Australian Institute of Health and Welfare 2000).

## 1.2 Selecting injury and poisoning cases

Hospital separations data are reported according to financial year. Up to the end of June 1998, hospital data were coded according to the second version of the Australian modification of ICD-9 (ICD-9-CM) (Table 1.1).

A first version of the Australian modification of ICD-10 (i.e. ICD-10-AM) was introduced at various stages in the different States and Territories. From 1 July 1998, NSW, Victoria Northern Territory and the ACT coded data according to ICD-10-AM (Table 1.1). The other four jurisdictions started coding data to ICD-10-AM from 1 July 1999 (Table 1.1).

Table 1.1. Use of ICD in national hospital morbidity data; Australia

ICD-9-CM US version	ICD-9-CM First Australian edition	ICD-9-CM Second Australian edition	ICD-10-AM First edition	ICD-10-AM First Edition	ICD-10-AM Second Edition
1993 – 1/07/95 National	1/07/95 – 30/06/96 National	1/07/96 – 30/06/98/ National 1/07/98 – 30/06/99 QLD, WA, SA, TAS	1/07/98 – 30/06/99 NSW, VIC, NT, ACT	1/07/99 – 30/06/00 National	1/07/00 to current National

Source: AIHW, 2000

For 1998–99, data for Tasmania, Western Australia, South Australia and Queensland were mapped to ICD-10-AM and data for the other four jurisdictions were mapped to ICD-9-CM data.

In selecting cases for this Report, we used the ICD-10-AM coded data for ACT, Victoria, Northern Territory and NSW and mapped ICD-10-AM data for the remaining four States.

Separations that satisfied the following criteria were selected for inclusion in this Report:

- A 'Principal Diagnosis' in the ICD-10-AM range S00–T98 (i.e. Chapter XIX Injury, poisoning and certain other consequences of external causes codes); and
- An External cause code in the ICD-10-AM range V01–Y98 (i.e. Chapter XX External causes of morbidity and mortality).

The application of these selection criteria resulted in 403,724 hospital separations. Because some injuries result in more than one separation, case counts and rates based on this criterion are not equivalent to population incidence. The issue of separations and incidence is further discussed in Section 2.6.2.

The 403,724 hospital separations identified for this report is higher than the 401,723 cases due to external causes identified by the AIHW using the following criteria (Personal communication with Ruth Penm, AIHW August 2001):

- Principal diagnosis was an injury or poisoning (diagnoses codes S00–98 and Z04.1–Z04.5); and
- An External Cause (V01–Y98) was present.

The reason for this difference of 2,001 cases lies with the way external causes were selected. There are 31 fields where external cause data can be recorded in the NHMD. The AIHW selected those cases where the external cause was recorded in the first external cause field (this is sometimes called the 'main' external cause code field. The selection criteria were extended and included cases where an external cause code did not appear in the 'main' external cause field, but appeared in one of the other external cause code fields, i.e. the 'first appearing' external cause code. Criteria used for this report did not include diagnoses codes Z04.1–Z04.5 as these imply that there were no physical or physiological damage.

In this report we also excluded 42 cases that had codes in the range Y90–98. This is because these codes are supplementary codes to external causes of morbidity. According to ICD-10-AM guidelines, they should not be used to code single conditions (National Centre for Classification in Health 1998).

## 2 Results

### 2.1 Age and sex distribution

In the financial year 1998–99 there was a total of 5,735,049 hospital separations recorded from public, private and psychiatric hospitals in Australia (Australian Institute of Health and Welfare 2000). Seven per cent (n=403,724) of these separations were due to injury and poisoning (Table 2.1).

Table 2.1: Key indicators for hospital separations due to injury and poisoning, Australia 1998–99

Indicator	Males	Females	Persons
All hospital separations	2,640,362	3,094,604	5,735,049 <sup>(a)</sup>
Hospital separations due to injury and poisoning	231,950	171,774	403,724
Hospital separations due to injury and poisoning as a % of all separations	8.8%	5.6%	7.0%
Crude rate per 100,000 population	2,473.9	1,814.6	2,142.7
Age-standardised rate per 100,000 population	2,518.5	1,680.4	2,115.1
Change in age-standardised rate since 1997–98	2.4%	3.3%	2.8%

(a) Includes 83 separations for which sex was not reported

The male to female rate ratio (M:F rate ratio), based on age-standardised separation rates, was 1.5:1 indicating that male hospitalisation rates were higher overall than female rates. The age-standardised rate of injury separations for 1998–99 was 2.8% higher than the rate reported for 1997–98 injury separations (Table 2.1). This rate increase was proportionally higher in females than in males.

Age-specific hospital separation rates varied by age (Figure 2.1), with rates in both sexes increasing from birth to the 20–24 year age group (M:F rate ratio 2.5:1) and declining thereafter until about age 50 years for males and 40 years for females. In people aged 65 years and above, rates in both genders increased exponentially reaching maximum rates in the very old (age 85 years and above; M:F rate ratio 0.7:1). For the elderly, female rates were higher than male rates at ages 70 years and above. (Age-specific rate data for Figure 2.1 are tabulated in Table A5.1).



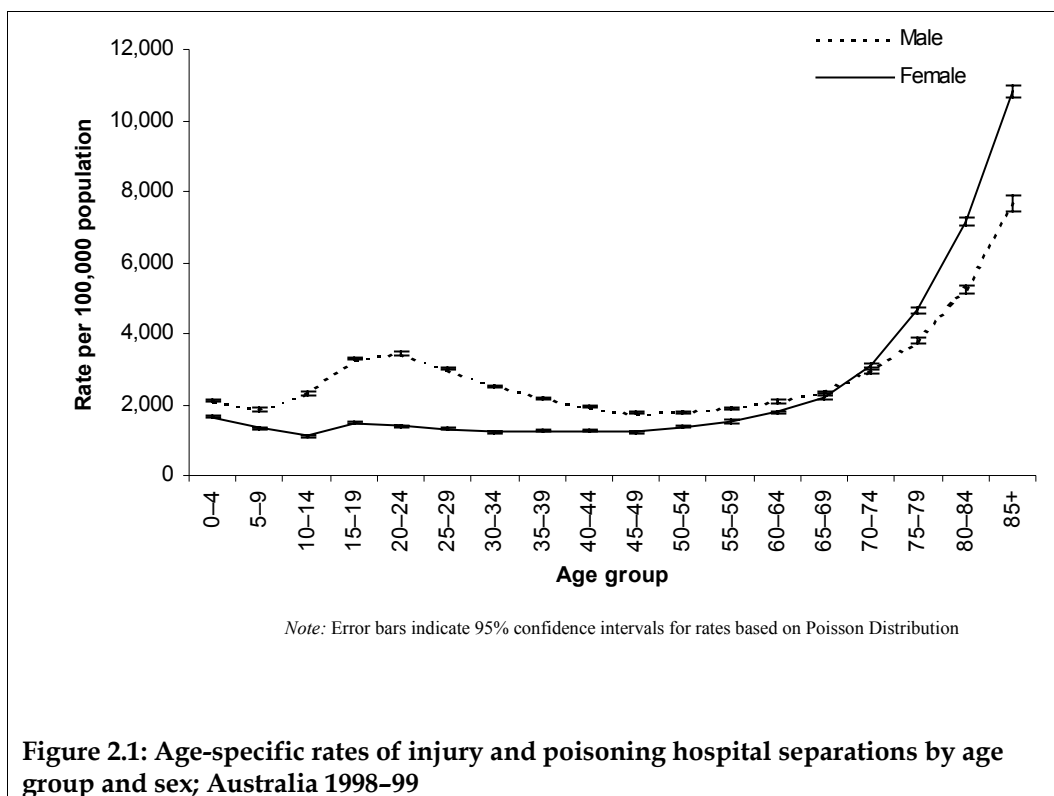


Figure 2.1: Age-specific rates of injury and poisoning hospital separations by age group and sex; Australia 1998-99

## 2.2 External causes

### 2.2.1 Major groups of injury and poisoning

In 1998-99, *Falls* and *Other unintentional injuries* were the most common cause of injury for both sexes accounting about 29% and 27% of the separations, respectively (Table 2.2). Proportionally, about 76% of the separations by males were associated with *Transportation*, *Falls*, *Other unintentional injuries* and assault. Females, on the other hand, were more likely to be hospitalised for injuries from *Falls* (36.8%), *Medical misadventures, etc.* (19.5%), and *Other unintentional injuries* (18.3%). Hospitalisations due to *Intentional self-harm* were proportionally double for females when compared to males. Conversely, cases attributed to harm inflicted by another person were more frequent for males (Table 2.2).

**Table 2.2: External causes of injury hospital separations: case counts and proportions by sex; Australia 1998–99**

Major groups	Males		Females		Persons		M:F ratio
	Count	Per cent	Count	Per cent	Count	Per cent	
Transportation	33,848	14.6	16,247	9.5	50,095	12.4	2.1
<i>Motor vehicle traffic accidents</i>	18,267	7.9	10,319	6.0	28,586	7.1	1.8
<i>Other transportation</i>	15,581	6.7	5,928	3.5	21,509	5.3	2.6
Near drowning	426	0.2	182	0.1	608	0.2	2.3
<i>Swimming pool</i>	148	0.1	60	0.0	208	0.1	2.5
<i>Other near drowning</i>	278	0.1	122	0.1	400	0.1	2.3
Poisoning, pharmaceuticals	5,090	2.2	5,533	3.2	10,623	2.6	0.9
Poisoning, other substances	2,125	0.9	1,287	0.7	3,412	0.8	1.7
Falls (W00–W19) <sup>(a)</sup>	51,834	22.3	63,150	36.8	114,984	28.5	0.8
<i>Slip, trip or stumble</i>	11,027	4.8	22,735	13.2	33,762	8.4	0.5
<i>Stairs and steps</i>	2,698	1.2	4,135	2.4	6,833	1.7	0.7
<i>Falls from playground equipment</i>	2,777	1.2	2,544	1.5	5,321	1.3	1.1
<i>Other falls</i>	35,332	15.2	33,736	19.6	69,068	17.1	1.0
Fires/burns/scalds	3,866	1.7	2,096	1.2	5,962	1.5	1.8
<i>Scalds</i>	1,037	0.4	797	0.5	1,834	0.5	1.3
<i>Other fires/burns</i>	2,829	1.2	1,299	0.8	4,128	1.0	2.2
Other unintentional injuries	76,699	33.1	31,358	18.3	108,057	26.8	2.4
Intentional self-harm	8,847	3.8	12,352	7.2	21,199	5.3	0.7
<i>Self harm, poisoning</i>	7,006	3.0	11,255	6.6	18,261	4.5	0.6
<i>Self harm, other</i>	1,841	0.8	1,097	0.6	2,938	0.7	1.7
Intentional, inflicted by another	14,271	6.2	5,128	3.0	19,399	4.8	2.8
Undetermined intent	1,244	0.5	984	0.6	2,228	0.6	1.3
Medical misadventure, etc.	33,700	14.5	33,457	19.5	67,157	16.6	1.0
<b>All major groups</b>	<b>231,950</b>	<b>100.0</b>	<b>171,774</b>	<b>100.0</b>	<b>403,724</b>	<b>100.0</b>	<b>1.4</b>

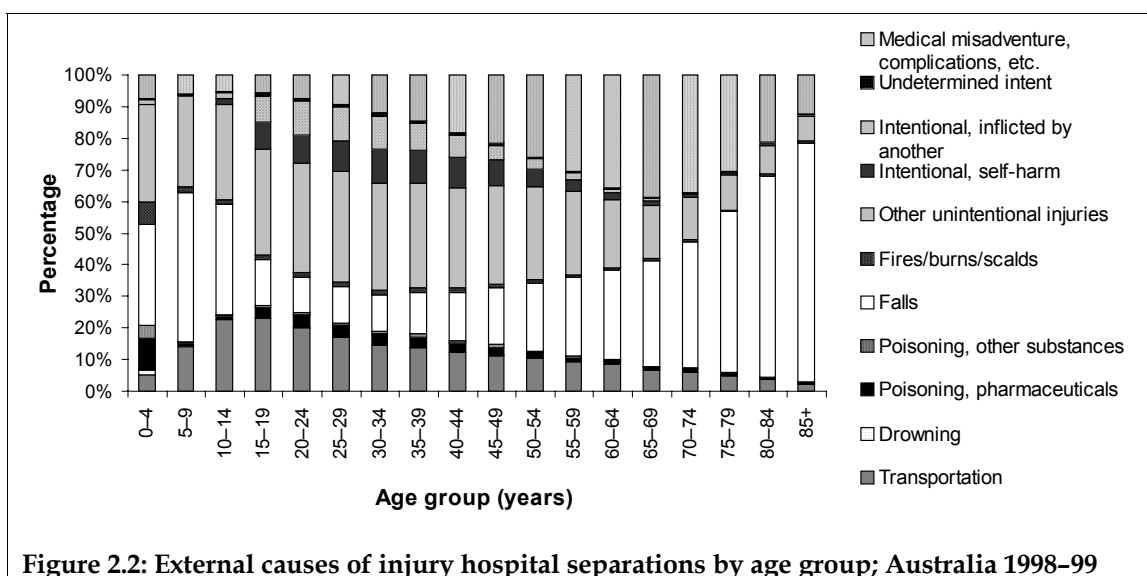
(a) Please note that the ICD-10-AM range for falls presented here (W00–W19) is not equivalent to the ICD-9-CM range E880–E888. That is, because there is no equivalent code for E887 (Fracture, cause unspecified). ICD-9-CM and ICD-10-AM external cause code ranges for each category are listed in the Appendix, Table A5.10.

Age of one male 'Intentional, inflicted by another' case and one female 'Transportation' case were not reported.

Shaded areas indicate three largest figures.

In Figure 2.2, hospital separations for external causes are presented for 18 five-year age groups. In Figure 2.2 (as in some other graphs and tables), data are not presented separately for males and females. (Table A5.2 show the same data but in five age groups.)

Figure 2.2 shows that fall-related hospitalisations were particularly common in children aged 0–14 years and those aged 65+ years, representing about 38% (n=25,689) and 54% (n=52,126) of the injuries in these two groups, respectively. Hospitalisations due to *Intentional self-harm* made up about 5% of hospitalisations, with the proportion highest in the 20–34 year age groups (i.e. around 10%). With age, hospitalisations due to medical misadventure became proportionally more common, increasing from about 23% of the hospitalisations in the 35–64 year age groups to 27% in those aged 65 years and above.



