WORK-RELATED HAND AND WRIST INJURIES IN AUSTRALIA

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BACKGROUND OF THE PROJECT TEAM

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The analysis of hospital separations presented in this report is based on data made available by the Australian Institute of Health and Welfare (AIHW). The authors, and not AIHW, are responsible for the use made of the data in this report.

EXECUTIVE SUMMARY

Background

The project aimed to provide an analysis of recent work-related hand and wrist injuries in Australia, focussing in particular on presentations to emergency departments and admissions to hospitals, although some information from workers' compensation agencies was also used.

Methods

The report focuses on emergency department presentations, hospital admissions and workers' compensation claims for serious injury in 2002-2003 and 2003-2004. The emergency department data came primarily from Victoria, with some supplementation from Queensland. Hospital admissions data were for the whole of Australia. Workers' compensation data came from Queensland, South Australia and Tasmania.

Findings

Work-related hand and wrist injuries are the most common work-related injury type and are an important problem in the Australian workforce. They are a very common cause of work-related injury presentation to emergency departments in Australia and also result in about 8400 admissions to hospital per year.

The injuries range from being relatively minor to very severe, most commonly involving the fingers, with open wounds the most common injury type and amputation the most severe injury type.

Using a sharp edged tool, operating powered plant or machinery which was not properly guarded, using a powered hand tool or appliance which was not properly guarded or which locked, and preparing food with an appliance or a knife, are the most common activities associated with injuries to the hand and wrist.

The manufacturing industry, wholesale and retail trade industry and the construction industry appear to be the industries where workers most commonly sustain hand and wrist injuries in the course of work. This is probably due to the tasks being undertaken and the equipment being used which has the potential to exert large forces directly or indirectly to the hand and wrist.

Guarding was a problem in a considerable minority of the injuries, as was locking or jamming power tools. This suggests there are design issues that could usefully form a focus of preventative activity.

1. INTRODUCTION

1.1 BACKGROUND

Injury is known to be an important cause of work-related morbidity and mortality of workers in Australia (Driscoll and Mayhew, 1999). Information on such injury is potentially available from a variety of sources. Most of these sources are primarily based on one or more administrative criteria. For example, an injured person may be identified because the injuries they sustained resulted in death (which almost always results in notification to a coroner), hospitalisation, presentation to an emergency department, presentation to a general practitioner, a successful claim for workers' compensation, investigation by an occupational health and safety agency, the person taking one or more days off work, and so on. Some of these systems have a reasonably close alignment with the severity of the injury. For example, an injured person presenting to an emergency department but not requiring admission to hospital is likely to have more severe injuries than a person presenting to a general practitioner but less severe injuries than a person who is admitted to hospital as a result of their injuries. In contrast, injuries for which workers' compensation payments are received can range from being relatively minor (with the proviso that one or more weeks off work are usually required for an injured person to be included in publicly available workers' compensation data) to fatal.

Some injury episodes will result in the injured person being recorded in more than one data set, but many injured persons will only be recorded in one or no data sets. The extent of overlap between the various data sources is not known. However, it is clear that to gain a full appreciation of the extent of work-related injury in the community, information will be required from several different sources. In addition, one of the keys to developing effective interventions aimed at preventing injury is having a good understanding of the characteristics of the injured persons, their injuries, and the circumstances in which the injuries occurred. Since each data source probably has characteristic injuries with characteristic injury circumstances, it is necessary to examine information from a range of data sources in order to plan appropriate interventions.

Injured persons presenting to emergency departments in Australia have been the subject of five significant publications – presentations to Victorian emergency departments in the early 1990s (Routley and Valuri 1993, 1994) and 1999 to 2002 inclusive (Stathakis and Cassell, 2004); presentations to a sample of Queensland emergency departments in 1996/1997 (Hockey and Miles, 1999); and a more recent combined analysis of Victorian and Queensland data (Driscoll and Harrison, 2007). This most recent report recommended, among other things, a more detailed examination of work-related hand and

wrist injuries and work-related eye injuries. This report presents the detailed analysis of hand and wrist injuries. The detailed analysis of eye injuries is presented in a companion report.

The current report was commissioned by the Office of the Australian Safety and Compensation Council of the Australian Government Department of Education, Employment and Workplace Relations. It aims to provide a detailed analysis of recent work-related hand and wrist injuries in Australia, focussing in particular on presentations to emergency departments and admissions to hospitals, although some information from workers' compensation agencies was also used.

The report focuses on emergency department presentations, hospital admissions and workers' compensation claims for serious injury in 2002-2003 and 2003-2004. The emergency department data came primarily from Victoria, with some supplementation from Queensland. Hospital admissions data were for the whole of Australia. Workers' compensation data came from Queensland, South Australia and Tasmania and included only serious claims for injury. Serious claims are those defined as involving one or more weeks off work.

1.2 PROJECT AIMS

The project aimed to provide a detailed analysis of recent work-related hand and wrist injuries in Australia, focussing in particular on presentations to emergency departments and admissions to hospitals.

1.3 OUTLINE OF THE STRUCTURE OF THE REPORT

This report has six main chapters. The Introduction provides background regarding the project. The approach taken in conducting the project is described in Chapter 2 Methods. Chapter 3 provides the main findings. Chapter 4 provides a discussion of the results, Chapter 5 presents a brief summary and conclusions, and the references are provided in Chapter 6. A more detailed consideration of hand and wrist injuries resulting in hospital admission is provided in Appendix 1.

2. METHODS

2.1 EMERGENCY DEPARTMENT DATA

There is no source of national information on emergency department presentations in Australia. Information used in this study comes primarily from the most comprehensive of the available collections – the Victorian Emergency Minimum Dataset, run by the Victorian Injury Surveillance Unit (VISU). Some other information was also provided by the Queensland Injury Surveillance Unit (QISU). For both collections, the data covered injury presentations over the two year period 1 July 2002 to 30 June 2004 inclusive.

The Victorian data covered injured persons treated at the emergency departments of the 38 hospitals collecting data in accordance with the Victorian Emergency Minimum Dataset. The injury information was coded using the International Classification of Diseases ICD-10-AM, edition 3 (NCCH, 2002). Eligible cases were persons aged 15 years or over who had a coded activity at the time of injury equal to "*working for income*" and who sustained an injury to the hand or wrist. Variables used for the current analysis were age, sex, injury cause, location, nature of main injury, body region, departure status, referral on departure and a brief text description of the injury event. For each of the main injury circumstances, as identified by the analysis of coded variables, a random sample of the text descriptions of 200 cases was obtained. This represented 3% to 100% of the relevant cases, depending on the number of cases in each circumstance. These descriptions were read and common themes identified. The Victorian data exclude persons that presented to an emergency department and were subsequently admitted as a result of their injury. Victorian data do not include information on industry.

The Queensland data covered injured persons treated at any one of the 16 hospitals participating in the data collection activities of the QISU. Three regions are covered by these 16 hospitals - metropolitan (South Brisbane); regional (Mackay and Moranbah Health Districts) and remote (Mt Isa). The precise coverage of the Queensland population, and of the Queensland working population, by the Queensland data collection is not known. Similarly, it is not known to what extent the collection is representative of the Queensland workforce. Eligible cases were persons of any age who had a coded activity at the time of injury equal to "*working for income*". All the variables used from the Victorian data were also available from Queensland. In addition, the Queensland data had information available on the industry of employment of the injured person. Text descriptions were provided for all the Queensland cases, but there was no coded information to allow determination of the relevant industry of the worker whose injury was described in the text description.

The analysis of emergency department data presented here focuses on the Victorian data, as they cover nearly the whole of Victoria and are more likely to be representative of a broad range of industries. Analysis of the Queensland data also indicated that the type of incidents resulting in hand and wrist injuries were similar in Queensland and Victoria. Queensland data are used primarily to provide some information on industry-specific issues and more detail in some specific areas.

2.2 HOSPITAL DATA

Data on hand and wrist injuries resulting in hospital admissions came from the Australian Institute of Health and Welfare's hospital separations data base. This covers virtually all admissions to public and private hospitals in Australia. Cases were all persons with a date of separation (which equates almost directly to an episode of admission) from hospital between 1 July 2002 and 30 June 2004; an hand and wrist injury as recorded by the coded information; and a code indicating they were working for income at the time of the injury (U73.0). The data were coded with the third edition of ICD-10-AM (NCCH, 2002). Separate "cases" which involved a transfer from another acute-care hospital (meaning they were not new incident cases) were excluded, except for calculation of length of stay.

2.3 WORKERS' COMPENSATION DATA

Workers' compensation data were included primarily to examine the text descriptions available for cases. Information on accepted claims for serious hand and wrist injuries that occurred from 1 July 2002 to 30 June 2004 inclusive were obtained from Queensland, South Australia and Tasmania. Text descriptions were also available from Queensland and South Australia. All the South Australian cases (about 3000) cases, and a random sample of 1000 of the Queensland cases, were used in the analysis of text descriptions.

2.4 FORMAT OF RESULTS

Where possible, results are presented for the three main data sources – emergency department presentations, hospital admissions and workers' compensation claims – in each section of the results. Where this is not possible, only the data sources that could provide useful data were included. In some areas, relevant data were only available from one of the data sources.

The absolute number of cases in any one category was generally not of major interest because only the hospital separations data are national, and the focus of this analysis was on obtaining a qualitative as well as a quantitative assessment of hand and wrist injury cases. For this reason, most of the information presented is in terms of percentages rather than absolute numbers.

Generally, categories presented in tables were not separately included if they contained less than 10 cases. Where data are presented in terms of categories and sub-categories, only the categories with more than 10 cases are included. This means that the sub-category percentages presented in the tables may be less than the total for the relevant category. An asterix (*) in a table means there was at least one case. A dash (-) means there were no cases.

3. RESULTS

3.1 INTRODUCTION

This report considers hand and wrist injuries which occurred in the period 1 July 2002 to 30 June 2004 inclusive. As mentioned, the absolute number of cases of hand and wrist injury was not of primary interest in this analysis. In order to provide an understanding of the scope of the problem and the number of cases on which the percentages are based, the overall numbers are indicated in each table as appropriate.

In the two-year period covered by the study there were 16 712 cases of work-related hand and wrist injury resulting in hospital admission. Work-related hand and wrist injuries comprised 32% of all work-related injury admissions over that period.

There were 12 491 emergency department presentations in Victoria for work-related hand and wrist injury over the two-year study period. This represented 32.7% of the 38 210 work-related presentations to emergency departments in Victoria over the same period. Another 1573 work-related hand and wrist injury cases presenting to one of these emergency departments resulted in admission (i.e. about 1.1% of persons presenting to an emergency department with a work-related hand and wrist injury required admission). In Queensland, there were 3351 presentations to emergency departments due to work-related hand and wrist injury. These represented 44% of the 7552 work-related cases of injury that presented to the involved emergency departments over the same period.

There were 13 830 accepted serious claims for hand and wrist injuries in the workers' compensation data provided by Queensland, South Australia and Tasmania for which information was supplied in enough detail for this study. In addition, text descriptions from 3200 South Australian cases and a sample of 1000 from Queensland cases were analysed.

3.2 GENDER

The majority of hand and wrist injuries occurred in males, although the male predominance was greater in the hospitalized cases than the emergency department and workers' compensation cases (Table 1).

Table 1 Sex of injured persons – hand and wrist injuries - work-related hospital admissions, emergency department presentations and workers' compensation claims, July 2002 to June 2004. Per cent

	Hospital[1] N= 16 712	ED[2] N = 12 491	WC[3] N = 13 830
Male	90.9	77.4	75.4
Female	9.1	22.6	24.6
Total	**100.0**	**100.0**	**100.0**

1: Hospital admissions - Australia
2: Emergency department admissions - Victoria
3: Serious workers' compensation claims – Queensland, South Australia and Tasmania

3.3 AGE

Work-related hand and wrist injuries occurred to people of all ages, but about three quarters of the injuries occurred to persons aged between 15 and 44 years. The distribution of injuries across age groups was similar in all three data sets (Table 2).

Table 2 Age of injured persons – hand and wrist injuries – work-related hospital admissions, emergency department presentations and workers' compensation claims, July 2002 to June 2004. Per cent

	Hospital[1] N= 16 712	ED[2] N = 12 491	WC[3] N = 13 830
15-19	9.5	12.0	12.3
20-24	15.9	18.9	16.9
25-29	13.5	15.6	13.0
30-34	12.9	13.6	12.1
35-39	11.2	10.8	11.0
40-44	11.0	9.4	11.1
45-49	9.3	8.1	8.8
50-54	7.3	5.6	7.7
55-59	5.3	3.6	4.8
60-64	2.4	1.8	2.0
65+	1.3	0.7	0.3
Total	**100.0**	**100.0**	**100.0**

1: Hospital admissions - Australia (there were also 0.2% of persons whose age was less than 15 years).
2: Emergency department admissions – Victoria.
3: Serious workers' compensation claims – Queensland, South Australia and Tasmania.

3.4 INDUSTRY

Information on industry was not available for the Victorian data. The hospital data unfortunately had no industry coded for just over one third of cases, and an "other specified" industry for another 20%. Of the remainder, manufacturing, construction, and agriculture, forestry and fishing were the main industries of the injured persons. The industry information was much more complete for the workers' compensation information, in which the manufacturing industry was the dominant industry, being the industry of employment for 33% of the cases. The next most common industries in the workers' compensation data were wholesale and retail trade and construction, but hand and wrist injuries were spread across many industries (Table 3). In the Queensland data, the most common industries were construction (12%) and mining (10%).

Table 3 Industry of injured persons – hand and wrist injuries – work-related hospital admissions and workers' compensation claims, July 2002 to June 2004. Per cent

	Hospital[1] N= 16 712	ED[2] N = 12 491	WC[3] N = 13 830
Agriculture, forestry & fishing	6.8		5.8
Mining	2.0		1.1
Manufacturing	13.3		32.8
Construction	12.2		9.8
Wholesale & retail trade	7.2		14.1
Accommodation, Cafes and Restaurants	-		7.2
Transport & storage	2.7		4.5
Property and business services	-		7.1
Government administration and defence	0.6		1.9
Education	-		4.4
Health services	1.1		6.8
Personal and other services	-		2.8
Other specified work for income	20.1		-
Unspecified working for income	34.1		-
Other	-		1.7
Total	**100.0**		**100.0**

1: Hospital admissions – Australia.
2: Emergency department admissions – Victoria – no industry information.
3: Serious workers' compensation claims– Queensland, South Australia and Tasmania.

3.5 PLACE

The main places of occurrence for the hand and wrist injuries resulting in hospital admission were industrial and construction areas (38%) such as factories and construction sites, and trade and service areas (12%) such as eating places and commercial garages.

For emergency department presentations the rank order was reversed, with the majority of incidents occurring in trade and service areas (54%), and a fifth occurring at industrial and construction areas. Ten per cent of injuries occurred at a health facility. Place of occurrence was not available for the workers' compensation data (Table 4).

Table 4 Place of injury occurrence – hand and wrist injuries – work-related hospital admissions and emergency department, July 2002 to June 2004. Per cent

	Hospital[1] N= 16 712	ED[2] N = 12 491	WC[3] N = 13 830
Trade & service area	**12.3**	**54.3**	
Shop and store	*4.1*		
Café, hotel & restaurant	*3.3*		
Other specified trade & service area	*4.9*		
Industrial & construction area	**37.9**	**19.0**	
Construction area	4.9		
Factory & plant	17.6		
Other specified industrial & construction area	15.4		
School, other institution & public administrative area	**1.8**		
Medical / hospital		**9.6**	
Farm	**4.2**	**2.7**	
Home	**1.3**	**2.0**	
Public highway, street & road	**0.8**	**1.4**	
Residential institution & public administrative area	**0.2**	**0.9**	
Other specified place of occurrence	**5.5**	**7.6**	
Unspecified place of occurrence	**35.2**	**2.5**	
Total	**100.0**	**100.0**	

1: Hospital admissions – Australia.
2: Emergency department admissions – Victoria.
3: Workers' compensation – Queensland, South Australia and Tasmania – no place information.

3.6 EXTERNAL CAUSE

There was a wide range of external causes associated with the hand and wrist injuries, but the predominant cause in all data sets was exposure to inanimate mechanical forces (the workers' compensation data were not coded to ICD-10, but the variables and categories used for the workers' compensation data allowed an approximate translation to ICD-10 categories). Falls accounted for 11% of the workers' compensation cases and 5.5% of the emergency department cases but very few of the hospital admission cases (Table 5).

Table 5 External cause of injury – hand and wrist injuries – work-related hospital admissions and emergency department, July 2002 to June 2004. Per cent

	Hospital[1] N= 16 712	ED[2] N = 12 491	WC[3] N = 13 830
Exposure to inanimate mechanical forces	**80.1**	**79.4**	**57.0**
Caught, crushed, jammed or pinched in or between other objects (not door)	*11.2*		
Contact with other powered hand tools & household machinery	*8.7*		
Contact with knife, sword or dagger	*7.4*		
Foreign body or object entering through skin	*7.1*		
Contact with woodworking & forming machinery	*6.5*		
Struck by thrown, projected or falling object	*4.1*		3.4
Contact with non-powered hand tool	*3.6*		
Contact with metalworking machinery	*3.4*		
Caught, crushed, jammed or pinched in or between door	*1.3*		
Contact with powered lawnmower	*0.2*		
Other exposure to inanimate mechanical forces	*26.4*		
Fall	*	**5.5**	**10.7**
Exposure to animate mechanical forces	**1.3**	**3.5**	**1.2**
Exposure to electric current radiation & extreme air temperature & pressure	**0.5**		
Contact with heat & hot substances	**0.7**	**3.3**	**2.7**
Contact with venomous animals & plants	**0.1**		**0.2**
Accidental poisoning by & exposure to noxious substances	**0.3**		**0.3**
Travel, privation & overexertion	**0.9**		
Other & unspecified[4]	**11.7**	**8.3**	**27.9**
Total	**100.0**	**100.0**	**100.0**

1: Hospital admissions – Australia.
2: Emergency department admissions – Victoria.
3: Serious workers' compensation claims – Queensland, South Australia and Tasmania – data based on Type of Occurrence Mechanism codes.
4: 12.1% of "Other & unspecified category" for workers' compensation data comprised claims due to body stressing.

3.7 AGENCY OF INJURY

The distinction between a breakdown agency and an agency of injury, as made in the Type of Occurrence Classification System used for workers' compensation data, is not made for hospital data or emergency department data. In many circumstances they are the same but, where they differ, the hospital data and emergency department data probably can be considered closer to the agency of injury than the breakdown agency.

Information on the agency of injury for hospital data came from the External Cause codes, described as the "mechanism of injury" for the detailed hospital analysis, but in reality the analysis combines information on agency and mechanism. For hospital data, the main agencies identified by the External Cause analysis were powered hand tools and household machinery, knives, woodworking and forming machinery; non-powered hand tools, and metalworking machinery (Table 5).

The only information on agency of injury available from the Victorian data was based on the External Cause codes, and the available information was not very detailed. The Queensland emergency department data had a variable called "Major Injury Factor", which is the equivalent of an agency of injury. The main major injury factors in the Queensland data were kitchen utensils (22.6%), particularly knives (16.1%); materials (16.6%), particularly sheet metal (9.5%); power tools (10.0%); mobile machinery (6.9%); hand tools (6.3%); and fixed machinery (4.1%).

For accepted serious workers' compensation claims from Queensland, South Australia and Tasmania, the main breakdown agencies were hand tools (31.1%), particularly sharp-edged tools (9.8%), fastening equipment (5.4%), furniture and fittings (5.2%) and other hand tools (4.5%); materials (16.4%); fixed plant and equipment (14.7%), particularly cutting equipment (7.2%), conveyors (2.6%) and pressing equipment (1.7%); and powered equipment (7.7%), particularly workshop tools (4.0%) and kitchen utensils (1.6%).

3.8 NATURE OF INJURY

Open wound was the most common type of injury. It accounted for 28% of hospitalizations, 55% of emergency department presentations and 35% of workers' compensation claims for work-related hand and wrist injuries. Fractures were the next most common injury types in hospitalized cases and the third most common injury type in workers' compensation cases, but were much less frequent in the emergency department

cases, for which superficial injuries were the second most common injury type. Sprains and strains were prominent only in workers' compensation cases. (The emergency department data described in this section were from Queensland because the Victorian data did not contain detailed information on injury type.) (Tables 6 to 8)

Industry-specific analyses of the type of injury were available for the Queensland emergency department data and the workers' compensation data. The pattern of injury types was broadly similar across industries. Prominent exceptions were a much higher proportion of burns in the accommodation, cafes and restaurant industry; and emergency department crush injuries being more prominent in the agriculture, forestry and fishing, manufacturing, construction and transport industries (Tables 7 and 8).

The fingers were the most commonly injured part of the hand and wrist (comprising 40% to 50% of the injuries, depending on the data set), followed by the wrist and hand (around 40%) and the thumb (around 10%). Fingers were by far the most common location for amputation injuries.