Age-specific rates for external causes of hospital separations for males and females are tabulated in Tables A5.3 and A5.4. Overall, male rates were higher than female rates (age-standardised M:F rate ratios were greater than 1) for all external causes except for *Poisoning, pharmaceuticals* (X40-X44), *Falls* (W00-W19) and *Intentional, self-harm* (X60-X84 and Y87.0). In the case of *Falls*, male rates were higher than female rates at ages less than 65 years, but with female life expectancy greater than males in this elderly cohort, female rates were more than double male rates. Rates of *Intentional self-harm* were higher in females less than 65 years of age than males. However, in age groups 65 years and above, rates in males were higher than females for *Intentional self-harm*.

## 2.2.2 Profiles of priority injury areas

Injury prevention and control has been recognised as a National Health Priority Area (NHPA) since 1986 (Commonwealth Department of Health and Aged Care 2001). In August 2001, the Strategic Injury Prevention Partnership<sup>1</sup> (SIPP) released the National Injury Prevention Plan following its endorsement by the Australian Health Ministers' Council. The Plan specified four priority areas for 2001-2003 (Commonwealth Department of Health and Aged Care 2001). These are:

- Falls in older people;
- Falls in children;
- Drowning and near drowning; and

<sup>1</sup> SIPP is the body through which Commonwealth, State and Territory government health agencies and other key organisations and sectors meet on injury prevention and control. SIPP has responsibility for implementing the National Injury Prevention Plan, and its Priorities for 2001-2003.

- **Poisoning among children aged 0-4 years.**

Table 2.3 provides overall data for these four priority topics, as well as for key target populations for interventions in each area. For the elderly and children, falls are shown by five-year age groups.

Table 2.3: Injury priority topics: case counts, proportions, hospital separation rates by sex, as well as male to female ratios; Australia 1998–99

Priority area	Males			Females			Persons			M:F ratio <sup>(b)</sup>
	Count	Per cent	Rate <sup>(a)</sup>	Count	Per cent	Rate <sup>(a)</sup>	Count	Per cent	Rate <sup>(a)</sup>	
<b>Falls in older people aged 65+ years<sup>(c)</sup> (W00-W19)</b>										
65–69 years	1,868	13.8%	560.2	3,261	8.4%	937.90	5,129	9.8%	753.0	0.6
70–74 years	2,409	17.8%	836.8	5,081	13.2%	1,541.32	7,490	14.4%	1,212.9	0.5
75–79 years	2,886	21.3%	1398.8	7,634	19.8%	2,778.87	10,520	20.2%	2,186.9	0.5
80–84 years	2,885	21.3%	2616.9	8,893	23.0%	4,970.49	11,778	22.6%	4,073.2	0.5
85+ years	3,479	25.7%	4937.1	13,730	35.6%	8,570.48	17,209	33.0%	7,460.5	0.6
All 65+ years	13,527	100.0%	1,081.5 <sup>(d)</sup>	38,599	100.0%	2,019.4 <sup>(d)</sup>	52,126	100.0%	1,615.4 <sup>(d)</sup>	0.5
<b>Falls in children aged 0–14 years<sup>(c)</sup> (W00-W19)</b>										
0–4 years	4,298	27.6%	654.6	3384	33.4%	543.2	7,682	29.9%	600.4	1.2
5–9 years	5,674	36.5%	833.0	4418	43.6%	682.8	10,092	39.3%	759.8	1.2
10–14 years	5,573	35.9%	828.1	2342	23.1%	365.1	7,915	30.8%	602.1	2.3
0–14 years	15,545	100.0%	771.5 <sup>(d)</sup>	10,144	100.0%	531.7 <sup>(d)</sup>	25,689	100.0%	654.6 <sup>(d)</sup>	1.5
<b>Near drowning (W65-W74)</b>										
0–4 years	196	46.0%	29.9	96	52.7%	15.4	292	48.0%	22.8	1.9
15–34 years	99	23.2%	3.5	26	14.3%	0.9	125	20.6%	2.2	3.7
All ages	426	100.0%	4.7 <sup>(d)</sup>	182	100.0%	2.1 <sup>(d)</sup>	608	100.0%	3.4 <sup>(d)</sup>	2.3
<b>Poisoning among children 0–4 years (X40–X49)</b>										
0–4 years	1813	100%	276.1	1601	100%	257.0	3,414	100%	266.8	1.1

(a) Age-specific rates per 100,000 population are provided for five-year age groups.

(b) Ratio is based on age-standardised rates.

(c) Please note that the ICD10-AM range for falls presented here (W00–W19) is *NOT* equivalent to the ICD-9-CM range E880–E888. That is, because there is no equivalent code for E887 (Fracture, cause unspecified).

(d) These are age-standardised rates per 100,000 population.

Table 2.3 shows the following for the four priority groups:

#### *Falls among persons aged 65+ years*

- There were 52,126 hospitalisations coded to W00–W19 (*Unintentional falls*) among the elderly in 1998–99. These made up more than 50% of all hospitalised injuries to the elderly.
- One-third of the elderly falls (n=17,209) were to persons aged 85 years or more.
- In 1998–99, hospitalisation rates for falls among the elderly increased exponentially as age rose, i.e. rates were lowest in the 65–

69 year age group and highest for those aged 85 years or more. The increase between age groups was steeper for the older age groups.

- For elderly falls, female separation rates for all elderly age groups were higher than the comparable male rates.

#### *Falls among children 0-14 years*

- There were 25,689 hospitalised falls among children in 1998-99. These accounted for about 38% of all injuries to children.
- Male separation rates were higher than those for females in this age group.
- Males aged 5-9 years had the highest rates and made up more than one-third of falls among males aged 0-14 years.

#### *Near-drowning*

- There were 608 near drowning cases in 1998-99, i.e. less than 1% of all the injury hospitalisations during this period.
- Of the 608 cases, about 48% (n=292) were to children aged 0-4 years and about 23% (n=99) were to males aged 15-34 years.
- Rates were highest for children aged 0-4 years.

#### *Poisoning among children aged 0-4 years*

- There were more than 3,500 hospital separations due to poisoning among children aged 0-4 years in 1998-99. These cases accounted for 15% of all injury to children aged 0-4 years during this period.
- Male and female rates were not very different for this age group.

## 2.3 Place and Activity

The transition from ICD-9-CM to ICD-10-AM coding affected the reporting of *Place of occurrence* and *Activity* during 1998–99. For *Place*, there are a number of issues that should be considered:

According to ICD-9-CM (second Australian edition), a *Place* code was required for cases given an external cause code in the ranges E850–E869 and E880–E928 (i.e. accidental injuries other than transport accidents, and excluding medical misadventures). In practice, a *Place* code was commonly provided for cases with a wider range of external cause codes. This practice was consistent with the guide for use of this item given in the National Health Data Dictionary (NHDD) (p 185): "A place of occurrence code must accompany each related external cause code" (Australian Institute of Health and Welfare 1998). In particular, 'transport accidents' were commonly allocated a place code, usually *Street or Highway*.

The first edition of ICD-10-AM specified that a *Place* code was required if the external cause code was in the range W00–Y34 (excluding Y06 and Y07). This code range includes accidental injuries, other than transport accidents, and also includes cases recorded as intentional self-harm or being of undetermined intent, and most cases of assault. The guide for use of this item given in the NHDD (p 184) makes it clear that *Place* is only required for this range of external cause codes (Australian Institute of Health and Welfare 1998). This guide was followed in practice, and place codes were rarely applied to cases with other external cause codes.

Thus, although the scope of cases for which a *Place* code was required was wider under ICD-10-AM (first edition) than under ICD-9-CM (second edition), the use of *Place* codes for cases outside the required range of external causes almost ceased.

The effect of the latter change was greatest for transport accidents. In the four jurisdictions that used ICD-9-CM in 1998–99, the great majority of the 11,917 cases where *Place* = *Street and Highway* have a transport accident as the external cause. In contrast, the 4,337 cases where *Place* = *Street and Highway* in the jurisdictions that used ICD-10-AM in 1998–99 included almost none that were transport accidents (most of these cases were accidental falls or assault).

Hence, Tables 2.6 and 2.8 give a better indication of the relative prominence of roads as the location of injuries resulting in hospital admission than do Tables 2.5 and 2.7. (See Table 2.2 for the number of separations due to 'road traffic accidents'. By definition, all of these should have occurred on a street or highway.)

Also, ICD-10-AM *Place of occurrence* codes differed from the relevant ICD-9-CM codes and some ICD-9-CM *Place* categories could not be mapped exactly to the ICD-10-AM categories. The ICD-9-CM *Place* categories that could not be mapped exactly to the ICD-10-AM category were *School, other institutions; Trade and service area; and Industrial and construction area* (Table 2.4).

Because of these problems, we present data for the hospital separations from NSW, Victoria, ACT and Northern Territory coded to ICD-10-AM (these cases formed about 58% of all the injury separations for 1998–99). We present *Place* data for the four jurisdictions coded to ICD-9-CM separately.

Table 2.4: ICD-9-CM and ICD-10-AM *Place of occurrence* codes

Place of occurrence	ICD-9-CM code	Place of occurrence	ICD-10-AM code
Home	E849.0	Home	0
Farm	E849.1	Residential institution	1
Mine and quarry	E849.2	School, other institution and public administrative area ( <i>includes hospital</i> )	2
Industrial place and premises	E849.3	Sports and athletics area	3
Place for recreation and sport	E849.4	Street and highway	4
Street and highway	E849.5	Trade and service area	5
Public building	E849.6	Industrial and construction area	6
Residential institution ( <i>includes hospital</i> )	E849.7	Farm	7
Other specified places	E849.8	Other specified places	8
Unspecified place	E849.9	Unspecified place	9

### 2.3.1 Place

Tables 2.5 and 2.7 summarise the *Place of occurrence* for jurisdictions that coded data directly to ICD-10-AM. For about 30% of these cases (n=68,463) no *Place of occurrence* was reported. Of the hospital separations cases where *Place* was reported, about 42% (n=68,352) had *Place* reported as *Other specified place* and *Unspecified place*. This may have been due to a lack of information in case notes or because of mapping difficulties for the States using ICD-9-CM.

For those cases where more specific data were available, injury most often occurred in and around the home with 53,272 (33.0%) of the cases being injured there (Table 2.5). For females, the number of injuries that occurred in the home and in residential institutions was proportionally higher than in males (50% versus 27%). Males, on the other hand, had almost three times the number of cases reported for *Sports and athletics areas* than females and more than eight times the number from *Industrial and construction areas* (Table 2.5).

**Table 2.5: Place of occurrence directly coded to ICD-10-AM for injury hospitalisations: case counts and proportions by sex, NSW, Victoria, ACT and Northern Territory 1998–99**

ICD-10-AM Place of occurrence	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Home	22,823	25.0	30,449	43.2	53,272	33.0
Residential institution	1,995	2.2	4,894	6.9	6,889	4.3
School, other institutions & public administration area	2,059	2.3	1,723	2.4	3,782	2.3
Sport and athletics area	9,041	9.9	2,381	3.4	11,422	7.1
Street and highway	2,411	2.6	1,926	2.7	4,337	2.7
Trade and service area	3,770	4.1	2,080	3.0	5,850	3.6
Industrial and construction area	6,036	6.6	577	0.8	6,613	4.1
Farm	898	1.0	224	0.3	1,122	0.7
Other specified places	4,365	4.8	2,233	3.2	6,598	4.1
Unspecified place	37,773	41.4	23,981	34.0	61,754	38.2
<b>All places</b>	<b>91,171</b>	<b>100.0</b>	<b>70,468</b>	<b>100.0</b>	<b>161,639</b>	<b>100.0</b>

*Shaded areas indicate three most common Place of occurrence categories.*

**Table 2.6 presents data for the jurisdictions that coded data directly to ICD-9-CM. For about 9% of these cases (n=16,073), there was no information on Place. Of those that did provide data, about 50% (n=77,934) coded to Other specified place or Place not specified.**

**Table 2.6: Place of occurrence directly coded to ICD-9-CM for injury hospitalisations: case counts and proportions by sex, Queensland, WA, SA, and Tasmania 1998–99**

ICD-9-CM Place of occurrence	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Home	15,865	17.2	19,632	30.0	35,497	22.5
Farm	1,704	1.8	707	1.1	2,411	1.5
Mine & quarry	332	0.4	32	0.0	364	0.2
Industrial place	5,560	6.0	544	0.8	6,104	3.9
Place for recreation and sport	7,549	8.2	2,201	3.4	9,750	6.2
Street and highway	7,695	8.3	4,222	6.5	11,917	7.6
Public building	2,692	2.9	1,793	2.7	4,485	2.8
Residential institution	3,764	4.1	5,323	8.1	9,087	5.8
Other specified	4,072	4.4	1,835	2.8	5,907	3.7
Not specified	42,978	46.6	29,049	44.5	72,027	45.7
<b>All places</b>	<b>92,211</b>	<b>100</b>	<b>65,338</b>	<b>100</b>	<b>157,549</b>	<b>100</b>

*Shaded areas indicate three most common Place of occurrence categories.*

**Table 2.7 presents Place data for those jurisdictions that coded directly to ICD-10-AM. This shows that age was also a factor in Place of injury occurrence. Children and the elderly were more likely to be injured in the home, while teenagers aged 15–19 years were more likely to be injured in Sport and athletics areas (Table 2.7). For age groups 20–34**



and 35–64 years, *Industrial and construction areas* were common places of injury occurrence.

**Table 2.7: Place of occurrence directly coded to ICD-10-AM for injury hospitalisations: case counts and proportions by age group, NSW, Victoria, ACT and Northern Territory 1998–99**

Place of occurrence	0–14 years		15–19 years		20–34 years		35–64 years		65+ years	
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Home	9,441	32.2	2,300	18.5	8,045	22.2	13,236	31.2	20,250	49.1
Residential institution	156	0.5	98	0.8	423	1.2	493	1.2	5,719	13.9
School, other institutions & public administration area	2,177	7.4	346	2.8	267	0.7	358	0.8	634	1.5
Sport and athletics area	2,842	9.7	2,307	18.6	4,381	12.1	1,613	3.8	279	0.7
Street and highway	258	0.9	275	2.2	970	2.7	1,229	2.9	1,605	3.9
Trade and service area	474	1.6	489	3.9	1,898	5.2	1,754	4.1	1,235	3.0
Industrial and construction area	43	0.1	497	4.0	2,705	7.5	3,248	7.7	120	0.3
Farm	95	0.3	57	0.5	253	0.7	551	1.3	166	0.4
Other specified places	1,172	4.0	622	5.0	1,936	5.3	2,070	4.9	798	1.9
Unspecified place	12,693	43.2	5,440	43.8	15,397	42.4	17,810	42.0	10,413	25.3
<b>All places of occurrence</b>	<b>29,351</b>	<b>100.0</b>	<b>12,431</b>	<b>100.0</b>	<b>36,275</b>	<b>100.0</b>	<b>42,362</b>	<b>100.0</b>	<b>41,219</b>	<b>100.0</b>

Note: Age was not reported for one case where injury occurred in an unspecified place.