Table 6 Nature of injury – hand and wrist injuries – by sex - work-related hospital admissions workers' compensation claims, July 2002 to June 2004. Per cent

Principal diagnosis	Hospital[1]	ED[2]	WC[3]
	N= 16 712	N = 12 491	N = 13 830
Superficial injury of wrist & hand	**2.0**		**1.7**
Open wound of wrist & hand	**27.5**		**35.2**
Open wound of finger(s) without damage to nail	*14.5*		
Open wound of finger(s) with damage to nail	*6.7*		
Other open wound	*6.4*		
Fracture at wrist & hand level	**22.4**		**20.0**
Fracture of carpal (wrist) bones	*0.7*		*5.8*
Fracture of metacarpal bones	*3.8*		*3.2*
Fracture of thumb	*3.1*		*2.4*
Fracture of other finger phalanx, part unspecified	*0.6*		*8.3*
Fracture of other finger, proximal phalanx	*2.7*		
Fracture of other finger, middle phalanx	*2.3*		
Fracture of other finger, distal phalanx	*8.5*		
Multiple fractures of fingers	*0.3*		*0.3*
Fracture of other & unspecified parts of wrist & hand	*0.3*		*0.1*
Dislocation of wrist & fingers	**0.8**		**0.7**
Traumatic rupture of ligament	**0.3**		
Sprain & strain of wrist & fingers	**1.1**		**25.2**
Injury of nerves at wrist & hand level	**7.5**		**0.1**
Injury of ulnar nerve at wrist & hand level	*0.9*		
Injury of median nerve at wrist & hand level	*0.3*		
Injury of radial nerve at wrist & hand level	*1.1*		
Injury of digital nerve of thumb	*1.1*		
Injury of digital nerve of other finger	*3.8*		
Injury of other & unspecified nerves of wrist & hand	*0.2*		
Injury of blood vessels at wrist & hand level	**2.2**		
Injury of muscle & tendon at wrist & hand level	**15.1**		
Injury of long flexor muscle & tendon of thumb at wrist & hand level	*0.5*		
Injury of flexor muscle & tendon of other finger at wrist & hand level	*2.8*		
Injury of extensor muscle & tendon of thumb at wrist & hand level	*2.9*		
Injury of extensor muscle & tendon of other finger at wrist & hand level	*6.8*		
Injury of multiple flexor muscles & tendons at wrist & hand level	*0.4*		
Injury of multiple extensor muscles & tendons at wrist & hand level	*0.6*		
Injury of other & unspecified muscle & tendon at wrist & hand level	*1.1*		
Crushing injury of wrist & hand	**3.5**		**8.5**
Traumatic amputation of wrist & hand	**14.2**		**4.2**
Traumatic amputation of thumb (includes partial)	*2.3*		*0.6*
Traumatic amputation of other single finger (includes partial)	*10.0*		*3.4*
Traumatic amputation of two or more fingers alone (includes partial)	*1.9*		
Other traumatic amputation	*0.1*		
Burn of wrist & hand	**2.0**		**3.1**
Other & unspecified injuries of wrist & hand	**1.3**		**1.3**
Total	**100.0**		**100.0**

1 Hospital admissions – Australia.
2 Emergency department admissions – Victoria – no information available.
3 Serious workers' compensation claims– Queensland, South Australia and Tasmania.

Table 7 Nature of injury – hand and wrist injuries – by industry - work-related emergency department presentations[1], July 2002 to June 2004. Per cent

Industry	n	Open wound	Fracture	Sprain / strain	Superficial	Crush	Burn	Amputation
Agriculture	191	50.8	4.2	3.7	7.9	13.1	2.1	3.1
Mining	343	40.2	3.8	4.1	12.8	24.2	3.2	2.3
Manufacturing	296	52.4	2.0	3.0	13.5	15.5	4.7	2.4
Construction	405	52.6	4.4	2.2	11.9	15.6	2.0	1.7
Retail	199	62.8	2.5	2.5	16.1	3.0	6.5	1.0
Accommodation, cafes, restaurants	146	65.1	1.4	2.7	16.4	3.4	7.5	0.0
Transport	163	41.1	6.8	8.6	10.4	22.7	0.1	0.6
Health	126	54.0	0.8	3.2	29.4	4.0	4.0	0.0
All industries	3351	55.1	3.0	3.3	12.8	10.4	4.4	1.6

[1] Emergency department data from Queensland.

Table 8 Nature of injury – hand and wrist injuries – by industry - work-related workers' compensation claims[1], July 2002 to June 2004. Per cent

Workers' comp	n	Open wound	Crush	Superficial	Sprain / strain	Fracture	Burn	Amputation
Agriculture	803	35.2	6.7	1.1	19.9	25.6	0.8	8.2
Mining	148	25.7	9.5	2.0	20.3	35.8	0.7	4.7
Manufacturing	4539	38.7	9.6	1.2	23.6	16.6	2.2	5.7
Construction	1355	42.5	6.5	1.5	13.7	27.5	1.8	4.5
Wholesale	559	35.2	9.8	1.8	21.3	22.7	1.4	5.6
Retail	1393	40.9	7.0	1.5	25.1	16.1	4.4	2.8
Accommodation, cafes, restaurants	999	47.0	4.3	1.3	20.8	12.3	11.2	1.8
Transport	623	23.1	11.1	0.8	24.9	31.0	2.1	3.9
Property and business	975	27.2	11.2	1.9	29.2	22.5	2.6	3.3
Government admin	259	14.3	12.0	4.3	41.3	18.9	3.5	2.3
Education	609	39.7	7.9	1.5	21.0	23.2	2.5	1.3
Health	944	16.8	8.3	1.6	50.2	15.0	4.8	0.7
Cultural and recreational	132	28.0	4.6	3.0	23.5	32.6	0.8	2.3
Personal and other	380	22.1	9.7	2.1	32.9	24.2	2.4	2.9
All industries	13 830	35.2	8.5	1.7	25.2	20.0	3.1	4.2

[1] Serious workers' compensation claims in Queensland, South Australia and Tasmania. Serious claims are those involving one or more weeks off work.

3.9 LENGTH OF STAY

The mean length of stay for hand and wrist injury related hospitalisations was 1.6 days. Burn of the hand and wrist (3.3 days) and injury of blood vessels at wrist and hand level (2.2 days) had the longest mean length of stay.

Table 9 Mean length of stay – hand and wrist injuries – by principal diagnosis and sex - work-related hospital admissions, July 2002 to June 2004. Per cent and days

Principal diagnosis	Length of stay (days)		
	Males	Females	Persons
Superficial injury of wrist & hand	1.4	1.0	1.3
Open wound of wrist & hand	1.4	1.4	1.4
Fracture at wrist & hand level	1.6	1.7	1.6
Dislocation of wrist & fingers	1.7	1.1	1.6
Traumatic rupture of ligament	1.1	1.0	1.1
Sprain & strain of wrist & fingers	1.2	1.2	1.2
Injury of nerves at wrist & hand level	1.5	1.2	1.4
Injury of blood vessels at wrist & hand level	2.3	1.6	2.2
Injury of muscle & tendon at wrist & hand level	1.4	1.4	1.4
Crushing injury of wrist & hand	1.4	1.8	1.4
Traumatic amputation of wrist & hand	2.0	2.3	2.0
Burn of wrist & hand	3.5	1.9	3.3
Other & unspecified injuries of wrist & hand	1.3	1.0	1.3
Total	1.6	1.5	1.6

3.10 CIRCUMSTANCES OF INJURY

For wrist and hand injuries, the text descriptions from the 3292 South Australian workers' compensation claims were probably the most useful, having more detail than the Queensland descriptions and also having associated coded information on the injury circumstances such as industry, agency and mechanism. These text descriptions were read in an attempt to identify common occurrences. Victorian and Queensland emergency department text descriptions, and a random sample of 1000 of the Queensland workers' compensation descriptions, were also reviewed. Common occurrences are described in the following paragraphs.

About 30% of injuries resulting from a fall occurred when the person fell from a ladder. Falls from trucks involved about another 10%.

There were many incidents involving powered hand tools, with the main circumstances described being repetitive movements causing wrist injury, lacerations due to pieces of the equipment breaking (e.g. grinder blades), or damage to the hand or wrist when the tools locked or “kicked back” and jerked violently.

Knife injuries commonly occurred when the injured person was cutting food or cutting materials.

Hot oil was the most common single cause of burns in emergency department and workers’ compensation injuries, usually in employees of the accommodation, café and restaurant industry. Exposure to hot water or steam was also common, usually while cooking or re-heating food. Welding was another common activity, particularly in the manufacturing industry, that resulted in burns to the hand or wrist.

Needlestick injuries accounted for about 10% of the emergency department presentation for cutting or piercing injuries. Not surprisingly, most of these involved health workers.

About 10% of the claims in the agricultural industry involved sheep shearing, with the majority of these occurring when the powered shears “locked up’, causing a sudden violent force on the hand and/or wrist of the operator.

The manufacturing industry had many incidents that involved cutting, slicing and sawing equipment, as well as presses, printers and conveyors. The majority of these involved problems with missing or defective guards, and/or occurred while guards were being cleaned or equipment was being cleaned or maintained, during which time the guards had been removed. A common description was that the injured worker had been distracted at the time and put his/her hand in a position where it could come into contact with moving parts of the machinery. Another common occurrence was the person wearing gloves and the glove becoming caught in the equipment, commonly pulling the fingers or hand into contact with the machinery. Other common injury circumstances involved locking or jamming power tools and sharp-edged hand tools or knives.

The main injury circumstances in the construction industry involved powered and un-powered hand tools and knives.

In retail trade, contact with cutting, slicing and sawing machinery, and with heating, cooking and baking equipment, during food preparation, was common, as was contact with powered slicing equipment. Injuries to the fingers from knives used while preparing food

were also particularly common, as they were in the accommodation, café and restaurant industry.

Most of the injuries in transport workers occurred during loading or unloading activities.

In the property and business services industry, many of the incidents appeared similar to those in a range of other industries, particularly the manufacturing, construction and retail trade industries, suggesting that this industry category may have been used to cover workers in labour hire arrangements.

4. DISCUSSION

Hand and wrist injuries have previously been shown to be an important reason for presentation at emergency departments (Driscoll and Harrison, 2007). This report used information from emergency departments, hospital separations and workers' compensation to examine the characteristics of these injuries, and the circumstances surrounding their occurrence, in more depth. This analysis confirmed that hand and wrist injuries comprise a considerable proportion (about 30% to 40%) of all work-related injuries presenting to emergency departments and all work-related injuries resulting in hospital admission, but that very few (less than 2%) such hand and wrist injuries result in hospital admission. Nevertheless, nearly 8400 persons each year sustain a work-related hand and wrist injury that is severe enough to require hospitalization.

The main industries in which hand and wrist injuries appear to be a problem are the manufacturing industry, wholesale and retail trade industry and the construction industry. Using a sharp edged tool, particularly a knife, is the single task resulting in the highest number of work-related hand and wrist injuries. Other common activities and agencies were power tools which locked suddenly, mobile machinery, and fixed machinery such as cutting plant, presses and conveyors. Preparing food and welding are the most common activities associated with burn injuries to the hand and wrist. Similar results have been reported for Australia (Hockey and Miles, 1999; Muscatello and Mitchell, 2001; Routley and Valuri 1993, 1994; Stathakis and Cassell, 2004) and elsewhere (Barr et al, 2004; Muggleton et al, 1999; Thomsen et al, 2007), although the extent to which repetitive strain injuries are classified as injuries or diseases affects the extent to which direct comparisons can be made between different studies.