Shaded areas indicate three most common Place of occurrence categories.

Table 2.8 shows *Place* data by age groups for the jurisdictions that coded directly to ICD-9-CM. This table also shows the role of age in relation to *Place of occurrence*.

**Table 2.8: Place of occurrence directly coded to ICD-9-CM for injury hospitalisations: case counts and proportions by age group, Queensland, WA, SA, and Tasmania 1998–99**

Place of occurrence	0–14 years		15–19 years		20–34 years		35–64 years		65+ years	
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Home	8,491	29.4	1,677	12.7	5,655	15.4	8,666	19.0	11,008	33.2
Farm	366	1.3	194	1.5	586	1.6	892	2.0	373	1.1
Mine & quarry	12	0.0	18	0.1	180	0.5	142	0.3	12	0.0
Industrial place	37	0.1	542	4.1	2,578	7.0	2,858	6.3	89	0.3
Place for recreation + sport	2,803	9.7	1,896	14.3	3,450	9.4	1,394	3.1	207	0.6
Street and highway	1,281	4.4	1,823	13.8	3,911	10.6	3,321	7.3	1,581	4.8
Public building	1,834	6.3	413	3.1	837	2.3	794	1.7	607	1.8
Residential institution	398	1.4	234	1.8	1,000	2.7	2,318	5.1	5,137	15.5
Other specified	954	3.3	632	4.8	2,008	5.5	1,778	3.9	535	1.6
Not specified	12,716	44.0	5,826	44.0	16,531	45.0	23,347	51.3	13,607	41.0
<b>All places of occurrence</b>	<b>28,892</b>	<b>100.0</b>	<b>13,255</b>	<b>100.0</b>	<b>36,736</b>	<b>100.0</b>	<b>45,510</b>	<b>100.0</b>	<b>33,156</b>	<b>100.0</b>

Shaded areas indicate three most common Place of occurrence categories.

## 2.3.2 Activity

*Activity* of the injured person at the time of occurrence of the external cause is a new code in the ICD-10-AM classification. For the four States using the ICD-9-CM classification during 1998–99, no information on activity was reported that could be mapped to the ICD-10-AM *Activity* categories. Therefore, only data for the four jurisdictions that coded to ICD-10-AM are presented in this section.

Of the cases coded to ICD-10-AM, more than 70% of cases were coded to either *Other specified activity* or *Unspecified activity*. Where some specific activity during injury occurrence was reported, there appeared to be noticeable gender differences (Table 2.9).

Males appeared to be particularly at risk of injury while engaged in sports activity or while working for income. There were three times more injuries from sports activities and almost five times more from working for income by males than females. Injuries during leisure and vital activities accounted for about 13% (n=10,640 cases) in females, higher than injuries from sports and working for income (Table 2.9).

**Table 2.9: Activity reported for injury hospitalisations: case counts and proportions by sex, NSW, Victoria, Northern Territory and ACT 1998–99**

Activity engaged in while injured	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Sports activity	11,150	10.2	3,080	3.8	14,230	7.5
Leisure activity	8,420	7.7	4,599	5.7	13,019	6.9
Working for income	10,958	10.0	1,451	1.8	12,409	6.5
Other types of work	3,685	3.4	2,476	3.1	6,161	3.3
Resting, sleeping, eating, etc.	4,024	3.7	6,041	7.5	10,065	5.3
Other specified activities	21,421	19.6	19,009	23.8	40,430	21.3
<b>Unspecified activity</b>	<b>49,838</b>	<b>45.5</b>	<b>43,379</b>	<b>54.2</b>	<b>93,217</b>	<b>49.2</b>
<b>All activities</b>	<b>109,497</b>	<b>100.0</b>	<b>80,035</b>	<b>100.0</b>	<b>189,532</b>	<b>100.0</b>

*Activity coding for one case in NSW was incorrectly reported.*

*Shaded areas indicate three most common Activity categories.*

**Age-specific cases of injury by activity are summarised in Table 2.10. Injury during sports activity was highest in the age groups 15–34 years and this proportion declined with age. Injury during leisure activity was particularly high in children and injury while engaging in vital activities such as eating, and resting was highest in the elderly.**

**Table 2.10: Activity reported for injury hospitalisations: case counts and proportions by age group, NSW, Victoria, Northern Territory and ACT 1998–99**

Activity engaged in while injured	0–14 years		15–19 years		20–34 years		35–64 years		65+ years	
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Sports activity	3,351	9.7	2,823	17.6	5,351	11.9	2,321	4.6	384	0.9
Leisure activity	5,295	15.3	1,416	8.8	2,856	6.3	2,190	4.4	1,262	2.9
Working for income	49	0.1	869	5.4	4,988	11.1	6,264	12.5	239	0.5
Other types of work	456	1.3	265	1.6	939	2.1	2,469	4.9	2,032	4.6
Resting, sleeping, etc.	1,082	3.1	282	1.8	962	2.1	2,042	4.1	5,697	13.0
Other specified activities	7,670	22.2	3,487	21.7	10,300	22.9	10,754	21.5	8,219	18.7
Unspecified activity	16,634	48.2	6,937	43.1	19,643	43.6	23,888	47.8	26,114	59.4
<b>All activities</b>	<b>34,538</b>	<b>100.0</b>	<b>16,079</b>	<b>100.0</b>	<b>45,039</b>	<b>100.0</b>	<b>49,928</b>	<b>100.0</b>	<b>43,947</b>	<b>100.0</b>

Note: Age was not reported for one case where injury occurred during unspecified activity and Activity was not reported for a case in age group 0–14 years.

Shaded areas indicate three most common Activity categories.

## 2.4 Diagnoses

Up to the end of the financial year 1997–98, the NHMD allowed for a total of 26 diagnoses to be recorded. This included a Principal Diagnosis and 25 additional diagnoses. From 1 July 1998, the NHMD allowed for 31 diagnoses to be collected, i.e. a Principal Diagnosis and 30 additional diagnoses. This section reports on Principal Diagnoses.

### 2.4.1 Body region

This section reports on separations in 1998–99 for which the Principal Diagnosis is in the ICD-10-AM *Chapter XIX injury, poisoning and certain other consequences of external causes codes* (i.e. the 'S' and 'T' sections in ICD-10-AM). Four body regions have been distinguished and are shown in Table 2.11:

- head (S00–S09),
- trunk (S10–S39),
- shoulder and upper limb (S40–S69), and
- hip and lower limb (S70–S99).

A fifth aggregate of 'T' section codes not coded to a single specific body region is also included to account for the remaining hospital separations.

During 1998–99, *Injury to shoulders and upper limbs* were the most common injuries diagnosed and treated in males and females, accounting for about 28% (n=64,366) and 20.3% (n=34,943) of the cases, respectively.

The number of cases of *Injury to the head* and *Injury to the hips and lower limbs* was similar proportionally in males and accounted for about 18% each. In females, the number of cases of *Injury to the hips*

*and lower limbs* was proportionally higher than in males and made up about 23% of the cases diagnosed.

*Head injuries* were diagnosed in 15% of the cases, with males having more than twice as many head injuries diagnosed than females.

The number of injuries diagnosed that were not specified by body region ('T' section codes) were over 60,000 for both males and females and together represented 32% of all injuries.

Table 2.11: Principal diagnoses reported for injury hospitalisations from external causes:  
case counts and proportions by body region and sex, Australia 1998–99

Principal diagnosis by body region	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Head	41,480	17.9%	19,419	11.3%	60,899	15.1%
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	19,170	8.3%	15,203	8.9%	34,373	8.5%
Shoulder and upper limb	64,366	27.7%	34,943	20.3%	99,309	24.6%
Hip and lower limb	41,153	17.7%	38,977	22.7%	80,130	19.8%
Other injuries not specified by body region	65,781	28.4%	63,232	36.8%	129,013	32.0%
<b>All body regions</b>	<b>231,950</b>	<b>100.0%</b>	<b>171,774</b>	<b>100.0%</b>	<b>403,724</b>	<b>100.0%</b>

## 2.4.2 Principal diagnoses

The ICD-10-AM Chapter XIX *Injury, poisoning and certain other consequences of external causes* (i.e. codes S00–T98) provides several hundred categories. For the purposes of this Report these have been summarised into 22 groups. These were used to group the Principal Diagnoses.

The twelve most common groups of Principal Diagnoses are summarised in Table 2.12. (A complete tabulation of all 22 groups is presented in Appendix A, Table A5.5.)

The most common group of Principal Diagnoses reported in all injury from external cause hospital separations was *Complications of surgical and medical care, not elsewhere classified (nec)*. These cases accounted for nearly 16% (n=64,052) of the cases and were proportionally most often diagnosed in females, i.e. it accounted for 18.5% (n= 31,764) of the female cases.

*Injuries to the head* made up about 15% (n=60,899 cases). For males this proportion was 17.9% (n=41,480).

In general, *Injury to the wrist and hand* and *Injury to knee and lower leg* were proportionally higher in males than in females whereas *Injury to the elbow and forearm, injury to hip and thigh, and Poisoning by drugs, medicaments and biological substances* were proportionally higher in females.

**Table 2.12: Principal diagnoses reported for injury hospitalisations from external causes: case counts and proportions by sex, Australia 1998–99**

Chapter XIX groups	ICD-10-AM Code	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
Complications of surgical and medical care, nec	T89	32,288	13.9	31,764	18.5	64,052	15.9
Injuries to the head	S00–S09	41,480	17.9	19,419	11.3	60,899	15.1
Injuries to the wrist and hand	S60–S69	32,926	14.2	8,961	5.2	41,887	10.4
Injuries to the knee and lower leg	S80–S89	23,709	10.2	16,257	9.5	39,966	9.9
Injuries to the elbow and forearm	S50–S59	20,920	9.0	17,229	10.0	38,149	9.4
Poisoning by drugs, medicaments and biological substances	T36–T50	12,238	5.3	17,606	10.2	29,844	7.4
Injuries to the hip & thigh	S70–S79	10,135	4.4	18,482	10.8	28,617	7.1
Injuries to the shoulder & upper arm	S40–S49	10,520	4.5	8,753	5.1	19,273	4.8
Injuries to the abdomen, lower back, lumbar spine & pelvis	S30–S39	8,462	3.6	8,114	4.7	16,576	4.1
Injuries to the thorax	S20–S29	7,705	3.3	5,130	3.0	12,835	3.2
Injuries to the ankle & foot	S90–S99	7,309	3.2	4,238	2.5	11,547	2.9
Toxic effects of substances chiefly non-medicinal as to source	T51–T65	4,843	2.1	2,960	1.7	7,803	1.9
Sub-total of remaining 10 groups of principal diagnoses		19,415	8.4	12,861	7.5	32,276	8.0
<b>All principal diagnoses</b>	<b>S00–T98</b>	<b>231,950</b>	<b>100.0</b>	<b>171,774</b>	<b>100.0</b>	<b>403,724</b>	<b>100.0</b>

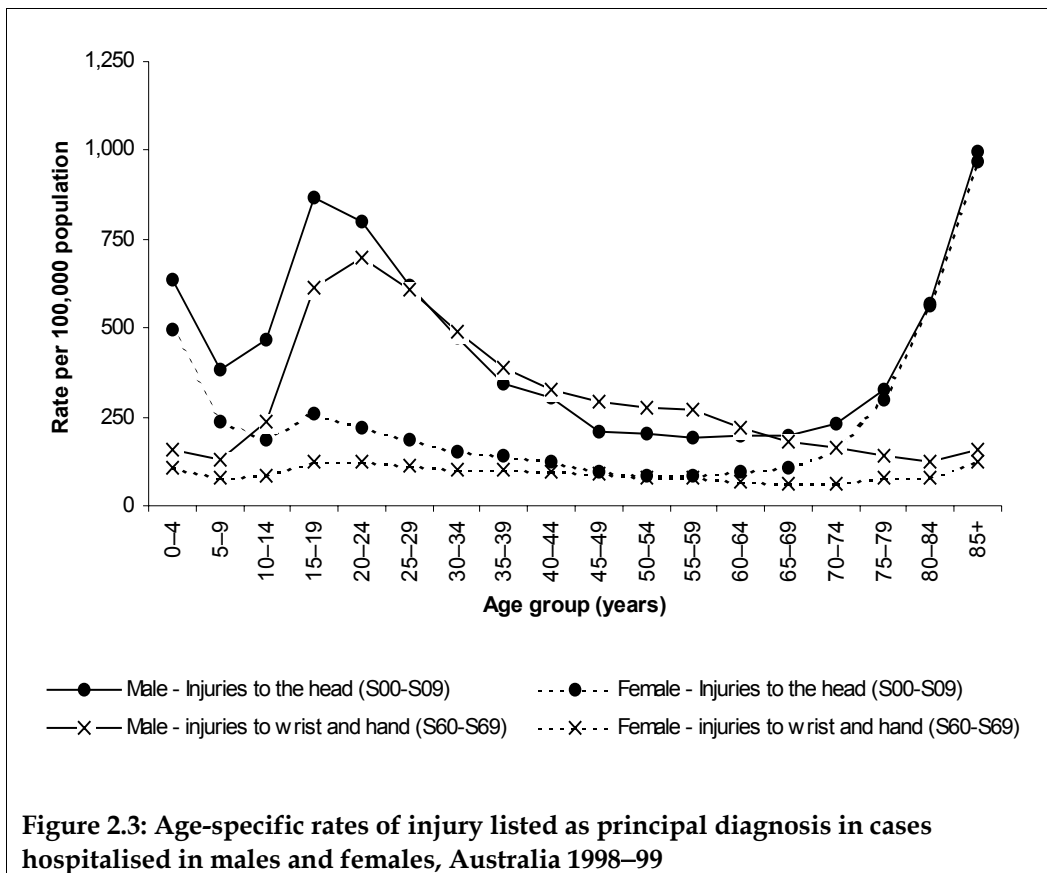
*Shaded areas indicate the three most common diagnoses in males, females and persons.*

Age-specific rates for *Head injuries (S00–S09)* and *Injuries to the wrist and hand (S60–S69)* are presented in Figure 2.3. (Complete tabulations of rates of all injuries and poisoning diagnosed as principal diagnoses in males, females and persons are summarised in Appendix A, Table A5.6–Table A5.8.)

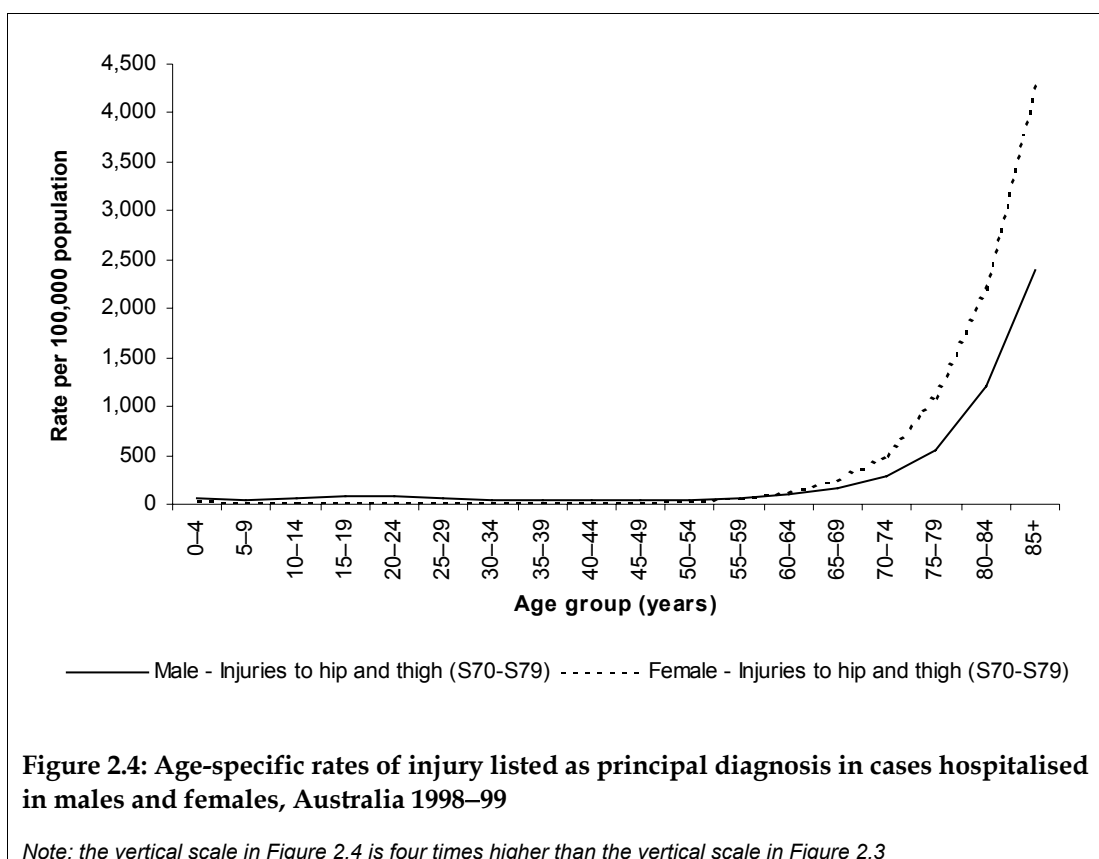
When *Complications of surgical and medical care, nec* are excluded, the rate of hospitalisations due to head injury was higher than any other type distinguished in Tables 2.9, A5.6 and A5.7.

In Figure 2.3, it is evident that the very young (age group 0–4 years, males and females), young males aged 15–24 years and the very old (ages 80 years and above) have high rates for *Head injury*, reaching highest levels in old age. Overall, males were more than twice as likely to be hospitalised from head injuries than females at all ages (i.e. 442 versus 205 head injury hospital separations per 100,000 population).

Hospitalisations due to *Injuries to the wrist and hand* were also very common, but rates were lower than rates for head injuries (Figure 2.3). Highest rates in males occurred during teenage and early adult years (15–24 years). For the remaining age groups, the rates were fairly similar. For females, the rate were fairly similar for all age groups. The all-ages male rate was higher than the corresponding female rate (i.e. 351 versus 95 per 100,000 population).



In Figure 2.4, rates of hospital separations due to hip and thigh injury are presented for both males and females. These injuries appear to be associated with ageing as rates in both sexes begin to increase at age 55 years. In persons aged 65 years and above, the rates increased exponentially in both sexes reaching their highest rate in the 85+ years age group. In general, female rates were higher than male rates at age 60 years and above. (Note: the vertical scale in Figure 2.4 is four times higher than the vertical scale in Figure 2.3).



## 2.5 Length of stay

The direct burden that injury and poisoning place on the health care system can be estimated, to some degree, by the total number of hospital bed days consumed, i.e. the length of stay (LOS). Average LOS (ALOS) is also an imperfect proxy measure for severity. However, the calculation of LOS due to injury events is not straightforward.

The first episode of care for an incident case will start with acute admission to a hospital bed. A particular case may be transferred to another hospital and each hospital only records the number of days the particular patient spent in their facility. ALOS for a particular type of injury case is the total number of bed days (LOS) divided by the number of cases. The total LOS is available, but the number of distinct cases is not. This is because some injury cases result in more than one hospital separation and the available data does not provide a direct means to allow for this. Hence, we have calculated ALOS based on separations rather than on cases.

The data presented below represents an aggregated estimate of LOS calculated from the sum of LOS for all separations having a relevant diagnosis code and external cause code. This includes separations of

incident cases, readmissions and transfers for which Principal Diagnosis was an injury.

In 1998–99, the 403,724 injury separations resulted in a total of 1,711,091 bed days, i.e. an average LOS of 4 days. For 28.0% (n=114,877) of these separations, discharge occurred on the same day of admission. If the same day cases are removed, the total number of bed days was 1,596,214 for 288,847 separations, i.e. an average of 6 days. About 47% of these admitted patients had a stay of 3 days or more (n=135,354) (Table 2.13).

Table 2.13: Length of stay for all separations and separations where same day discharges were excluded; Australia 1998–99

Length of stay (days)	All cases		Excluding same day cases	
	Frequency	Per cent	Frequency	Per cent
Up to 1 day	225,227	55.8	110,350	38.2
2	43,143	10.7	43,143	14.9
3–4	43,845	10.9	43,845	15.2
5–7	33,607	8.3	33,607	11.6
8–14	33,385	8.3	33,385	11.6
15–21	11,746	2.9	11,746	4.1
22–28	5,111	1.3	5,111	1.8
29–35	2,829	0.7	2,829	1.0
36–49	2,568	0.6	2,568	0.9
50 days or more	2,263	0.6	2,263	0.8
<b>Total</b>	<b>403,724</b>	<b>100.0</b>	<b>288,847</b>	<b>100.0</b>

The type of injuries sustained, severity and health burden associated with their treatment are summarised in Table 2.14. The average length of stay (ALOS) and the total length of stay (LOS) are used, respectively, as proxies for severity and health burden in these tabulations.

As shown in Table 2.14, the most common Principal Diagnosis group was *Complications of surgical & medical care, nec.* This group accounted for more than 400,000 bed days (ALOS=6.5 days) (Table 2.14). An examination of the External Cause of injury associated with this diagnosis indicated that 99% (n=63,399) of the cases were due to complications of medical and surgical care and 38% of these cases were elderly patients aged 65 years and older.

In terms of LOS, *Injuries to the hip and thigh* are second highest in rank after *Complications of surgical & medical care, nec* with over 300,000 bed days required for treatment. Females accounted for more than twice the number of bed days due to the prevalence of hip and thigh injuries in this group. These injuries also had the second highest LOS (10.5 days) followed by *Injuries to the abdomen, lower back, lumbar spine & pelvis* (8 days). Although *Sequelae of injuries, poisoning & other consequences of external causes* had the highest ALOS (22



days) fewer cases and total bed days were required for treatment (80 cases, LOS=1,757 days). An examination of these cases indicated that, for over half (n=53), their treatment followed a previous injury event which was classified as *Other unintentional injury*.

Other injuries that had high ALOS were *Injuries to the thorax* (6 days), *Burns* (6 days), and *Injuries to the neck* (5.9 days). Although cases diagnosed with *Injuries to the head* were the most common injury diagnosed as principal diagnosis after *Complications of surgical & medical care, nec*, most head injury cases had a short stay in hospital (ALOS=2.5 days) before discharge.

**Table 2.14: Principal Diagnosis group of external cause hospital separations: case counts, length of stay, and average length of stay by sex and ranked by length of stay; Australia 1998–99**

Chapter XIX groups	Males			Females			Persons		
	Count	LOS	ALOS	Count	LOS	ALOS	Count	LOS	ALOS
Complications of surgical & medical care, nec	32,288	207,950	6.4	31,764	205,569	6.5	64,052	413,519	6.5
Injuries to the hip & thigh	10,135	96,672	9.5	18,482	203,997	11.0	28,617	300,669	10.5
Injuries to the knee & lower leg	23,709	87,667	3.7	16,257	93,191	5.7	39,966	180,858	4.5
Injuries to the head	41,480	101,881	2.5	19,419	50,598	2.6	60,899	152,479	2.5
Injuries to the abdomen, lower back, lumbar spine & pelvis	8,462	56,638	6.7	8,114	73,361	9.0	16,576	129,999	7.8
Injuries to the elbow & forearm	20,920	37,038	1.8	17,229	41,020	2.4	38,149	78,058	2.0
Injuries to the thorax	7,705	42,647	5.5	5,130	34,463	6.7	12,835	77,110	6.0
Injuries to the shoulder & upper arm	10,520	29,611	2.8	8,753	46,357	5.3	19,273	75,968	3.9
Injuries to the wrist & hand	32,926	51,038	1.6	8,961	15,163	1.7	41,887	66,201	1.6
Poisoning by drugs, medicaments & biological substances	12,238	26,956	2.2	17,606	39,051	2.2	29,844	66,007	2.2
Burns	4,968	29,495	5.9	2,329	14,479	6.2	7,297	43,974	6.0
Injuries to the ankle & foot	7,309	21,277	2.9	4,238	13,349	3.1	11,547	34,626	3.0
Injuries to the neck	3,003	18,920	6.3	1,959	10,140	5.2	4,962	29,060	5.9
Injuries to unspecified parts of trunk, limb or body region	2,904	7,464	2.6	2,301	8,933	3.9	5,205	16,397	3.2
Toxic effects of substances chiefly non-medicinal as to source	4,843	8,014	1.7	2,960	5,109	1.7	7,803	13,123	1.7
Other and unspecified effects of external causes	3,350	6,683	2.0	2,927	6,375	2.2	6,277	13,058	2.1
Effects of foreign body entering through natural orifice	3,825	5,228	1.4	2,619	3,858	1.5	6,444	9,086	1.4
Certain early complications of trauma	771	3,834	5.0	384	2,095	5.5	1,155	5,929	5.1
Injuries involving multiple body regions	431	1,560	3.6	273	1,212	4.4	704	2,772	3.9
Sequelae of injuries, poisoning & other consequences of external causes	56	1,460	26.1	24	297	12.4	80	1,757	22.0
Other complications of trauma, nec	83	220	2.7	45	162	3.6	128	382	3.0
Frostbite	24	59	2.5	0	..	..	24	59	2.5
<b>All principal diagnoses</b>	<b>231,950</b>	<b>842,312</b>	<b>3.6</b>	<b>171,774</b>	<b>868,779</b>	<b>5.1</b>	<b>403,724</b>	<b>1,711,091</b>	<b>4.2</b>

*Shaded areas indicate three highest figures for each column.*

## 2.6 Separation mode

### 2.6.1 All separations

Mode of separation of patients admitted for injury and poisoning is summarised by sex for 1998–99 in Table 2.15 and by age group in Table 2.16.

Over 84% of all injury cases were discharged to their usual residence (Table 2.15). In the case of children (Table 2.16), an even larger proportion (93%) was discharged to their home. For elderly cases, about 68% of cases were discharged to their usual residence. The 'Usual residence' might have been a nursing home for some of these people, but this cannot be determined from the available data. Over 5,000 elderly cases were discharged to a nursing home at the end of their episode of care (Table 2.16).

Less than 1% (n=3,434) of the cases died in hospital. About 47% of these were female (Table 2.15) and 70% (n=2,389) were aged 65 years or older (Table 2.16). (Please note that these separations exclude cases that died shortly after arrival and prior to being admitted to hospital.)

About 10% of the cases (n=39,409) were discharged to another acute hospital facility (Table 2.15), and 18% of these (n=17,544) were elderly cases (Table 2.16).

Table 2.15: Mode of separation of patients admitted for injury and poisoning: case counts and percentages by sex; Australia 1998–99

Mode of separation	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Discharge/transfer to an(other) acute hospital	19,644	8.5	19,765	11.5	39,409	9.8
Discharge/transfer to a nursing home	1,494	0.6	4,043	2.4	5,537	1.4
Discharge/transfer to an(other) psychiatric hospital	617	0.3	663	0.4	1,280	0.3
Discharge/transfer to other health care accommodation	539	0.2	585	0.3	1,124	0.3
Statistical discharge – type change	2,119	0.9	4,516	2.6	6,635	1.6
Left against medical advice/discharge at own risk	3,202	1.4	1,832	1.1	5,034	1.2
Statistical discharge - return from leave	130	0.1	131	0.1	261	0.1
Died	1,811	0.8	1,623	0.9	3,434	0.9
Other <sup>(a)</sup>	202,231	87.2	138,508	80.6	340,739	84.4
Not reported	163	0.1	108	0.1	271	0.1
<b>All modes of separation</b>	<b>231,950</b>	<b>100.0</b>	<b>171,774</b>	<b>100.0</b>	<b>403,724</b>	<b>100.0</b>

(a) Includes discharge to usual residence/own accommodation/welfare institution.

Shaded areas indicate three highest proportions.

'Statistical' separations are followed by a further episode as an inpatient in the same hospital, usually for a different type of care.