Issues associated with missing or inadequate guarding appeared to still be a major problem in many industries, particularly the manufacturing industries, as were power hand tools which became jammed, or locked up, in the materials being worked on. Similar issues have previously been identified in an analysis of design-related issues in serious work-related injuries in Australia (Driscoll et al, 2005) and warrant attention in terms of future prevention activity.

Only the hospital data provided national coverage. The emergency department data came primarily from Victoria and provide almost complete coverage of emergency department admissions in that State. Therefore, the information should provide a valid description of work-related hand and wrist injuries in Victoria. Since Victoria has a wide range of industries (with mining perhaps being the one industry not likely to be well represented in the data set), this information should be broadly applicable to Australia as a whole. The

workers' compensation text information was only from two states, but it is likely that the circumstances of injury for a given task would be similar. Since the information was used primarily to gain an understanding of the way the hand and wrist injuries occurred, using information from only two jurisdictions is unlikely to introduce important bias. Regardless, text descriptions were not available electronically from other jurisdictions for this project.

The emergency department and workers' compensation text descriptions were of variable quality and usefulness for the current project. This highlights the difficulties in using narrative data that are not specifically designed to answer a particular research question. Nevertheless, some useful information was available in the text fields. There may be benefit in developing some simple written guidelines that could be given to persons completing narrative fields, so that they have an understanding of the sort of information that would be useful to people who may make use of the data at a later time. There is probably more chance of meaningfully influencing the recording of text fields in emergency department data sets than in workers' compensation cases, as presumably it is health personnel rather than the injured person who usually write the text. However, whether such an approach would have any meaningful impact on the quality and usefulness of the data provided from either source would need to be tested.

5. CONCLUSIONS

Work-related hand and wrist injuries are the most common work-related injury type and are an important problem in the Australian workforce. They are a very common cause of work-related injury presentation to emergency departments in Australia and also result in about 8400 admissions to hospital per year.

The injuries range from being relatively minor to very severe, most commonly involving the fingers, with open wounds the most common injury type and amputation the most severe injury type.

Using a sharp edged tool, operating powered plant or machinery which was not properly guarded, using a powered hand tool or appliance which was not properly guarded or which locked, and preparing food with an appliance or a knife, are the most common activities associated with injuries to the hand and wrist.

The manufacturing industry, wholesale and retail trade industry and the construction industry appear to be the industries where workers most commonly sustain hand and wrist injuries in the course of work. This is probably due to the tasks being undertaken and the equipment being used which has the potential to exert large forces directly or indirectly to the hand and wrist.

Guarding was a problem in a considerable minority of the injuries, as was locking or jamming power tools. This suggests there are design issues that could usefully form a focus of preventative activity.

6. REFERENCES

Barr AE, Barbe MF, Clark BD (2004). Work-related musculoskeletal disorders of the hand and wrist: epidemiology, pathophysiology, and sensorimotor changes. *Journal Orthopaedic Sports Physical Therapy*;34(10):610-27.

Driscoll TR, Harrison JE (2007). *Work-related injuries using emergency department data*. Canberra: The Australian Safety and Compensation Council.

Driscoll TR, Harrison JE, Bradley C, Newson RS. *Design issues in work-related serious injuries*. Canberra: The Australian Safety and Compensation Council, 2005. http://www.ascc.gov.au/PDF/Standards/10605DesignIssues_fa.pdf.

Driscoll T, Mayhew C 1999). Extent and cost of occupational injury and illness, in *Occupational health and safety in Australia.* C. Mayhew, C. Peterson, Editors. Allen & Unwin: Sydney. p. 28-51.

Muggleton JM, Allen R, Chappell PH (1999). Hand and arm injuries associated with repetitive manual work in industry: a review of disorders, risk factors and preventive measures. *Ergonomics*;42(5):714-739.

Muscatello D, Mitchell R (2001). Identifying work-related injury and disease in routinely collected NSW hospitalisation data. *NSW Public Health Bulletin*;12(7):195–197.

Hockey R, Miles E (1999). *Workplace injury*. http://www.qisu.org.au/modcore/PreviousBulliten/backend/upload_file/issue053.pdf Accessed May 2008.

National Centre for Classification in Health (NCCH) (2002). *The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification, (ICD–10–AM)*, Third edition: University of Sydney.

Routley V, Valuri J (1993). *Work-related injuries.* VISU: Melbourne.

Routley V, Valuri J (1994). *Work-related injuries.* VISU: Melbourne.

Stathakis V, Cassell E (2004). *Overview of unintentional hospital-treated work injury, Victoria 1999-2002.* VISAR: Melbourne.

Thomsen JF, Mikkelsen S, Andersen JH, Fallentin N, Loft IP, Frost P, Kaergaard A, Bonde JP, Overgaard E (2007). Risk factors for hand-wrist disorders in repetitive work. *Occupational Environmental Medicine*;64(8):527-533.

APPENDIX 1: DETAILED ANALYSIS OF WORK-RELATED HAND AND WRIST INJURIES REQUIRING HOSPITAL ADMISSION

CONTENTS FOR APPENDIX 1

A1.1 Hospitalised hand and wrist injury in context of all work-related injury

Selection criteria:[*]

- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *All work-related injury compared with work-related injury cases with hand and wrist diagnosis in diag1 field*

The proportion of work-related injury that involves the hand and wrist as the primary diagnosis varied with age and sex. The proportion of hand and wrist injury was lower for females than males in all age groups. The proportion of work-related injury hospitalisations that primarily involved hand and wrist injury was highest in adolescent males, with 48.1% in the 15–19 and 45.3% in the 20–24 year age group (Table A1.1)

Appendix Table 1.1: Sex and age group at admission for work-related injury hospitalisations and work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Age group at admission (years)	All work-related injury			Proportion that is work-related hand and wrist injury[**]		
	Males	Females	Persons	Males	Females	Persons
0–14	93	37	130	23.7%	10.8%	20.0%
15–19	2968	468	3436	48.1%	34.8%	46.3%
20–24	5425	802	6227	45.3%	25.9%	42.8%
25–29	5266	786	6052	39.3%	24.7%	37.4%
30–34	5773	737	6510	34.2%	24.6%	33.1%
35–39	5332	796	6128	32.4%	18.7%	30.6%
40–44	5272	1024	6296	31.3%	18.3%	29.2%
45–49	4519	1031	5550	30.9%	15.8%	28.1%
50–54	3760	891	4651	28.9%	15.5%	26.4%
55–59	2846	723	3569	28.1%	11.8%	24.8%
60–64	1481	278	1759	25.4%	10.1%	23.0%
65–69	579	109	688	22.1%	10.1%	20.2%
70+	508	274	782	15.2%	1.5%	10.4%
Total	**43 822**	**7956**	**51 778**	**34.7%**	**19.0%**	**32.3%**

[**] Only includes cases with hand and wrist injury in diag1 (See data issues for inclusion criteria).

More than fifty per cent (53.1%) of manufacturing related injury hospitalisations had a hand and wrist injury as the principal diagnosis; however, in the health services industry only 13.1% of admissions had a hand and wrist injury as the principal diagnosis. In the manufacturing industry, 53.6% of hospitalisations in males and 47.6% of hospitalisations in females involved the hand or wrist as the principal diagnosis; however, in the mining industry 24.9% of admissions in males and only 10.0% of admissions in females, involved the hand and wrist (Table A1.2).

Appendix Table 1.2: Sex and industry for work-related injury hospitalisations and work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Industry (code)	All work-related injury			Proportion that is work-related hand and wrist injury**		
	Males	Females	Persons	Males	Females	Persons
Agriculture, forestry & fishing (U73.00)	4520	537	5057	23.3%	16.8%	22.6%
Mining (U73.01)	1314	40	1354	24.9%	10.0%	24.4%
Manufacturing (U73.02)	3861	338	4199	53.6%	47.6%	53.1%
Construction (U73.03)	5477	53	5530	36.4%	24.5%	36.3%
Wholesale & retail trade (U73.04)	2487	1054	3541	38.1%	25.0%	34.2%
Transport & storage (U73.05)	2430	149	2579	17.7%	12.1%	17.4%
Government administration & defence (U73.O6)	563	150	713	16.3%	9.3%	14.9%
Health services (U73.07)	371	975	1346	17.3%	11.5%	13.1%
Other specified work for income (U73.08)	8231	1948	10 179	36.3%	19.5%	33.1%
Unspecified working for income (U73.09)	14 568	2712	17 280	35.9%	17.0%	33.0%
Total	**43 822**	**7956**	**51 778**	**34.7%**	**19.0%**	**32.3%**

** Only includes cases with hand and wrist injury in diag1.

The majority (86.8%) of work-related injury hospitalisations for amputations involved the hand and wrist, as did the majority of crush injury (74.4%). Only a small proportion of work-related sprain and strain injury admissions involved the hand and wrist (3.9%) (Table A1.3).

Appendix Table 1.3: Sex and nature of injury for work-related injury hospitalisations and work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Nature of injury	All work-related injury			Proportion that is work-related hand and wrist injury**		
	Males	Females	Persons	Males	Females	Persons
Superficial injury	1789	448	2237	15.6%	12.9%	15.1%
Open wound	7082	719	7801	58.7%	61.9%	59.0%
Fracture	10 444	1629	12073	33.5%	15.4%	31.1%
Dislocation	1740	376	2116	9.4%	6.1%	8.8%
Sprain & strain	3619	1174	4793	3.8%	4.3%	3.9%
Nerve & spinal cord injury	1749	395	2144	61.5%	46.1%	58.6%
Blood vessel injury	484	40	524	68.6%	85.0%	69.8%
Muscle & tendon injury	5099	856	5955	46.1%	19.6%	42.3%
Crush injury	724	69	793	73.8%	81.2%	74.4%
Amputation	2519	224	2743	88.2%	71.4%	86.8%
Burn & corrosion	1162	186	1348	24.3%	23.7%	24.2%
Other	7411	1840	9251	2.3%	2.4%	2.3%
Total	**43 822**	**7956**	**51778**	**34.7%**	**19.0%**	**32.3%**

** Only includes cases with hand and wrist injury in diag1.

The majority (58.4%) of work-related injury admissions with a mechanism of injury of 'exposure to inanimate mechanical forces' involved the hand or wrist injury as the primary body region injured. 87.1% of hospitalisations due to 'contact with woodworking and forming machinery' involved the hand or wrist as the primary diagnosis. However, only a relatively small proportion of transport and fall related work-related injury hospitalisations had a hand and wrist injury as the primary diagnosis (Table A1.4).