**Table 2.16: Mode of separation of patients admitted for injury and poisoning: case counts and percentages by age group; Australia 1998–99**

Mode of separation	0–14 years		15–19 years		20–34 years		35–64 years		65+ years	
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Discharge/transfer to an(other) acute hospital	3,985	5.8	2,113	6.6	6,516	7.1	9,251	8.0	17,544	18.3
Discharge/transfer to a nursing home	7	0.0	9	0.0	44	0.0	226	0.2	5,251	5.5
Discharge/transfer to an(other) psychiatric hospital	4	0.0	86	0.3	554	0.6	497	0.4	139	0.1
Discharge/transfer to other health care accommodation	44	0.1	74	0.2	253	0.3	301	0.3	452	0.5
Statistical discharge – type change	38	0.1	109	0.3	449	0.5	881	0.8	5,158	5.4
Left against medical advice/discharge at own risk	179	0.3	531	1.7	2,413	2.6	1,738	1.5	173	0.2
Statistical discharge – return from leave	73	0.1	17	0.1	50	0.1	55	0.0	66	0.1
Died	109	0.2	86	0.3	311	0.3	539	0.5	2,389	2.5
Other <sup>(a)</sup>	63,681	93.4	28,763	90.4	80,701	88.3	102,750	88.3	64,842	67.5
Not reported	36	0.1	21	0.1	123	0.1	79	0.1	12	0.0
<b>All modes of separation</b>	<b>68,156</b>	<b>100.0</b>	<b>31,809</b>	<b>100.0</b>	<b>91,414</b>	<b>100.0</b>	<b>116,317</b>	<b>100.0</b>	<b>96,026</b>	<b>100.0</b>

(a) Includes discharge to usual residence/own accommodation/welfare institution.

Shaded areas indicate three highest proportions.

## 2.6.2 ‘Estimated Incidence’

For the purposes of national statistics, the incidence of new injury cases is of particular interest. Data on cases admitted to a hospital can provide some insight, but current morbidity data have particular characteristics that limit the potential of determining injury incidence. Recent changes to the NHDD may enable better estimation of injury incidence for more recent data years (Harrison and Steenkamp In Press).

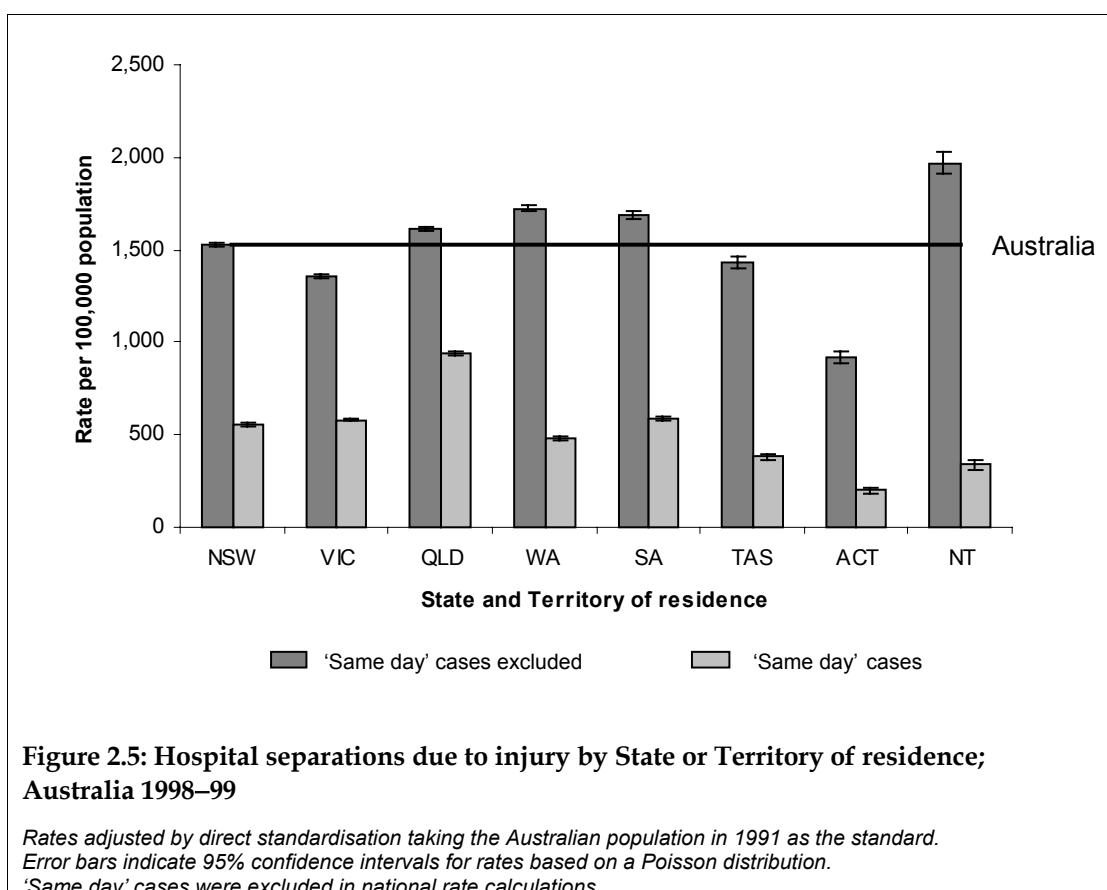
‘Separations’ are not equivalent to newly incident cases that result in hospitalisation. This is because some incident cases result in more than one separation. National hospital statistics do not presently provide a direct means to account for such multiple counting. A partial means is provided by the data element ‘Mode of Separation’. Recorded separations to another acute care hospital can be expected to result in another separation, i.e. from the destination hospital. Similarly, statistical separations are followed by another episode of care in the same hospital, and another separation. The omission of such cases is a way to obtain an estimate of newly incident cases. Eleven per cent of injury separations in 1998–99 were of these types that are likely to represent multiple counting of incident cases (Table

2.15). For separations by persons aged 65 years or more the equivalent proportion is 24% (Table 2.16).

Limitations of this method for estimating incidence of specific injuries are that it does not allow for cases in which subsequent episodes of care in hospital follow separation to usual residence. It may also over-correct if the record of the subsequent episode of care is coded differently to the initial episode (e.g. if the principal diagnosis code is in the 'injury' range for the initial separation but not for subsequent ones).

## 2.7 States and Territories

Age-adjusted rates of hospital separations due to injury by State and Territory of residence are presented in Figure 2.5. To reduce the effect of different admission and discharge practises on hospitalisation rates between the States and Territories for less serious cases, 'Same day' cases are shown separately from cases resulting in at least one night in hospital (Figure 2.5). State and Territory of residence (i.e. the patient's residence) was used because in some jurisdictions people may be served by hospitals in other States and Territories. Injuries treated in jurisdictions other than their residence would underestimate the hospital separations in their State or Territory of residence.



Rates in all States and Territories, except NSW, were significantly different from the national average rate of 1,524 hospital separations per 100,000 population (95% CI=1,518 to 1,529) (Figure 2.5). Rates in Queensland, Western Australia, South Australia and the Northern Territory were significantly higher than the national rate. Rates in Victoria, Tasmania, and the Australia Capital Territory were significantly lower than the national average. (Data for Figure 2.5 is summarised in the Appendix, Table A5.9.)

A number of private free-standing day hospital facilities and other private hospitals did not report hospital separations for 1998–99. These facilities were in Victoria (12), South Australia (3), Tasmania (5), ACT (7) and the Northern Territory (1) (Australian Institute of Health and Welfare 2000).

## 2.8 Trends over time

Age-standardised rates of hospital separations due to injury during the period 1993–94 to 1998–99 are tabulated in Table 2.17 for external cause major groups. For this section, the external cause major group selection was based on ICD-9-CM to enable comparison with previous years of hospital separations data. Since the coding of hospital separations for financial year 1998–99 is in transition, with some jurisdictions coding to ICD-9-CM and others to ICD-10-AM, interpretation must be made with caution due to mapping of ICD-10-AM coded records back to ICD-9-CM for approximately 58% of records.

The rates presented here were based on separations and not incident cases of injury. Changes in separation rates may not reflect changes in incidence rates. There is probably an increase in ascertainment over the period shown (which would tend to increase rates) and admission policies and practices might have changed (which could lower or raise rates).

Overall, in terms of rates, falls have the highest hospitalisation rates when compared to all other major groups of injury for the last three years of the time series presented in Table 2.17. High rates were also recorded for *Other unintentional injuries* and *Medical misadventure, etc.*

Injuries associated with falling, particularly in children and in the elderly, have been recognised as priorities for injury (Commonwealth Department of Health and Aged Care 2001) and NISU has recently published two relevant reports--one on falls in the elderly (Cripps and Carman 2001) and falls in children (Steenkamp and Cripps 2001).

The rate of separations attributed to *Falls* seemed to have increased from 1993–94 to 1997–98, but the rate for 1998–99 was lower than the rate for 1997–98 (Table 2.17). The transition to ICD-10-AM accounts for this change. Table 2.17 also identifies four other categories that may have been influenced by the transition to ICD-10-AM (these are shaded in grey). These issues are examined further in Section 3.7 that deals with the impact of the transition to ICD-10-AM.

**Table 2.17: Age-standardised rates of hospital separations due to injury by major ICD-9-CM external cause groups; Australia, financial years 1993–94 to 1998–99**

<b>Major groups</b>	<b>1993–94</b>	<b>1994–95</b>	<b>1995–96</b>	<b>1996–97</b>	<b>1997–98</b>	<b>1998–99</b>
Transportation	280.9	282.2	288.7	274.9	280.2	283.9
Near drowning	4.2	3.7	3.6	3.5	3.7	3.4
Poisoning, pharmaceuticals	61.7	58.7	61.7	61.0	65.8	59.0
Poisoning, other substances	18.4	18.1	19.3	17.4	17.7	16.7
Falls	548.0	559.2	574.4	579.6	592.4	579.8
Fires/flames/scalds	30.6	26.4	30.9	27.1	27.6	28.6
Other unintentional	560.6	564.5	574.5	507.1	521.0	564.9
Intentional self inflicted	89.6	102.1	108.7	107.7	113.9	114.8
Intentional, inflicted by another	105.5	107.2	109.5	105.1	109.2	107.2
Undetermined intent	6.2	6.2	5.1	3.9	4.0	12.1
Medical misadventure, etc	343.7	365.3	372.8	362.6	375.5	339.4
<b>All major groups</b>	<b>2,049.5</b>	<b>2,093.7</b>	<b>2,149.1</b>	<b>2,050.0</b>	<b>2,111.1</b>	<b>2,109.8</b>

*Shaded areas indicate possible problems due to transition to ICD-10-AM in four jurisdictions in 1998–99. (See Section 3.7.)*

# 3 Data issues

## 3.1 Data source

The data on hospital separations were provided by the AIHW (Australian Institute of Health and Welfare 1999). Case selection for the original 1998–99 dataset provided to NISU was according to the following criteria:

- Any record with any diagnosis in the range S00–T98 codes of ICD-10-AM Chapter XIX; or
- Any record with any external cause in the range V01–Y98 codes of ICD-10-AM Chapter XX in any external cause field.

NISU processed, combined and checked the relevant data year to facilitate analysis, including assessment of trends. For this report the selection criteria were restricted as described in Sections 1.2 and 3.3.

Population data were obtained from the Australian Institute of Health and Welfare and are similar to data presented in the Demographic Statistics Catalogue No. 3101.0 (Australian Bureau of Statistics). Rates were calculated using final population estimates as at 31 December of the relevant years.

## 3.2 Confidence intervals

All (or nearly all) separations are included, so sampling errors do not apply to these data. However, the time periods used to group the cases (i.e. financial years) are arbitrary. Use of another period (e.g. January to December) would result in different rates. Where case numbers are small, the effect of chance variation on rates can be large. The 95% confidence intervals of these rates are based on a Poisson assumption about the number of cases in a time period. Therefore, chance variation alone would be expected to lead to a rate outside the 95% confidence interval on only 5% of occasions.

## 3.3 Selection criteria

Cases that had the following criteria were selected for inclusion in this Report:

- Principal Diagnosis in the ICD-10-AM range S00–T98 (i.e. Chapter XIX 'Injury, poisoning and certain other consequences of external causes' codes); and



- External cause code categories V01–Y98 of ICD-10-AM (i.e. Chapter XX 'External causes of morbidity and mortality').

The data source allows for more than one external cause code to be recorded. For purposes of this Report, the 'main' external cause was not used for the 1998–99 data. The 'first appearing' external cause was used (see Section 1.2).

### **3.4 Hospitalised cases vs other cases**

Only some injuries result in admission to a hospital. Hence, cases that rapidly result in death are not included. Also, the many cases that result in a visit to a general practitioner or to an emergency department, but do not get admitted to a hospital, are excluded, as is the still larger group of cases that do not result in a visit to a medical service at all. In general, cases admitted to a hospital are serious, or require observation because they might be serious, or require particular forms of treatment. The fraction of incident injury cases (in total, and of particular types) that result in admission may vary over time or between jurisdictions.

### **3.5 Errors, inconsistencies and uncertainties**

The data used for this report were abstracted from medical records in hundreds of hospitals and coded and entered by a large number of people, operating in distinct State and Territory hospital systems over a period of six years and further processed by the AIHW and NISU. Consequently, and despite the existence of a well defined National Minimum Data Set for hospital inpatient data, variations occur in the data, between places and over time. The following data issues are relevant to this project:

- The quality of External Cause and Place coding in Australian hospital in-patient collections remains uncertain. They have been the subject of few published studies, and they are not necessary for deriving Diagnosis Related Groups and other key outputs of the data source.
- Not all hospital separations are new incident cases, i.e. hospitalisations include repeat admissions and transfers between acute hospitals.
- Changes in hospital admission policies may have influenced the rates, as might have changes to coding or reporting of data.

## 3.6 Calculation of rates

Rates have been adjusted for age to overcome the effect of differences in the proportions of people of different ages (and different injury risks) in the populations that are compared. Direct standardisation was employed, taking the Australian population in 1991 as the standard (five-year age groups to 85 years and older). Changes in age composition are small within narrow age bands (e.g. 15–19 years) and adjustment has not been applied to five-year age groups.

## 3.7 Transition from ICD-9-CM to ICD-10-AM

As stated in Section 1.2, hospital separations data were coded according to the second version of the Australian modification of ICD-9 (ICD-9-CM) up to the end of June 1998. The first version of the Australian modification of ICD-10 (i.e. ICD-10-AM) was introduced in two stages. From 1 July 1998, NSW, Northern Territory, Victoria and ACT coded data according to ICD-10-AM.

The other four jurisdictions still coded data according to ICD-9-CM during 1998–99. For 1998–99, data for Tasmania, Western Australia, South Australia and Queensland were mapped to ICD-10-AM and data for the other four jurisdictions were mapped to ICD-9-CM data. Mapping was done by the AIHW, following tables prepared by the National Centre for Classification in Health. The method and its limitations are described in *Australian Hospital Statistics 1998–99* (Australian Institute of Health and Welfare 2000).

Each time a new ICD revision has been implemented in the past, it has produced some level of discontinuity in the ability to produce such analyses (Australian Institute of Health and Welfare Draft). It is, therefore, necessary to investigate the effect of the transition to ICD-10-AM.

The AIHW has done some analyses in regard to dual coded hospital separations data (i.e. data coded to both ICD-9-CM and ICD-10-AM), but the number of cases available for injury was quite small. That is, less than 700 dual coded separations related to injury were compared (Australian Institute of Health and Welfare Draft).

NISU has investigated the impact of the transition from ICD-9 to ICD-10 for deaths by analysing dual coded deaths data for the years 1997 and 1998 (Steenkamp, Harrison et al. Draft) and by comparing data for 1998 and 1999 (Kreisfeld and Harrison Draft).

Comparability ratios<sup>2</sup> for dual coded deaths data for 1997 and 1998 indicated that the comparability ratio (CR) for three major groups of injury fell outside a range of 0.95 and 1.05. (A CR of 1.00 indicates no net difference between coding outcomes under the two versions of ICD). The CR for *Falls* was 0.40, for *Other unintentional* it was 2.35 and for *Medical misadventure, etc.* it was 1.43 (Steenkamp, Harrison et al. Draft).

Although these analyses prompt concern about some categories that posed problems in regard to deaths data, it still does not answer the question as to the impact of the transition on hospital separations data.

Table 3.1 shows the proportions for various major types of injury for 1997–98 and 1998–99.

For the four jurisdictions that coded to ICD-10-AM from 1 July 1998, the following differences between case numbers for 1997–98 and 1998–99 were observed (Table 3.1):

- Overall, case numbers increased by about 2%, i.e. from 225,562 separations to 230,102;
- For *Drowning*, there was a decrease of 19.5%;
- For *Poisoning, pharmaceuticals*, cases decreased of 15.2%, but *Poisoning, other substances* case counts increased by 13.6%;
- For *Fires/burns/scalds*, case counts increased by 28.9%;
- *Other unintentional injuries* increased by 16.4%;
- For *Undetermined intent*, case counts increased by 470.6%; and
- Case counts for *Medical misadventure, etc.* decreased by about 10%.

It is difficult to distinguish between changes in the hospital separations rates (which, as stated before, are not incidence rates) and the influence of the transition to ICD-10-AM. The relative contributions of these factors will become clearer when another one or two years of data have been analysed.

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<sup>2</sup> A comparability ratio for a specific cause of injury is calculated by dividing the number of cases arrived at by coding to ICD-10 by the number arrived at through coding to ICD-9.

**Table 3.1: Proportions of separations by major group of injury by jurisdiction;  
Australia  
1997–98 and 1998–99**

Major injury group	NSW, Victoria, ACT, Northern Territory				Queensland, WA, SA, Tasmania			
	1997–98		1998–99		1997–98		1998–99	
	ICD-9-CM		Direct ICD-10-AM		ICD-9-CM		Direct ICD-9-CM	
Transportation	28,995	12.9%	28,031	12.5%	21,876	12.7%	22,059	12.5%
Drowning	349	0.2%	281	0.2%	310	0.2%	326	0.2%
Poisoning, pharmaceuticals	6,394	2.8%	5,423	3.0%	5,500	3.2%	5,200	3.0%
Poisoning, other substances	1,479	0.7%	1,680	0.8%	1,724	1.0%	1,460	0.8%
Falls	69,869	31.0%	70,434	27.1%	46,157	26.9%	47,698	27.1%
Fires/burns/scalds	2,495	1.1%	3,215	1.4%	2,527	1.5%	2,462	1.4%
Other unintentional	50,082	22.2%	58,310	26.5%	45,732	26.6%	46,739	26.5%
Intentional, self inflicted	12,736	5.6%	12,464	5.0%	8,087	4.7%	8,735	5.0%
Intentional, inflicted by another	10,091	4.5%	9,900	5.4%	9,488	5.5%	9,478	5.4%
Undetermined intent	327	0.1%	1,866	0.2%	409	0.2%	362	0.2%
Medical misadventure, etc.	42,745	19.0%	38,498	17.9%	30,082	17.5%	31,525	17.9%
<b>Total</b>	<b>225,562</b>	<b>100.0%</b>	<b>230,102</b>	<b>100.0%</b>	<b>171,892</b>	<b>100.0%</b>	<b>176,044</b>	<b>100.0%</b>

*Shaded areas indicate possible problems due to transition to ICD-10-AM.*

*Falls* are an important category to investigate further as falls in the elderly and falls in children are two priority areas identified in the National Injury Prevention Plan (Commonwealth Department of Health and Aged Care 2001). The ICD-10-AM range for falls W00–W19 is not equivalent to the ICD-9-CM falls range E880–E888. The reason for this is the lack of an equivalent code for E887 (*Fracture, cause unspecified*). In deaths data this is a major problem as a large proportion of elderly falls are coded to this external cause code (Kreisfeld and Harrison Draft).

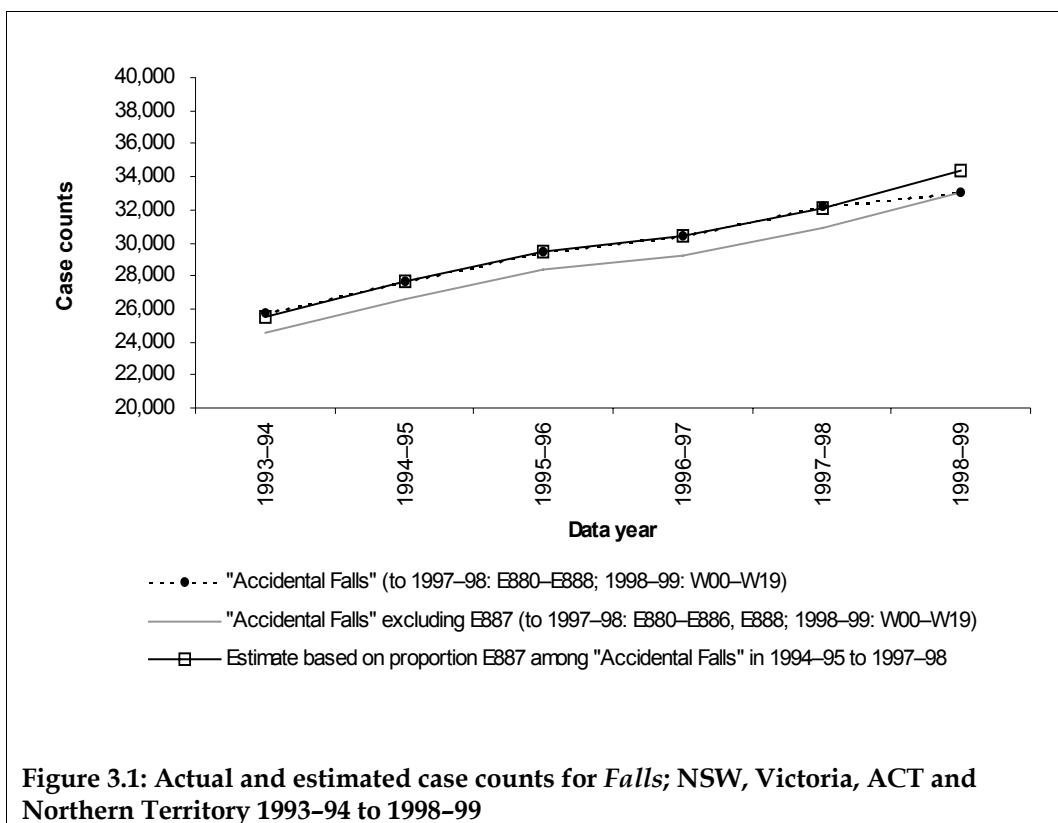
In hospital separations data, the proportion of all accidental falls cases coded to E887 is much lower than for deaths. This is so for all ages and for persons aged 65 years or more (Table 3.2).

Table 3.2: Proportion of 'Accidental falls' coded to E887; Australia 1993–94 to 1998–99

	Data year					
	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99 <sup>(a)</sup>
Falls for NSW, Victoria, ACT, and Northern Territory						
All ages	8.3%	8.3%	8.2%	8.1%	8.0%	n.a.
65+ years	4.5%	3.9%	3.9%	3.8%	4.0%	n.a.
Falls for Queensland, Western Australia, South Australia and Tasmania						
All ages	10.4%	8.5%	6.5%	6.4%	6.7%	6.8%
65+ years	7.0%	5.2%	3.6%	3.4%	3.4%	3.1%

(a) Data for NSW, Victoria, ACT and Northern Territory were coded to ICD-10-AM for this year.

The implication of Table 3.2 is that the transition to ICD-10-AM will have a relatively minor impact on a time series for *Falls*, especially in the elderly age group. The fractions presented in Table 3.2 can also be used to 'correct' ICD-10-AM data as shown in Figure 3.1 for elderly persons. In this figure, the proportion of all accidental falls cases coded to E887 in the three years 1995-96 to 1997-98 has been used to calculate an estimated series, which has been extrapolated to 1998-99.



*Place of occurrence* coding also changed with the introduction of ICD-10-AM (see Section 2.3.1 for details).

## 4 References

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# 5 Appendices

**Table A5.1: Case counts and age-specific rates of injury hospitalisations by sex and M:F rate ratio; Australia 1998–99**

Age groups (years)	Males		Females		Persons		M:F ratio
	Count	Rate	Count	Rate	Count	Rate	
0–4	13,754	2,094.9	10,284	1,650.8	24,038	1,878.7	1.3
5–9	12,690	1,863.0	8,715	1,346.9	21,405	1,611.6	1.4
10–14	15,552	2,311.0	7,161	1,116.3	22,713	1,727.9	2.1
15–19	22,319	3,290.2	9,490	1,474.0	31,809	2,405.8	2.2
20–24	23,849	3,452.2	9,280	1,395.9	33,129	2,443.8	2.5
25–29	22,214	3,002.3	9,648	1,312.7	31,862	2,160.3	2.3
30–34	17,697	2,514.8	8,726	1,233.4	26,423	1,872.4	2.0
35–39	16,268	2,172.8	9,463	1,258.7	25,731	1,714.8	1.7
40–44	13,539	1,924.8	8,894	1,257.9	22,433	1,590.5	1.5
45–49	11,612	1,759.3	8,062	1,228.3	19,674	1,494.6	1.4
50–54	10,741	1,784.7	7,961	1,369.2	18,702	1,580.5	1.3
55–59	8,651	1,895.5	6,698	1,518.2	15,349	1,710.0	1.2
60–64	7,779	2,080.6	6,649	1,774.9	14,428	1,927.6	1.2
65–69	7,802	2,339.9	7,588	2,182.4	15,390	2,259.5	1.1
70–74	8,467	2,941.1	10,237	3,105.4	18,704	3,028.8	0.9
75–79	7,832	3,796.0	12,835	4,672.1	20,667	4,296.3	0.8
80–84	5,779	5,242.1	12,777	7,141.3	18,556	6,417.2	0.7
85+	5,404	7,668.8	17,305	10,802.1	22,709	9,844.9	0.7
<b>All ages</b>	<b>231,950</b>	<b>2,473.9</b>	<b>170,964</b>	<b>1,814.6</b>	<b>403,724</b>	<b>2,142.7</b>	<b>1.4</b>

**Table A5.2: Injury hospital separations: Major groups of external causes by age group; Australia 1998–99**

ICD-10-AM major groups of external causes	Age group					
	0–14	15–19	20–34	35–64	65+	All ages
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Transportation	13.9	23.0	17.3	11.2	4.6	12.4
Drowning	0.5	0.1	0.1	0.1	0.0	0.2
Poisoning, pharmaceuticals	4.2	3.2	3.7	2.3	0.7	2.6
Poisoning, other substances	1.7	0.9	1.0	0.7	0.2	0.8
Falls	37.7	14.3	11.4	19.1	54.3	28.5
Fires/burns/scalds	3.6	1.5	1.3	1.1	0.5	1.5
Other unintentional	29.9	33.8	34.6	29.5	11.4	26.8
Intentional, self inflicted	0.7	8.2	9.7	7.3	0.8	5.3
Intentional, inflicted by another	1.3	8.4	10.6	4.9	0.4	4.8
Undetermined intent	0.2	0.9	1.0	0.6	0.1	0.6
Medical misadventure, etc.	6.3	5.7	9.3	23.0	26.9	16.6
<b>All external causes</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note: Age not reported for one male case in the external cause group 'Intentional, inflicted by another'.