Appendix Table 1.4: Sex and mechanism of injury for work-related injury hospitalisations and work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Mechanism of injury	All work-related injury	Proportion that is work-related hand and wrist injury**		
		Males	Females	Persons
Transport accident	4998	5.8%	4.2%	5.5%
Falls	8481	6.3%	3.7%	5.7%
Exposure to inanimate mechanical forces	22926	58.4%	58.5%	58.4%
Contact with other & unspecified machinery	*3866*	*64.7%*	*77.7%*	*65.9%*
Struck by thrown, projected or falling object	*2770*	*25.5%*	*12.7%*	*24.5%*
Caught, crushed, jammed or pinched in or between other objects (not door)	*2708*	*70.3%*	*55.6%*	*69.4%*
Contact with other powered hand tools & household machinery	*2224*	*65.7%*	*65.7%*	*65.7%*
Foreign body or object entering through skin	*1918*	*61.7%*	*70.6%*	*62.1%*
Contact with knife, sword or dagger†	*1694*	*71.5%*	*81.3%*	*72.7%*
Striking against or struck by sports equipment or other objects	*1666*	*27.0%*	*8.4%*	*24.6%*
Contact with woodworking & forming machinery	*1252*	*87.0%*	*92.0%*	*87.1%*
Contact with non-powered hand tool	*778*	*77.1%*	*74.5%*	*76.7%*
Contact with metalworking machinery	*755*	*75.3%*	*92.9%*	*75.6%*
Contact with sharp glass	*715*	*63.3%*	*85.5%*	*67.1%*
Contact with agricultural machinery	*488*	*51.5%*	*61.1%*	*52.3%*
Caught, crushed, jammed or pinched in or between door	*300*	*73.9%*	*78.6%*	*75.0%*
Contact with powered lawnmower	*56*	*73.6%*	*66.7%*	*73.2%*
Exposure to other & unspecified inanimate mechanical forces	*1736*	*41.0%*	*55.3%*	*41.8%*
Exposure to animate mechanical forces	1203	17.2%	19.4%	17.8%
Exposure to electric current radiation & extreme air temperature & pressure	717	12.2%	6.0%	11.3%
Contact with heat & hot substances	498	21.6%	26.7%	22.5%
Contact with venomous animals & plants	425	4.3%	9.4%	4.9%
Accidental poisoning by & exposure to noxious substances	920	5.5%	2.0%	4.9%
Overexertion, travel & privation	3354	4.3%	5.0%	4.4%
Other & unspecified	8256	26.3%	11.9%	23.6%
Total	**51778**	**34.7%**	**19.0%**	**32.3%**

**Only includes cases with hand and wrist injury in diag1.
† Only includes W26 (i.e. not W29).

A1.2 Hospitalised hand and wrist injury – overview

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*

Sex and age

More than ninety per cent (90.9%) of work-related hand and wrist injury hospitalisations occurred in males. The majority (64.6%) of admissions occurred in the 20–44 year age bracket. Males and females had a similar age distribution. The mean age of admission was 35.0 years (Table A2.1)

Appendix Table 2.1: Sex and age group at admission for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14	22	4	26	0.1%	0.3%	0.2%
15–19	1427	163	1590	9.4%	10.8%	9.5%
20–24	2456	208	2664	16.2%	13.7%	15.9%
25–29	2070	194	2264	13.6%	12.8%	13.5%
30–34	1975	181	2156	13.0%	11.9%	12.9%
35–39	1729	149	1878	11.4%	9.8%	11.2%
40–44	1651	187	1838	10.9%	12.3%	11.0%
45–49	1397	163	1560	9.2%	10.8%	9.3%
50–54	1088	138	1226	7.2%	9.1%	7.3%
55–59	801	85	886	5.3%	5.6%	5.3%
60–64	376	28	404	2.5%	1.8%	2.4%
65–69	128	11	139	0.8%	0.7%	0.8%
70+	77	4	81	0.5%	0.3%	0.5%
Total	**15197**	**1515**	**16712**	**100.0%**	**100.0%**	**100.0%**

Industry sector and worker's compensation status

More than three quarters of manufacturing and mining related hand and wrist injury hospitalisations were expected to be funded by worker's compensation (National Health Data Committee 2003). In contrast less than forty per cent (38.7%) of government administration and defence related hospitalised work-related injury was expected to be funded by worker's compensation (Table A2.2).

Manufacturing and construction had the highest number of hand and wrist related injury hospitalisations for the named industry groups with 2230 and 2006 cases, respectively (Table A2.2).

[*] See data issues for further details on selection criteria.

Appendix Table 2.2: Industry sector and worker's compensation status for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Principal diagnosis	Worker's compensation status†			
	Worker's compensation		Not workers compensation	Total
	Cases	Per cent		
Agriculture, forestry & fishing (U73.00)	487	42.7%	654	1141
Mining (U73.01)	253	76.4%	78	331
Manufacturing (U73.02)	1758	78.8%	472	2230
Construction (U73.03)	1149	57.3%	857	2006
Wholesale & retail trade (U73.04)	832	68.7%	379	1211
Transport & storage (U73.05)	304	67.7%	145	449
Government administration & defence (U73.06)	41	38.7%	65	106
Health services (U73.07)	128	72.7%	48	176
Other specified work for income (U73.08)	2251	66.9%	1,116	3,367
Unspecified working for income (U73.09)	3885	68.2%	1,810	5,695
Total	**11088**	**66.3%**	**5,624**	**16712**

† Cases categorised by 'Expected principal source of funds for an admitted patient episode' (National Health Data Committee 2003).

Mechanism of injury

Exposure to inanimate mechanical forces was the most common mechanism of injury grouping for work-related hand and wrist injury with 13 386 cases (80.1%) and 'Caught, crushed, jammed or pinched in or between other objects' (not door) was the most common type (Table A2.3).

Appendix Table 2.3: Mechanism of injury for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Mechanism of injury	Cases	Per cent
Transport accident	277	1.7%
Falls	480	2.9%
Exposure to inanimate mechanical forces	13386	80.1%
Caught, crushed, jammed or pinched in or between other objects (not door)	*1879*	*11.2%*
Contact with other powered hand tools & household machinery	*1461*	*8.7%*
Contact with knife, sword or dagger	*1232*	*7.4%*
Foreign body or object entering through skin	*1192*	*7.1%*
Contact with woodworking & forming machinery	*1091*	*6.5%*
Struck by thrown, projected or falling object	*680*	*4.1%*
Contact with non-powered hand tool	*597*	*3.6%*
Contact with metalworking machinery	*571*	*3.4%*
Caught, crushed, jammed or pinched in or between door	*225*	*1.3%*
Contact with powered lawnmower	*41*	*0.2%*
Other exposure to inanimate mechanical forces	*4417*	*26.4%*
Exposure to animate mechanical forces	214	1.3%
Exposure to electric current radiation & extreme air temperature & pressure	81	0.5%
Contact with heat & hot substances	112	0.7%
Contact with venomous animals & plants	21	0.1%
Accidental poisoning by & exposure to noxious substances	45	0.3%
Travel, privation & overexertion	149	0.9%
Other & unspecified	1947	11.7%
Total	**16712**	**100.0%**

Place of injury

Industrial and construction area was the most common place of occurrence for hand and wrist work-related injuries which required hospitalisation with 6334 cases and ,940 of these occurred in a factory or plant. A trade and service area was the second most common area of occurrence with 2057 hospitalisations (Table A2.4).

Appendix Table 2.4: Place of occurrence for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Principal diagnosis	Cases	Per cent
Home	209	1.3%
Residential institution	37	0.2%
School, other institution & public administrative area	308	1.8%
Sports & athletics area	42	0.3%
Street & highway	142	0.8%
Trade & service area	2057	12.3%
Shop & store	*678*	4.1%
Café hotel & restaurant	*559*	3.3%
Other trade & service area	*820*	4.9%
Industrial & construction area	6334	37.9%
Factory & plant	*2940*	17.6%
Construction area	*820*	4.9%
Other industrial & construction area	*2574*	15.4%
Farm	697	4.2%
Other specified place of occurrence	913	5.5%
Unspecified place of occurrence/no place code	5886	35.2%
No place code	87	0.5%
Total	**16712**	**100.0%**

Month and day of admission

The peak number of work-related hand and wrist injury admissions was in March (9.6%), with the trough in January. The peak day for admission was Wednesday with 3119 admissions (18.7%) and the trough was Sunday (654, 3.9%) (Table A2.5).

Appendix Table 2.5: Month and day of admission for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Month of admission	Day of admission							
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Total
January	48	142	190	225	226	242	89	1162
February	50	216	276	252	247	276	100	1417
March	55	296	311	272	258	288	119	1599
April	46	174	256	281	242	214	90	1303
May	59	250	226	264	300	276	129	1504
June	61	200	229	237	271	234	106	1338
July	58	217	277	300	273	217	91	1433
August	40	194	217	222	250	307	109	1339
September	59	262	267	268	252	255	93	1456
October	61	200	272	325	293	251	85	1487
November	66	232	240	257	241	260	117	1413
December	51	250	247	216	214	195	88	1261
Total	**654**	**2633**	**3008**	**3119**	**3067**	**3015**	**1216**	**16712**

Length of stay

The mean length of stay for hand and wrist injury related hospitalisations was brief with 1.6 days for males, 1.5 days for females and 1.6 days overall. Burn of the hand and wrist had the longest mean length of stay with 3.3 days (Table A2.6).

Appendix Table 2.6: Length of stay for nature of principal diagnosis by sex for work-related hand and wrist injury, in Australia, 2002–2004

Nature of injury	Sex		
	Males	Females	Persons
Superficial injury of wrist & hand	1.4	1.0	1.3
Open wound of wrist & hand	1.4	1.4	1.4
Fracture at wrist & hand level	1.6	1.7	1.6
Dislocation of wrist & fingers	1.7	1.1	1.6
Traumatic rupture of ligament	1.1	1.0	1.1
Sprain & strain of wrist & fingers	1.2	1.2	1.2
Injury of nerves at wrist & hand level	1.5	1.2	1.4
Injury of blood vessels at wrist & hand level	2.3	1.6	2.2
Injury of muscle & tendon at wrist & hand level	1.4	1.4	1.4
Crushing injury of wrist & hand	1.4	1.8	1.4
Traumatic amputation of wrist & hand	2.0	2.3	2.0
Burn of wrist & hand	3.5	1.9	3.3
Other & unspecified injuries of wrist & hand	1.3	1.0	1.3
Total	**1.6**	**1.5**	**1.6**

Remoteness of residence

In the majority (10 867, 65.0%) of hand and wrist injury cases the injured person resided in a major city. This proportion was highest for the health services sector with 72.7% and lowest for the agriculture, forestry and fishing sector (14.8%) (Table A2.7).