**Table A5.3: Age-specific and age-standardised rates of injury hospitalisations for males by major groups of external causes; Australia 1998–99**

ICD-10-AM major groups of external causes	0–14	15–19	20–34	35–64	65+	All ages	Age-Standardised Rate
	Rate	Rate	Rate	Rate	Rate	Rate	
Transportation	315.3	779.5	542.3	242.5	203.5	361.0	369.6
Drowning	12.0	3.4	3.6	1.9	1.7	4.5	4.6
Poisoning, pharmaceuticals	72.4	54.7	83.6	34.4	25.9	54.3	55.4
Poisoning, other substances	32.6	22.1	28.5	16.6	12.2	22.7	22.9
Falls	773.1	531.9	351.9	328.5	1341.5	552.8	562.0
Fires/burns/scalds	72.8	55.6	41.8	25.6	22.4	41.2	41.9
Other unintentional	645.0	1,256.1	1,188.5	701.5	493.9	818.0	828.4
Intentional, self inflicted	5.5	109.8	189.0	101.0	37.6	94.4	95.1
Intentional, inflicted by another	28.2	315.5	338.4	116.3	21.8	152.2	156.3
Undetermined intent	4.8	22.6	25.8	11.3	4.4	13.3	13.5
Medical misadventure, etc.	126.9	139.0	193.8	355.9	1,334.4	359.4	359.5
<b>All external causes</b>	<b>2,088.7</b>	<b>3,290.2</b>	<b>2,987.2</b>	<b>1,935.2</b>	<b>3,499.2</b>	<b>2,473.9</b>	<b>2,509.3</b>

*Note: Age not reported for one male case in the external cause group 'Intentional, inflicted by another'.*

**Table A5.4: Age-specific and age-standardised rates of injury hospitalisations for females by major groups of external causes; Australia 1998–99**

ICD-10-AM major groups of external causes	0–14	15–19	20–34	35–64	65+	All ages	Age-Standardised Rate
	Rate	Rate	Rate	Rate	Rate	Rate	
Transportation	163.3	316.5	203.1	127.2	181.2	171.6	174.7
Drowning	6.6	0.8	1.0	0.6	0.6	1.9	2.0
Poisoning, pharmaceuticals	72.7	102.5	76.0	42.8	29.5	58.5	60.6
Poisoning, other substances	26.3	18.9	12.9	7.9	8.8	13.6	14.1
Falls	530.7	145.1	138.6	300.4	2,989.4	667.1	602.6
Fires/burns/scalds	51.4	15.1	14.8	12.2	21.2	22.1	22.7
Other unintentional	388.1	344.3	296.0	270.6	463.3	331.3	330.1
Intentional, self inflicted	17.6	290.6	229.4	138.8	33.5	130.5	134.5
Intentional, inflicted by another	17.7	82.9	117.1	46.4	12.3	54.2	56.4
Undetermined intent	3.6	20.5	16.8	9.8	6.6	10.4	10.6
Medical misadventure, etc.	90.6	136.7	206.7	402.1	957.9	353.4	327.9
<b>All external causes</b>	<b>1,368.6</b>	<b>1,474.0</b>	<b>1,312.3</b>	<b>1,358.8</b>	<b>4,704.4</b>	<b>1,814.6</b>	<b>1,736.3</b>

**Table A5.5: Principal diagnoses reported for injury hospitalisations from external causes: case counts and proportions by sex; Australia 1998–99**

Chapter XIX groups	ICD-10 code	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
Injuries to the head	S00–S09	41,480	17.9	19,419	11.3	60,899	15.1
Injuries to the neck	S10–S19	3,003	1.3	1,959	1.1	4,962	1.2
Injuries to the thorax	S20–S29	7,705	3.3	5,130	3.0	12,835	3.2
Injuries to the abdomen, lower back, lumbar spine & pelvis	S30–S39	8,462	3.6	8,114	4.7	16,576	4.1
Injuries to the shoulder & upper arm	S40–S49	10,520	4.5	8,753	5.1	19,273	4.8
Injuries to the elbow & forearm	S50–S59	20,920	9.0	17,229	10.0	38,149	9.4
Injuries to the wrist & hand	S60–S69	32,926	14.2	8,961	5.2	41,887	10.4
Injuries to the hip & thigh	S70–S79	10,135	4.4	18,482	10.8	28,617	7.1
Injuries to the knee & lower leg	S80–S89	23,709	10.2	16,257	9.5	39,966	9.9
Injuries to the ankle & foot	S90–S99	7,309	3.2	4,238	2.5	11,547	2.9
Injuries involving multiple body regions	T00–T07	431	0.2	273	0.2	704	0.2
Injuries to unspecified parts of trunk, limb or body region	T08–T14	2,904	1.3	2,301	1.3	5,205	1.3
Effects of foreign body entering through natural orifice	T15–T19	3,825	1.6	2,619	1.5	6,444	1.6
Burns	T20–T32	4,968	2.1	2,329	1.4	7,297	1.8
Frostbite	T33–T35	24	0.0	0	0.0	24	0.0
Poisoning by drugs, medicaments & biological substances	T36–T50	12,238	5.3	17,606	10.2	29,844	7.4
Toxic effects of substances chiefly non-medicinal as to source	T51–T65	4,843	2.1	2,960	1.7	7,803	1.9
Other and unspecified effects of external causes	T66–T78	3,350	1.4	2,927	1.7	6,277	1.6
Certain early complications of trauma	T79	771	0.3	384	0.2	1,155	0.3
Complications of surgical & medical care, nec	T80–T88	32,288	13.9	31,764	18.5	64,052	15.9
Other complications of trauma nec	T89	83	0.0	45	0.0	128	0.0
Sequelae of injuries, of poisoning & of other consequences of external causes	T90–T98	56	0.0	24	0.0	80	0.0
<b>All principal diagnoses</b>	<b>S00–T98</b>	<b>231,950</b>	<b>100.0</b>	<b>171,774</b>	<b>100.0</b>	<b>403,724</b>	<b>100.0</b>

**Table A5.6: Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in males; Australia 1998–99**

Chapter XIX groups	Age group																		All ages	AgeStd
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		
Injuries to the head	638.8	385.5	468.4	864.3	797.7	619.9	472.2	343.1	301.4	210.8	202.5	190.2	194.7	196.7	232.4	326.2	571.5	994.8	442.4	456.8
Injuries to the neck	8.7	13.2	29.7	49.7	59.8	48.0	40.1	37.5	27.9	25.0	24.4	21.5	21.4	20.7	21.5	35.4	49.9	61.0	32.0	32.6
Injuries to the thorax	7.0	8.5	18.7	61.2	84.0	86.2	80.7	85.3	78.6	81.1	87.9	99.3	115.8	123.3	170.2	236.5	350.1	506.6	82.2	82.7
Injuries to the abdomen, lower back, lumbar spine & pelvis	21.6	51.7	69.5	110.1	135.3	110.1	93.9	89.1	79.3	72.1	73.1	66.8	68.5	77.1	110.1	174.0	303.0	529.3	90.3	91.9
Injuries to the shoulder & upper arm	88.2	159.7	102.7	147.1	136.8	122.6	94.8	81.5	88.1	79.4	88.7	97.1	96.0	94.5	124.0	176.9	211.4	404.4	112.2	113.8
Injuries to the elbow & forearm	168.3	589.7	685.5	339.5	239.7	184.5	154.3	125.9	114.6	96.2	105.0	97.7	84.8	76.8	78.2	102.3	134.2	221.4	223.1	227.0
Injuries to the wrist & hand	158.4	129.2	235.2	614.6	696.4	610.1	489.0	387.6	327.4	295.0	275.8	269.1	221.2	180.2	164.3	143.5	126.1	158.9	351.2	356.8
Injuries to the hip & thigh	56.1	41.8	63.9	76.5	76.4	55.5	42.5	40.5	38.4	44.1	44.2	63.8	100.6	156.3	284.8	554.0	1,209.1	2,384.1	108.1	113.9
Injuries to the knee & lower leg	54.2	100.6	271.5	439.5	431.7	386.3	319.2	287.4	236.7	223.3	191.6	176.6	169.8	158.4	166.4	183.2	256.7	313.6	252.9	256.6
Injuries to the ankle & foot	54.8	73.4	82.5	100.8	111.2	97.6	89.5	86.3	83.9	73.9	69.3	62.0	55.9	45.9	45.9	45.6	37.2	52.5	78.0	78.4
Injuries involving multiple body regions	2.3	2.3	3.9	6.6	7.4	7.3	4.8	4.9	2.3	3.2	2.7	5.3	2.9	2.7	2.4	6.3	10.0	35.5	4.6	4.7
Injuries to unspecified parts of trunk, limb or body region	13.4	16.9	31.2	36.1	43.1	41.5	38.2	33.9	26.9	24.5	22.8	21.5	28.1	23.1	33.3	51.9	61.7	112.1	31.0	31.5
Effects of foreign body entering through natural orifice	123.5	69.9	21.5	20.2	23.7	25.4	27.0	27.5	28.4	33.3	34.1	37.0	37.2	51.6	58.0	59.1	53.5	78.1	40.8	41.1

*Continued*

**Table A5.6 (continued): Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in males; Australia 1998–99**

Chapter XIX groups	Age group																		All ages	AgeStd
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		
Burns	158.4	42.6	46.8	72.7	64.3	66.4	49.9	47.8	35.0	39.1	30.9	29.8	23.3	20.1	23.6	28.1	38.1	53.9	53.0	54.0
Frostbite	0.0	0.1	0.1	0.1	1.2	0.0	0.1	0.0	0.0	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Poisoning by drugs, medications & biological substances	198.9	17.5	24.4	135.9	242.8	225.0	218.0	182.4	148.1	108.2	87.9	65.1	57.2	50.7	63.2	69.3	98.9	122.0	130.5	133.0
Toxic effects of substances chiefly non-medicinal as to source	97.0	35.4	41.2	49.1	62.1	64.3	64.2	62.2	49.0	50.8	42.7	35.3	35.6	37.8	26.1	28.6	19.0	28.4	51.7	52.0
Other and unspecified effects of external causes	73.3	20.4	18.7	26.4	49.4	44.2	30.0	30.6	29.4	24.4	28.4	40.3	31.3	47.4	36.8	53.3	57.1	56.8	35.7	36.2
Certain early complications of trauma	2.6	4.3	5.1	9.7	11.6	18.0	12.4	8.5	9.1	6.8	5.8	4.8	6.4	6.0	6.9	7.8	9.1	7.1	8.2	8.3
Complications of surgical & medical care, nec	168.6	99.1	89.0	129.6	175.6	186.9	192.0	209.3	218.4	265.8	365.2	511.2	728.0	969.9	1,290.1	1,513.6	1,643.6	1,544.0	344.4	345.3
Other complications of trauma nec	0.3	0.9	0.9	0.1	1.0	1.9	1.3	0.7	1.1	0.8	0.8	0.7	1.6	0.3	1.4	0.0	0.0	1.4	0.9	0.9
Sequelae of injuries, of poisoning & of other consequences of external causes	0.5	0.3	0.6	0.3	1.2	0.5	0.7	0.5	0.7	0.3	0.3	0.7	0.3	0.6	1.4	0.5	1.8	2.8	0.6	0.6
<b>All principal diagnoses</b>	<b>2,094.9</b>	<b>1,863.0</b>	<b>2,311.0</b>	<b>3,290.2</b>	<b>3,452.2</b>	<b>3,002.3</b>	<b>2,514.8</b>	<b>2,172.8</b>	<b>1,924.8</b>	<b>1,759.3</b>	<b>1,784.7</b>	<b>1,895.5</b>	<b>2,080.6</b>	<b>2,339.9</b>	<b>2,941.1</b>	<b>3,796.0</b>	<b>5,242.1</b>	<b>7,668.8</b>	<b>2,473.9</b>	<b>2518.5</b>

**Table A5.7: Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in females; Australia 1998–99**

Chapter XIX groups	Age group																		All ages	AgeStd
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		
Injuries to the head	494.4	236.0	184.4	258.6	219.2	184.9	153.5	139.8	122.8	96.3	85.7	87.3	95.0	108.1	154.4	298.9	565.1	970.7	205.1	201.9
Injuries to the neck	5.1	8.8	17.3	30.9	33.1	26.5	22.8	20.6	17.5	19.0	15.8	15.4	14.7	11.8	20.9	31.3	44.2	55.6	20.7	20.3
Injuries to the thorax	4.2	5.4	12.2	35.7	37.5	31.3	29.4	31.9	34.9	35.0	42.8	53.0	62.7	80.0	114.7	203.5	325.3	525.6	54.2	46.6
Injuries to the abdomen, lower back, lumbar spine & pelvis	20.4	35.1	37.3	74.1	70.7	53.6	43.8	43.1	38.8	34.0	40.8	49.0	65.4	77.4	150.5	288.3	611.5	1,061.2	85.7	72.8
Injuries to the shoulder & upper arm	89.1	158.6	56.0	41.2	35.3	30.7	30.2	27.0	27.7	34.9	58.0	66.4	92.6	144.1	235.7	342.5	477.9	745.3	92.5	82.3
Injuries to the elbow & forearm	145.6	478.5	305.4	64.3	71.0	74.7	63.0	66.0	69.2	78.3	118.2	165.7	209.0	266.6	366.8	487.0	626.0	681.6	182.0	172.9
Injuries to the wrist & hand	109.6	79.6	82.5	123.6	121.5	114.7	103.0	102.2	93.9	89.4	81.5	80.9	68.1	59.2	60.7	76.1	79.9	121.7	94.7	95.7
Injuries to the hip & thigh	32.6	21.5	24.3	23.9	21.2	15.0	11.3	15.7	15.7	17.2	35.6	63.5	118.3	239.9	488.1	1,086.6	2,216.7	4,265.3	195.2	139.8
Injuries to the knee & lower leg	38.8	57.6	100.4	146.9	131.5	129.9	118.5	127.4	118.2	143.7	182.7	206.5	239.4	263.7	344.9	457.9	652.3	810.9	171.7	158.4
Injuries to the ankle & foot	39.8	44.5	51.4	44.3	41.4	40.7	41.4	40.2	40.7	38.7	44.9	38.1	38.7	37.1	46.7	64.4	90.5	112.4	44.8	43.8
Injuries involving multiple body regions	1.6	1.4	1.9	3.3	3.6	3.3	2.1	2.7	1.6	1.7	2.1	0.9	1.9	2.3	3.0	9.8	8.4	20.6	2.9	2.7
Injuries to unspecified parts of trunk, limb or body region	12.5	14.5	17.0	25.9	26.2	23.1	17.4	19.0	18.5	12.6	14.3	15.0	19.5	17.5	40.3	56.8	92.8	181.6	24.3	22.4
Effects of foreign body entering through natural orifice	121.5	49.0	15.7	9.8	9.3	10.3	9.2	14.0	15.6	19.0	21.8	23.3	26.2	31.1	30.3	37.1	58.7	59.3	27.7	27.6

*Continued*

Table A5.7 (continued): Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in females; Australia 1998–99

Chapter XIX groups	Age group																		All ages	AgeStd	
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+			
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate			Rate
Burns	128.4	25.2	13.4	16.9	21.5	18.1	17.0	16.8	15.7	15.4	11.2	11.3	14.9	15.0	17.9	16.7	24.0	41.2	24.6	25.4	
Frostbite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poisoning by drugs, medicaments & biological substances	190.7	10.5	72.2	376.0	316.8	288.3	268.3	265.1	232.5	189.4	130.0	97.5	61.7	58.7	69.2	81.2	111.2	119.8	186.0	191.6	
Toxic effects of substances chiefly non-medicinal as to source	76.4	20.1	28.1	40.8	35.2	35.8	33.8	30.5	27.6	25.7	29.6	22.0	19.5	18.7	17.0	18.6	20.1	20.0	31.3	32.1	
Other and unspecified effects of external causes	47.0	14.1	13.3	26.4	35.2	36.2	29.4	23.4	22.6	23.0	31.0	38.5	29.1	29.0	47.6	44.8	58.7	92.4	30.9	30.1	
Certain early complications of trauma	2.4	2.2	1.9	4.2	4.7	3.4	4.7	4.4	5.2	3.2	4.1	2.9	3.5	5.2	4.6	7.3	10.1	9.4	4.1	3.9	
Complications of surgical & medical care, nec	90.4	83.5	81.2	126.9	160.2	191.3	234.5	268.4	338.6	350.3	418.3	479.8	593.9	716.7	891.2	1,062.9	1,066.4	905.1	335.6	309.3	
Other complications of trauma nec	0.2	0.5	0.3	0.2	0.9	0.3	0.1	0.3	0.4	0.8	0.5	0.7	0.8	0.0	0.6	0.4	1.7	2.5	0.5	0.4	
Sequelae of injuries, of poisoning & of other consequences of external causes	0.0	0.5	0.3	0.0	0.0	0.5	0.0	0.4	0.1	0.6	0.5	0.5	0.0	0.3	0.3	0.0	0.0	0.0	0.3	0.2	
<b>All principal diagnoses</b>	<b>1,650.8</b>	<b>1,346.9</b>	<b>1,116.3</b>	<b>1,474.0</b>	<b>1,395.9</b>	<b>1,312.7</b>	<b>1,233.4</b>	<b>1,258.7</b>	<b>1,257.9</b>	<b>1,228.3</b>	<b>1,369.2</b>	<b>1,518.2</b>	<b>1,774.9</b>	<b>2,182.4</b>	<b>3,105.4</b>	<b>4,672.1</b>	<b>7,141.3</b>	<b>10,802.1</b>	<b>1,814.6</b>	<b>1680.4</b>	

**Table A5.8: Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in persons; Australia 1998-99**

Chapter XIX groups	Age group																		All ages	AgeStd
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		
Injuries to the head	568.5	312.7	329.8	569.4	514.0	403.1	312.4	241.2	211.9	153.7	145.1	139.6	144.8	151.5	190.8	310.6	567.5	978.0	323.2	330.8
Injuries to the neck	7.0	11.1	23.7	40.5	46.7	37.3	31.4	29.1	22.7	22.0	20.2	18.5	18.0	16.1	21.2	33.1	46.3	57.2	26.3	26.5
Injuries to the thorax	5.6	7.0	15.5	48.8	61.2	58.9	55.0	58.6	56.7	58.1	65.7	76.5	89.2	101.2	140.6	217.7	334.8	519.8	68.1	64.6
Injuries to the abdomen, lower back, lumbar spine & pelvis	21.0	43.6	53.8	92.6	103.6	82.0	68.8	66.0	59.0	53.1	57.2	58.0	66.9	77.2	131.7	239.3	493.8	898.7	88.0	84.2
Injuries to the shoulder & upper arm	88.6	159.2	79.9	95.5	87.0	76.8	62.4	54.2	57.9	57.2	73.6	82.0	94.3	119.8	183.6	271.5	376.3	641.2	102.3	99.7
Injuries to the elbow & forearm	157.2	535.5	500.0	205.5	157.0	129.8	108.6	95.9	91.8	87.3	111.5	131.1	147.0	173.7	232.2	322.0	438.5	541.0	202.5	203.4
Injuries to the wrist & hand	134.7	105.0	160.7	375.5	414.5	363.2	295.5	244.6	210.4	192.5	180.3	176.6	144.6	118.5	109.0	105.0	97.5	133.1	222.3	227.2
Injuries to the hip & thigh	44.6	31.9	44.6	50.9	49.3	35.3	26.9	28.1	27.0	30.7	40.0	63.6	109.4	198.9	393.3	858.1	1,832.6	3,690.6	151.9	133.0
Injuries to the knee & lower leg	46.7	79.7	188.0	297.0	284.4	258.5	218.5	207.3	177.3	183.6	187.2	191.3	204.7	212.2	261.7	340.1	501.5	659.0	212.1	210.4
Injuries to the ankle & foot	47.5	59.3	67.3	73.3	76.9	69.2	65.4	63.2	62.3	56.4	57.3	50.2	47.3	41.4	46.3	56.3	70.2	94.1	61.3	61.5
Injuries involving multiple body regions	2.0	1.9	2.9	5.0	5.5	5.3	3.5	3.8	1.9	2.4	2.4	3.1	2.4	2.5	2.8	8.3	9.0	25.1	3.7	3.7
Injuries to unspecified parts of trunk, limb or body region	13.0	15.7	24.3	31.2	34.8	32.3	27.8	26.5	22.7	18.6	18.6	18.3	23.8	20.3	37.1	54.7	80.9	160.4	27.6	27.2
Effects of foreign body entering through natural orifice	122.5	59.7	18.7	15.1	16.7	17.9	18.1	20.7	22.0	26.2	28.1	30.3	31.7	41.1	43.2	46.6	56.7	65.0	34.2	34.3

*Continued*

Table A5.8 (continued): Principal diagnoses reported for injury hospitalisations: age-specific and age adjusted rates in persons; Australia 1998–99

Chapter XIX groups	Age group																		All ages	AgeStd
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		
Burns	143.8	34.1	30.5	45.5	43.3	42.3	33.4	32.3	25.3	27.3	21.2	20.7	19.1	17.5	20.6	21.6	29.4	45.1	38.7	39.8
Frostbite	0.0	0.1	0.1	0.1	0.6	0.0	0.1	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Poisoning by drugs, medicaments & biological substances	194.9	14.1	47.7	252.8	279.1	256.6	243.2	223.9	190.4	148.7	108.6	81.0	59.5	54.8	66.4	76.1	106.5	120.5	158.4	162.0
Toxic effects of substances chiefly non-medicinal as to source	87.0	27.9	34.8	45.1	48.9	50.1	49.0	46.3	38.3	38.3	36.3	28.7	27.5	28.0	21.2	22.9	19.7	22.5	41.4	42.1
Other and unspecified effects of external causes	60.5	17.3	16.1	26.4	42.4	40.2	29.7	27.0	26.0	23.7	29.7	39.4	30.2	38.0	42.6	48.4	58.1	81.5	33.3	33.2
Certain early complications of trauma	2.5	3.2	3.5	7.0	8.2	10.7	8.5	6.5	7.2	5.0	5.0	3.9	4.9	5.6	5.7	7.5	9.7	8.7	6.1	6.2
Complications of surgical & medical care, nec	130.5	91.5	85.2	128.3	168.0	189.1	213.3	238.9	278.6	307.9	391.3	495.8	660.9	840.7	1,077.2	1,256.2	1,286.5	1,100.3	339.9	324.2
Other complications of trauma nec	0.2	0.7	0.6	0.2	1.0	1.1	0.7	0.5	0.8	0.8	0.7	0.7	1.2	0.1	1.0	0.2	1.0	2.2	0.7	0.7
Sequelae of injuries, of poisoning & of other consequences of external causes	0.2	0.4	0.5	0.2	0.6	0.5	0.4	0.5	0.4	0.5	0.4	0.6	0.1	0.4	0.8	0.2	0.7	0.9	0.4	0.4
<b>All principal diagnoses</b>	<b>1,878.7</b>	<b>1,611.6</b>	<b>1,727.9</b>	<b>2,405.8</b>	<b>2,443.8</b>	<b>2,160.3</b>	<b>1,872.4</b>	<b>1,714.8</b>	<b>1,590.5</b>	<b>1,494.6</b>	<b>1,580.5</b>	<b>1,710.0</b>	<b>1,927.6</b>	<b>2,259.5</b>	<b>3,028.8</b>	<b>4,296.3</b>	<b>6,417.2</b>	<b>9,844.9</b>	<b>2,142.7</b>	<b>2115.1</b>



**Table A5.9: Injury hospital separations by State or Territory of residence, Australia 1998–99: case counts, age adjusted rates and 95% confidence intervals for ‘Same day’ excluded separations and ‘Sameday’ separations**

State or Territory of residence	‘Same day’ cases excluded				‘Same day’ cases			
	Count	Rate	95% CI		Count	Rate	95% CI	
NSW	97,253	1,527.1	1,517.5	1,536.7	34,940	555.7	549.9	561.6
Victoria	63,393	1,353.4	1,342.8	1,363.9	26,870	578.9	571.9	585.8
Queensland	56,162	1,613.6	1,600.3	1,626.9	32,102	936.5	926.2	946.7
Western Australia	31,809	1,724.3	1,705.4	1,743.3	8,711	479.5	469.4	489.6
South Australia	25,119	1,685.8	1,665.0	1,706.7	8,389	584.7	572.2	597.2
Tasmania	6,751	1,431.7	1,397.5	1,465.8	1,756	382.6	364.7	400.5
ACT	2,833	918.6	884.8	952.5	617	200.2	184.4	216.0
Northern Territory	3,770	1,970.2	1,907.3	2,033.1	691	337.2	312.1	362.3
<b>Australia</b>	<b>288,847</b>	<b>1,523.6</b>	<b>1,518.1</b>	<b>1,529.2</b>	<b>114,877</b>	<b>614.9</b>	<b>611.4</b>	<b>618.5</b>

*State of residence was not reported for 3,519 cases.*

### ICD-9-CM and ICD-10-AM code ranges for some injury types

In order to present national deaths and hospital separations data on injury in a useable way, NISU groups data in particular way. Table A5.10 presents the grouping used in this report. We provide the ICD-9-CM codes and the nearest matches of ICD-10-AM codes for the groupings we used. It should be noted that these ranges are not necessarily ‘equivalent’ for all categories. For example, the ICD-9-CM falls range E880–E888 is not equivalent to the ICD-10-AM W00–W19 range (See Chapter 3).

**Table A5.10: ICD-9 and ICD-10 External Cause code ranges for specific major injury types**

<b>Major groups</b>	<b>ICD-9-CM</b>	<b>ICD-10-AM</b>
Transportation	E800–E848	V01–V99
<i>Motor vehicle traffic accidents</i>	<i>E810–E819 (.0–.9)</i>	<i>V30–V79 (.4–.9); V81.1; V82.1; V83–86 (.0,.3); V20–V28 (.3–.9); V29 (.4–.9); V12–V14 (.3–.9); V19 (.4–.6); V02–V04 (.1,.9); V09.2; V80 (.3–.5); V87 (.0–.8); V89.2</i>
<i>Other transportation</i>	<i>E800–E807 (.3); E820–E825 (.6); E826 (.1,.9); E827–E829 (.1); E800–807 (.2); E820–E825 (.7); E826–829 (.0); E800–807 (.0,.1,.8,.9); E820–E825 (.0–.5,.8,.9), E826.2–.8; E827–E829 (.2–.9); E831.0–.9; E833.0–E845.9</i>	<i>V10–V11; V12–V14 (.0–.2); V15–V18; V19 (.0–.3,.8,.9); V01; V02–V04 (.0); V05; V06; V09 (.0,.1,.3,.9); V20–V28 (.0–.2); V29–V79 (.0–.3); V80 (.0–.2,.6–.9); V81–V82 (.0,.2–.9); V83–V86 (.4–.9); V87.9; V88 (.0–.9); V89 (.0,.1,.3,.9); V90–V99</i>
Near drowning	E910	W65–W74
<i>Swimming pool</i>	<i>E910.5</i>	<i>W67–W68</i>
<i>Other near drowning</i>	<i>E910.0–4,.6–.9</i>	<i>W65–W66, W68–W74</i>
Poisoning, pharmaceuticals	E850–E858	X40–X44
Poisoning, other substances	E860–E869	X45–X49
Falls	E880–E888 <sup>(a)</sup>	W00–W19
<i>Slip, trip or stumble</i>	<i>E885</i>	<i>W01</i>
<i>Stairs and steps</i>	<i>E880</i>	<i>W10</i>
<i>Falls from playground equipment</i>	<i>E884.0</i>	<i>W09</i>
<i>Other falls</i>	<i>E881–E883, E884.1–.7,.9</i>	<i>W00, W02–W08, W11–W19</i>
Fires/burns/scalds	E890–E899, E924.0,.8,.9	X00–X19
<i>Scalds</i>	<i>E924.0,.2</i>	<i>X10–X14</i>
<i>Other fires/burns/scalds</i>	<i>E890–E899, E924.1,.8,.9</i>	<i>X00–X09, X15–X19</i>
Other unintentional injuries	E900–E909, E911–E923, E924.1, E925–E929	W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9
Intentional, self-harm	E950–E959	X60–X84, Y87.0
<i>Self harm, poisoning</i>	<i>E950.0–E952.9</i>	<i>X60–69</i>
<i>Self harm, other</i>	<i>Remainder of codes between E950–E959</i>	<i>Remainder of codes</i>
Intentional, inflicted by another	E960–E978, E990–E999	X85–Y09, Y87.1, Y35–Y36, Y89.0, Y89.1
Undetermined intent	E980–E989	Y10–Y34, Y87.2
Medical misadventure, etc.	E870–E879, E930–E949	Y40–Y84, Y88.0–Y88.3
<b>All injury</b>	<b>E800–E999</b>	<b>V00–Y98</b>

(a) There is no ICD-10-AM equivalent for the ICD-9-CM E887 (Fracture, cause unspecified) code. In ICD-10-AM data, cases that would have gone to the E887 code, are coded to X59 (Exposure to unspecified factor). If E887 is excluded from the ICD-9-CM accidental falls range E880–E888, the resulting range (E880–E886, E888) is more or less equivalent to the ICD-10-AM range W00–W19.

# INJURY RESEARCH & STATISTICS

**This is the first statistical report on national hospital separations due to injury and poisoning by NISU. The report focuses mainly on data for the financial year 1998–99 and includes information on external causes of injury and principal diagnoses of injuries treated during hospitalisation. It also addresses some of the issues associated with reporting these data, especially during the ICD-9-CM and ICD-10-AM transitional period.**

**The report will be relevant to those interested in national hospitalisations due to injury and poisoning, including community practitioners, health planners and administrators, and the public. The data issues section will also be important for academic and health researchers who utilise hospital separations data.**