Appendix Table 2.7: Remoteness of residence by industry sector for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Industry type	Remoteness of residence						Total
	Major cities[a]	Inner Regional[b]	Outer Regional[c]	Remote[d]	Very Remote[e]	Not reported	
Total	10867	3306	1895	365	164	115	**16712**
Agriculture, forestry & fishing	14.8%	29.6%	38.7%	10.5%	5.5%	0.8%	**100.0%**
Mining[†]	28.4%	19.9%	31.4%	15.1%			**100.0%**
Manufacturing[†]	69.9%	21.1%	8.0%	0.7%			**100.0%**
Construction	67.2%	21.6%	8.3%	1.8%	0.3%	0.6%	**100.0%**
Wholesale & retail trade	63.6%	22.5%	10.7%	2.1%	0.7%	0.5%	**100.0%**
Transport & storage[†]	62.6%	21.2%	10.9%	2.4%			**100.0%**
Government administration & defence[†]	61.3%	20.8%	8.5%			4.7%	**100.0%**
Health services[†]	72.7%	21.0%	4.5%		0.0%		**100.0%**
Other specified work for income	67.7%	17.3%	12.7%	1.2%	0.4%	0.7%	**100.0%**
Unspecified working for income	73.3%	17.4%	6.7%	1.1%	0.8%	0.8%	**100.0%**
Total	**65.0%**	**19.8%**	**11.3%**	**2.2%**	**1.0%**	**0.7%**	**100.0%**

[a] Major cities: CDs with average ARIA index value of 0 to 0.2.
[b] Inner Regional, CDs with average ARIA index value >0.2 and <=2.4.
[c] Outer Regional, CDs with average ARIA value >2.4 and <=5.92,
[d] Remote, CDs with average ARIA index value >5.92 and <=10.53.
[e] Very Remote, CDs with average ARIA index value >10.53.
[†] Percentages not shown due to small case numbers, see note in data issues.

Principal diagnosis

Open wound was the most common type of injury and accounted for 27.5% of all hand and wrist injury hospitalisations and 'Open wound of finger(s) without damage to nail', was the most common type. Fracture was the next most common type of principal hand and wrist injury diagnosis. Most fractures involved the other finger (not thumb) (2,371, 14.2% overall) (Table A2.8).

Appendix Table 2.8: Principal diagnosis for work-related hand and wrist injury hospitalisations, in Australia, 2002–2004

Principal diagnosis	Cases
Superficial injury of wrist & hand	337
Open wound of wrist & hand	4599
Open wound of finger(s) without damage to nail	*2416*
Open wound of finger(s) with damage to nail	*1118*
Other open wound	*1065*
Fracture at wrist & hand level	3750
Fracture of carpal (wrist) bones	*123*
Fracture of metacarpal bones	*633*
Fracture of thumb	*523*
Fracture of other finger phalanx, part unspecified	*107*
Fracture of other finger, proximal phalanx	*454*
Fracture of other finger, middle phalanx	*388*
Fracture of other finger, distal phalanx	*1422*
Multiple fractures of fingers	*54*
Fracture of other & unspecified parts of wrist & hand	*46*
Dislocation of wrist & fingers	140
Traumatic rupture of ligament	46
Sprain & strain of wrist & fingers	189
Injury of nerves at wrist & hand level	1257
Injury of ulnar nerve at wrist & hand level	*148*
Injury of median nerve at wrist & hand level	*55*
Injury of radial nerve at wrist & hand level	*188*
Injury of digital nerve of thumb	*185*
Injury of digital nerve of other finger	*643*
Injury of other & unspecified nerves of wrist & hand	*38*
Injury of blood vessels at wrist & hand level	366
Injury of muscle & tendon at wrist & hand level	2518
Injury of long flexor muscle & tendon of thumb at wrist & hand level	*88*
Injury of flexor muscle & tendon of other finger at wrist & hand level	*474*
Injury of extensor muscle & tendon of thumb at wrist & hand level	*477*
Injury of extensor muscle & tendon of other finger at wrist & hand level	*1140*
Injury of multiple flexor muscles & tendons at wrist & hand level	*67*
Injury of multiple extensor muscles & tendons at wrist & hand level	*94*
Injury of other & unspecified muscle & tendon at wrist & hand level	*178*
Crushing injury of wrist & hand	590
Traumatic amputation of wrist & hand	2381
Traumatic amputation of thumb (includes partial)	*379*
Traumatic amputation of other single finger (includes partial)	*664*
Traumatic amputation of two or more fingers alone (includes partial)	*323*
Other traumatic amputation	*15*
Burn of wrist & hand	326
Other & unspecified injuries of wrist & hand	213
Total	**16712**

A1.3 Selection by diagnosis type

A1.3.1 Amputations

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Traumatic amputation of wrist and hand* ***in any field***

Age and sex

The majority (93.5%) of work-related hand and wrist amputation related hospitalisations occurred in males, compared with all work-related injury where 84.6% occurred in males. The peak number of admissions occurred in the 20–49 year age group. Males and females had a similar age distribution (Table A3.1.1).

'Other single finger' (i.e. not thumb) was the most common site of traumatic amputation of the hand and wrist with 1740 cases. There were 401 cases with a traumatic amputation of a thumb in any field and 346 cases with traumatic amputation of 2 or more fingers alone.

Appendix Table 3.1: Sex and age group at admission for work-related traumatic hand and wrist amputations, in Australia, 2002–2004

Age group at admission (years)	Cases	Per cent		
		Males	Females	Persons
0–14[†]	8	0.3%		
15–19	198	8.0%	7.4%	8.0%
20–24	317	12.9%	11.7%	12.8%
25–29	248	10.0%	9.9%	10.0%
30–34	280	11.3%	10.5%	11.3%
35–39	267	10.7%	11.7%	10.8%
40–44	319	12.6%	16.7%	12.9%
45–49	279	11.2%	12.3%	11.2%
50–54	230	9.1%	11.1%	9.3%
55–59	180	7.4%	5.6%	7.3%
60–64[†]	94	3.9%		
65–69[†]	31	1.3%		
70+	30	1.3%	0.0%	1.2%
Total	**2481**	**100.0%**	**100.0%**	**100.0%**

[†] Percentages not shown due to small case numbers, see note in data issues.

Mechanism

In the majority of hand and wrist amputation cases, the mechanism was exposure to inanimate mechanical forces (2293, 92.4%). Contact with woodworking and forming machinery was the most common specified mechanism with 380 cases. Traumatic amputations comprised 30.4% of all work-related hospitalisations with this mechanism. In 21.7% (75 cases) of the admissions with 'Two or more fingers alone' amputated or partially amputated, the mechanism of injury was 'Contact with woodworking and forming machinery' (Table A3.1.2).

There were a small number of cases with (in any field) 'Combined traumatic amputation of fingers and other part of wrist and hand' (S68.3); 'Traumatic amputation of other parts of wrist and hand' (S68.8); 'Traumatic amputation of wrist and hand, level unspecified'

[*] See data issues for further details on selection criteria.

(S68.9) and with 'Traumatic amputation of hand at wrist level' (S68.4). These have not been examined further separately for confidentially reasons and due the difficulty in interpretation of small case numbers.

There were no working for income related admissions for cases (in any field) with traumatic amputation of both hands (T05.0); traumatic amputation of one hand and other arm (T05.1); traumatic amputation of both arms (T05.2); traumatic amputation of upper and lower limbs in any combination (T05.6); and traumatic amputation of upper limb level unspecified (T11.6).

Appendix Table 3.2: Mechanism of injury and site of traumatic amputation for work-related traumatic hand and wrist amputation related hospitalisations, in Australia, 2002–2004

Mechanism of injury	All work-related traumatic amputations	Proportion of all work-related traumatic amputations		
		Thumb	Other single finger	Two or more fingers alone
Struck by thrown, projected or falling object	84	3.0%	3.8%	2.0%
Striking against or struck by other objects†	27	1.2%	1.2%	
Caught, crushed, jammed or pinched in or between door†	47	1.5%	2.2%	
Caught, crushed, jammed or pinched in or between other objects	340	10.2%	15.2%	10.1%
Contact with lifting & transmission devices, not elsewhere classified	106	5.0%	4.3%	3.2%
Contact with knife, sword or dagger†	55	1.7%	2.7%	
Contact with non-powered hand tool†	64	4.0%	2.5%	
Contact with powered lawnmower & other powered hand tools & household machinery	273	14.7%	9.7%	13.6%
Contact with agricultural machinery	82	1.5%	2.9%	6.6%
Contact with mining & earth drilling machinery†	26		0.9%	2.3%
Contact with metalworking machinery	124	4.2%	4.9%	6.1%
Contact with woodworking & forming machinery	380	22.7%	12.5%	21.7%
Contact with other & unspecified machinery	588	20.7%	24.0%	26.6%
Foreign body or object entering through skin†	47		2.0%	2.0%
Exposure to other & unspecified inanimate mechanical forces†	50	2.0%	2.3%	
Other & unspecified	188	6.0%	8.8%	3.2%
Total	**2481**	**100.0%**	**100.0%**	**100.0%**

Note: There were small numbers of amputation cases that were not Thumb; Other single finger or two or more fingers alone.
† Percentages not shown due to small case numbers, see note in data issues.

Place of occurrence

An industrial and construction area was the most common place of occurrence for work-related hand and wrist amputation related hospitalisations with 1108 cases and this was 6.6% of all hand and wrist injury admissions. 27.7% of amputations that involved 'Two or more fingers alone' occurred at a factory and plant, compared with 20.7% of 'Amputations of the thumb only' (Table A3.1.3).

Appendix Table 3.3: Place of occurrence and site of traumatic amputation for work-related traumatic hand and wrist amputation related hospitalisations, in Australia, 2002–2004

		Proportion of all work-related traumatic amputations		
Place of occurrence of injury	**All work-related traumatic amputations**	**Thumb**	**Other single finger**	**Two or more fingers alone**
Home†	31	0.7%		2.3%
Residential institution	5	0.0%	0.3%	0.0%
School, other institution & public administrative area†	25	0.7%		2.0%
Street & highway	4	0.0%	0.2%	0.0%
Trade & service area	242	8.7%	10.6%	6.4%
Shop & store	*95*	*3.7%*	*4.1%*	*2.3%*
Commercial garage	*17*	*1.2%*	*0.6%*	*0.3%*
Office building†	*9*	*0.2%*		*0.0%*
Café hotel & restaurant†	*36*	*0.7%*		*1.2%*
Other specified trade & service area	*53*	*1.2%*	*2.4%*	*1.7%*
Unspecified trade & service area	*32*	*1.5%*	*1.3%*	*0.9%*
Industrial & construction area	1108	43.9%	44.0%	50.0%
Construction area	*87*	*4.5%*	*3.2%*	*4.0%*
Factory & plant	*594*	*20.7%*	*24.1%*	*27.7%*
Mine & quarry†	*47*	*0.0%*		*2.6%*
Other specified industrial & construction area	*146*	*9.0%*	*5.2%*	*5.5%*
Unspecified industrial & construction area	*234*	*9.7%*	*9.4%*	*10.1%*
Farm	132	4.7%	4.8%	7.8%
Other specified place of occurrence	119	4.2%	4.9%	4.6%
Unspecified place of occurrence/no place code	815	36.9%	33.2%	26.9%
Total	**2481**	**100.0%**	**100.0%**	**100.0%**

Note: There were small numbers of amputation cases that were not Thumb; Other single finger or two or more fingers alone.

† Percentages not shown due to small case numbers, see note in data issues.

Industry sector

The highest number of traumatic amputations was in the unspecified and other specified working for income categories, however, manufacturing had the highest proportion of the specified industries (454, 18.3%). Mining had the highest proportion of admissions for amputation of 'Two or more fingers alone' with 21.8% of all mining related traumatic amputations having this as one of the diagnosis codes (Table A3.1.4).

Appendix Table 3.4: Industry sector and site of traumatic amputation for work-related traumatic hand and wrist amputation related hospitalisations, in Australia, 2002–2004

Industry sector	All work-related traumatic amputations	Proportion of all work-related traumatic amputations		
		Thumb	Other single finger	Two or more fingers alone
Agriculture, forestry & fishing	211	7.7%	8.3%	10.1%
Mining†	55		2.2%	3.5%
Manufacturing	454	16.5%	18.0%	21.4%
Construction	262	14.7%	9.5%	11.0%
Wholesale & retail trade	143	6.5%	6.4%	2.0%
Transport & storage	63	2.0%	2.9%	1.2%
Government administration & defence†	9		0.5%	
Health services†	5	0.0%	0.3%	
Other specified work for income	462	20.4%	18.4%	18.8%
Unspecified working for income	817	31.4%	33.5%	31.8%
Total	**2481**	**100.0%**	**100.0%**	**100.0%**

† Percentages not shown due to small case numbers, see note in data issues.
Note: There were small numbers of amputation cases that were not Thumb; Other single finger or two or more fingers alone.

A1.3.2 Burns

Selection criteria:[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Burns of wrist and hand **in any field***

Age and sex

There were 343 work-related hospitalisations with a hand and wrist injury diagnosis as the principal diagnosis and a hand and wrist burn diagnosis in any field. 86.3% of the 343 hand and wrist burn related hospitalisations were in males. Burns in females occurred at a slightly younger age and 42.6% occurred in the 15–24 year age bracket (Table A3.2.1)

Appendix Table 3.5: Sex and age group at admission for work-related hand and wrist burn related hospitalisations, in Australia, 2002–2004

Age group at admission (years)	Cases	Per cent		
		Males	Females	Persons
0–14[†]				
15–19	32	7.4%	21.3%	9.3%
20–24	59	16.6%	21.3%	17.2%
25–29	43	13.2%	8.5%	12.5%
30–34[†]	47			
35–39	52	16.2%	8.5%	15.2%
40–44	31	8.8%	10.6%	9.0%
45–49	43	13.2%	8.5%	12.5%
50–54	19	4.1%	14.9%	5.5%
55–59	9	3.0%	0.0%	2.6%
60–64	6	2.0%	0.0%	1.7%
65–69[†]				
Total	**343**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and/or percentages not shown due to small case numbers; see note in data issues..

Mechanism

Contact with heat and hot substances was the most common mechanism of injury for hand and wrist burn-related working for income related hospitalisations and comprised a greater proportion of all burn-related hand and wrist hospitalisations for females (51.1%) than for males (27.4%). Injury due to exposure to inanimate mechanical forces was relatively uncommon (12.8%) (Table A3.2.2).

[*] See data issues for further details on selection criteria.

Appendix Table 3.6: Mechanism of injury by sex for work-related hand and wrist burn related hospitalisations, in Australia, 2002–2004

Mechanism of injury	Cases	Per cent		
		Males	Females	Persons
Exposure to inanimate mechanical forces	44	12.5%	14.9%	12.8%
Contact with machinery	*33*	*8.8%*	*14.9%*	*9.6%*
Exposure to other & unspecified inanimate mechanical forces	*11*	*3.7%*	*0.0%*	*3.2%*
Exposure to electric transmission lines & current	76	23.6%	12.8%	22.2%
Exposure to smoke, fire & flames	64	19.9%	10.6%	18.7%
Contact with heat & hot substances	105	27.4%	51.1%	30.6%
Accidental poisoning†	39			
Other†	15			
Total	**343**	**100.0%**	**100.0%**	**100.0%**

† Cases and percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

An industrial and construction area was the most common area of occurrence of hand and wrist burns with 127 cases (37.0%). More than one quarter of burns in females occurred in a café, hotel and restaurant compared with only 7.4% of hand and wrist burns in males (Table A3.2.3).

Appendix Table 3.7: Place of occurrence by sex for work-related hand and wrist burn-related hospitalisations, in Australia, 2002–2004

Place of occurrence of injury	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
Home	15	0	15	5.1%	0.0%	4.4%
Trade & service area	40	20	60	13.5%	42.6%	17.5%
Café hotel & restaurant	22	13	35	7.4%	27.7%	10.2%
Other trade & service area	18	7	25	6.1%	14.9%	7.3%
Industrial & construction area	113	14	127	38.2%	29.8%	37.0%
Construction area	11	0	11	3.7%	0.0%	3.2%
Factory & plant	59	9	68	19.9%	19.1%	19.8%
Other & unspecified industrial & construction area	43	5	48	14.5%	10.6%	14.0%
Other specified place of occurrence	47	6	53	15.9%	12.8%	15.5%
Unspecified place of occurrence/no place code	81	7	88	27.4%	14.9%	25.7%
Total	**296**	**47**	**343**	**100.0%**	**100.0%**	**100.0%**

Industry sector

More than sixty per cent of hand and wrist burn related admissions had an 'other specified' (121, 35.3%) or 'unspecified' (88, 25.7%) industry code. Manufacturing was the specified industry with the highest number of hand and wrist burn related cases with 47 admissions (13.7%).

Diagnosis

Partial thickness burns were the most common type of burn in persons admitted for hand and wrist burn work-related hospitalisations. These were more common proportionally in males than females (Table A3.2.4).

Appendix Table 3.8: Hand and wrist burn diagnosis by sex for work-related hand and wrist burn related hospitalisations, in Australia, 2002–2004

Diagnosis	Cases			Per cent[‡]		
	Males	Females	Persons	Males	Females	Persons
Erythema[†] of wrist & hand	33	13	46	11.1%	27.7%	13.4%
Partial thickness burn of wrist & hand (i.e. blisters & epidermal loss)	132	17	149	44.6%	36.2%	43.4%
Full thickness burn of wrist & hand	82	9	91	27.7%	19.1%	26.5%
Burn of unspecified thickness of wrist & hand	59	8	67	19.9%	17.0%	19.5%

[†] Redness.
[‡] Per cent of all hand and wrist burns.
[§] A given separation can include more than one of the diagnoses listed.

A1.3.3 Nerve injury

Selection criteria:[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Nerve injury of wrist and hand **in any field***

Age and sex

There were 1888 work-related hospitalisations with a hand and wrist injury diagnosis as the principal diagnosis and a hand and wrist nerve injury in any diagnosis field. 87.4% of hospitalised work-related hand and wrist nerve injury was in males. Males and females had a similar profile. The peak for both males and females was in the 20–24 year age group (Table A3.3.1).

Appendix Table 3.9: Sex and age group at admission for work-related hand and wrist nerve injury related hospitalisations, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14[†]						
15–19	172	31	203	10.4%	13.0%	10.8%
20–24	302	41	343	18.3%	17.2%	18.2%
25–29	220	38	258	13.3%	16.0%	13.7%
30–34	239	34	273	14.5%	14.3%	14.5%
35–39	184	17	201	11.2%	7.1%	10.6%
40–44	166	27	193	10.1%	11.3%	10.2%
45–49	149	18	167	9.0%	7.6%	8.8%
50–54	113	12	125	6.8%	5.0%	6.6%
55–59	69	10	79	4.2%	4.2%	4.2%
60–64	21	6	27	1.3%	2.5%	1.4%
65–69[†]	9			0.5%		
70+[†]		0			0.0%	
Total	**1650**	**238**	**1888**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and percentages not shown due to small case numbers; see note in data issues.

Mechanism

The majority of work-related admissions due to hand and wrist nerve injury were due to exposure to inanimate mechanical forces (1,554, 82.3%). In males the most common specific mechanism was ‘Contact with knife, sword or dagger’ with 14.5% of admissions (239 cases), whereas in females ‘Contact with sharp glass’ and ‘Contact with knife, sword or dagger’ were most common with 20.6% of admissions (49 cases each) (Table A3.3.2).

[*] See data issues for further details on selection criteria.

Appendix Table 3.10: Mechanism of injury by sex for work-related hand and wrist nerve injury related hospitalisations, in Australia, 2002–2004

Mechanism of injury	Cases	Per cent		
		Males	Females	Persons
Exposure to inanimate mechanical forces	1554	83.1%	76.9%	82.3%
Striking against or struck by object	*62*	*3.5%*	*1.7%*	*3.3%*
Caught, crushed, jammed or pinched in or between door or other objects	*82*	*4.6%*	*2.5%*	*4.3%*
Contact with sharp glass	*162*	*6.8%*	*20.6%*	*8.6%*
Contact with knife, sword or dagger	*288*	*14.5%*	*20.6%*	*15.3%*
Contact with non-powered hand tool	*67*	*3.3%*	*5.0%*	*3.5%*
Contact with powered lawnmower & other powered hand tools & household machinery	*193*	*11.3%*	*2.5%*	*10.2%*
Contact with metalworking machinery[†]	*65*			
Contact with woodworking & forming machinery[†]	*129*			
Contact with other & unspecified machinery	*193*	*10.2%*	*10.5%*	*10.2%*
Foreign body or object entering through skin	*173*	*9.7%*	*5.5%*	*9.2%*
Exposure to other & unspecified inanimate mechanical forces	*140*	*7.5%*	*6.7%*	*7.4%*
Fall	56	3.1%	2.1%	3.0%
Overexertion & strenuous or repetitive movements	43	1.2%	9.7%	2.3%
Other & unspecified	235	12.6%	11.3%	12.4%
Total	**1888**	**100.0%**	**100.0%**	**100.0%**

[†] Percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

In males more than one third of hand and wrist work-related nerve injuries occurred in an industrial and construction area. However, in females, a trade and service area was the most common area of occurrence (Table A3.3.3).

Appendix Table 3.11: Place of occurrence by sex for work-related hand and wrist nerve injury related hospitalisations, in Australia, 2002–2004

Place of occurrence of injury	Cases	Per cent		
		Males	Females	Persons
Home[†]	29			
Institution & public administrative area	38	1.5%	5.5%	2.0%
Trade & service area	350	14.8%	44.5%	18.5%
Shop & store	*119*	*5.3%*	*13.0%*	*6.3%*
Cafe hotel & restaurant	*130*	*4.3%*	*24.8%*	*6.9%*
Other specified trade & service area	*54*	*2.8%*	*3.4%*	*2.9%*
Unspecified trade & service area	*47*	*2.4%*	*3.4%*	*2.5%*
Industrial & construction area	602	34.7%	12.6%	31.9%
Construction area	*90*	*5.3%*	*0.8%*	*4.8%*
Factory & plant	*285*	*16.1%*	*8.0%*	*15.1%*
Other specified industrial & construction area	*87*	*5.0%*	*2.1%*	*4.6%*
Unspecified industrial & construction area	*140*	*8.2%*	*1.7%*	*7.4%*
Farm[†]	55			
Other specified place of occurrence	95	5.1%	4.6%	5.0%
Unspecified place of occurrence/no place code	719	39.1%	31.1%	38.1%
Total	**1888**	**100.0%**	**100.0%**	**100.0%**

[†] Percentages not shown due to small case numbers; see note in data issues.

Industry sector

More than half of injuries occurred in an 'other specified' (384 cases) or 'unspecified' (663 cases) industry group. The construction industry was the industry with the highest number of injuries with 236 injuries (12.5%), followed by the manufacturing industry with 232 injuries (12.3%).

Diagnosis

More than half of hand and wrist nerve injury hospitalisations involved injury of the digital nerve of other finger (not thumb) (Table A3.3.4).

Appendix Table 3.12: Hand and wrist nerve diagnosis by sex for work-related hand and wrist nerve injury related hospitalisations, in Australia, 2002–2004

Diagnosis[§]	Cases			Per cent[‡]		
	Males	Females	Persons	Males	Females	Persons
Injury of ulnar nerve at wrist & hand level	210	33	243	12.7%	13.9%	12.9%
Injury of median nerve at wrist & hand level	94	14	108	5.7%	5.9%	5.7%
Injury of radial nerve at wrist & hand level	270	37	307	16.4%	15.5%	16.3%
Injury of digital nerve of thumb	239	29	268	14.5%	12.2%	14.2%
Injury of digital nerve of other finger (not thumb)	867	134	1,001	52.5%	56.3%	53.0%
Injury of multiple nerves at wrist & hand level	11	4	15	0.7%	1.7%	0.8%
Injury of other & unspecified nerves at hand & wrist level	37	10	47	2.2%	4.2%	2.5%

[‡] Per cent of all hand and wrist nerve injury

A1.3.4 Crush injury

Selection criteria:[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Crush injury of wrist and hand **in any field***

Age and sex

There were 698 work-related hospitalisations with a hand and wrist injury diagnosis as the principal diagnosis and a hand and wrist crush injury diagnosis in any diagnosis field. 90.8% of work-related hospitalisations with a hand and wrist crush injury were in males. Males and females had a similar age distribution, with females having a slightly higher mean age (38.8 years compared with 36.4 years) (Table A3.4.1).

Appendix Table 3.13: Sex and age group at admission for work-related hand and wrist crush injury, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14	0	0	0	0.0%	0.0%	0.0%
15–19	70	4	74	11.0%	6.3%	10.6%
20–24†	80	-	-	12.6%	-	-
25–29	69	9	78	10.9%	14.1%	11.2%
30–34	90	10	100	14.2%	15.6%	14.3%
35–39	81	5	86	12.8%	7.8%	12.3%
40–44	69	8	77	10.9%	12.5%	11.0%
45–49	62	13	75	9.8%	20.3%	10.7%
50–54	40	6	46	6.3%	9.4%	6.6%
55–59	36	4	40	5.7%	6.3%	5.7%
60–64†	23	-	-	3.6%	-	-
65–69	9	0	9	1.4%	0.0%	1.3%
70+	5	0	5	0.8%	0.0%	0.7%
Total	**634**	**64**	**698**	**100.0%**	**100.0%**	**100.0%**

† Cases and percentages not shown due to small case numbers, see note in data issues.

Mechanism

The majority of hand and wrist crush injury cases were due to exposure to inanimate mechanical forces, with 'Caught, crushed, jammed or pinched in or between other objects' being the most common type (179 cases) (Table A3.4.2).

[*] See data issues for further details on selection criteria.

Appendix Table 3.14: Mechanism of injury by sex for work-related hand and wrist crush injury related hospitalisations, in Australia, 2002–2004

Mechanism of injury	Cases	Per cent		
		Males	Females	Persons
Exposure to inanimate mechanical forces	565	81.1%	79.7%	80.9%
Caught, crushed, jammed or pinched in or between other objects	*179*	*26.2%*	*20.3%*	*25.6%*
Contact with other & unspecified machinery	*161*	*21.9%*	*34.4%*	*23.1%*
Contact with metalworking machinery	*46*	*7.3%*	*0.0%*	*6.6%*
Struck by thrown, projected or falling object	*41*	*6.5%*	*0.0%*	*5.9%*
Contact with lifting & transmission devices, not elsewhere classified†	*32*			
Caught, crushed, jammed or pinched in or between door	*21*	*2.1%*	*12.5%*	*3.0%*
Contact with agricultural machinery†	*18*			
Striking against or struck by other objects†	*15*			
Contact with woodworking & forming machinery†	*12*			
Contact with mining & earth drilling machinery	*10*	*1.6%*	*0.0%*	*1.4%*
Contact with non-powered hand tool	*9*	*1.4%*	*0.0%*	*1.3%*
Contact with other powered hand tools & household machinery†	*9*			
Contact with earthmoving, scraping & other excavating machinery	*7*	*1.1%*	*0.0%*	*1.0%*
Exposure to other & unspecified inanimate mechanical forces	*5*	*0.8%*	*0.0%*	*0.7%*
Transport accidents	16	2.5%	0.0%	2.3%
Other & unspecified mechanism of injury	117	16.4%	20.3%	16.8%
Total	**698**	**100.0%**	**100.0%**	**100.0%**

† Percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

An industrial and construction area was the most common place of occurrence for hand and wrist crush injury related admissions with more than half of the cases. Males and females had a similar distribution (Table A3.4.3).

Appendix Table 3.15: Place of occurrence by sex for work-related hand and wrist crush injury related hospitalisations, in Australia, 2002–2004

Place of occurrence of injury	Cases	Per cent		
		Males	Females	Persons
Trade & service area	50	6.8%	10.9%	7.2%
Industrial & construction area	350	50.9%	42.2%	50.1%
Construction area	*32*	*5.0%*	*0.0%*	*4.6%*
Factory & plant	*146*	*20.5%*	*25.0%*	*20.9%*
Mine & quarry	*25*	*3.9%*	*0.0%*	*3.6%*
Other specified industrial & construction area	*147*	*21.5%*	*17.2%*	*21.1%*
Farm	36	5.0%	6.3%	5.2%
Other specified place of occurrence	39	4.9%	12.5%	5.6%
Unspecified place of occurrence/no place code	223	32.3%	28.1%	31.9%
Total	**698**	**100.0%**	**100.0%**	**100.0%**

Industry sector

More than half of cases had an 'Other specified work for income' or 'Unspecified working for income' as the industry sector involved (398, 57.0%). Manufacturing was the most common specified industry with 105 admissions (15.0%), followed by the construction industry with 64 admissions (9.2%).

Diagnosis

The majority of crush injuries involved the thumb and other fingers. Involvement of the fingers and thumb was more common in males than females (Table A3.4.4).

Appendix Table 3.16: Hand and wrist crush diagnosis by sex for work-related hand and wrist crush injury related hospitalisations, in Australia, 2002–2004

Diagnosis	Cases	Per cent‡		
		Males	Females	Persons
Crush injury of thumb & other fingers	590	86.0%	70.3%	84.5%
Crush injury of other & unspecified parts of the hand	108	14.0%	29.7%	15.5%
Total	**698**	**100.0%**	**100.0%**	**100.0%**

‡ Per cent of all hand and wrist crush injury

A1.4 Selection by mechanism

A1.4.1 Metalworking machinery

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *W31.1 in the left most external cause (ExtCauseLeftStr)*

Age and sex

97.7% (558) of hand and wrist injury related working for income admissions with a mechanism of injury of 'Contact with metalworking machinery', were in males. The mean age of admission was 35.0 years (Table A4.1.1).

Appendix Table 4.1: Age group at admission for work-related hand and wrist injury with a mechanism of injury of contact with metalworking machinery, in Australia, 2002–2004

Age group at admission (years)	Cases
0–14	
15–19	76
20–24	84
25–29	75
30–34	60
35–39	65
40–44	57
45–49	52
50–54	45
55–59	36
60–64	14
65–69	
Total	**571**

Place of occurrence

The majority of work-related admissions for hand and wrist injury with a mechanism of injury of 'contact with metalworking machinery' occurred at a factory and plant (292, 51.1%). More than one fifth had an unspecified place or occurrence or no place code assigned (Table A4.1.1).

Appendix Table 4.2: Place of occurrence for work-related hand and wrist injury with a mechanism of injury of contact with metalworking machinery, in Australia, 2002–2004

Place of occurrence of injury	Cases	Per cent
Trade & service area	14	2.5%
Industrial & construction area	418	73.2%
Construction area	*14*	*2.5%*
Factory & plant	*292*	*51.1%*
Mine & quarry	*5*	*0.9%*
Other specified industrial & construction area	*25*	*4.4%*
Unspecified industrial & construction area	*82*	*14.4%*
Other specified place of occurrence	16	2.8%
Unspecified place of occurrence/no place code	123	21.5%
Total	**571**	**100.0%**

[*] See data issues for further details on selection criteria.

Industry sector

The manufacturing industry had the highest number of work-related hand and wrist injury admissions with a mechanism of injury of 'Contact with metalworking machinery' (254, 44.5%) (Table A4.1.3).

Appendix Table 4.3: Industry sector for work-related hand and wrist injury with a mechanism of injury of contact with metalworking machinery, in Australia, 2002–2004

Industry sector	Cases	Per cent
Agriculture & forestry & fishing	7	1.2%
Mining	5	0.9%
Manufacturing	254	44.5%
Construction	39	6.8%
Wholesale & retail trade†		
Transport & storage†		
Government administration & defence†		
Other specified work for income	87	15.2%
Unspecified working for income	173	30.3%
Total	**571**	**100.0%**

† Cases and percentages not shown due to small case numbers; see note in data issues.

Diagnosis

Open wound, fracture and traumatic amputation at wrist and hand level accounted for some 67.6% of all hand and wrist work-related injury admissions with a mechanism of injury of 'Contact with metalworking machinery' (Table A4.1.4).

Appendix Table 4.4: Principal diagnosis for work-related hand and wrist injury with a mechanism of injury of contact with metalworking machinery, in Australia, 2002–2004

Diagnosis	Cases	Per cent
Open wound of hand & wrist	136	23.8%
Open wound of finger(s) without damage to nail	*67*	11.7%
Open wound of finger(s) with damage to nail	*51*	8.9%
Other open wound of hand & wrist	*18*	3.2%
Fracture of hand & wrist	134	23.5%
Fracture of other finger (not thumb) distal phalanx	*64*	11.2%
Other fracture of hand & wrist	*70*	12.3%
Injury of nerves at wrist & hand level	36	6.3%
Injury of digital nerve of other finger (not thumb)	*17*	3.0%
Other injury of nerve at wrist & hand level	*19*	3.3%
Injury of blood vessels at wrist & hand level	14	2.5%
Injury of muscles & tendons at wrist & hand level	89	15.6%
Injury of extensor muscle & tendon of other finger at wrist & hand level	*47*	8.2%
Injury of extensor muscle & tendon of thumb at wrist & hand level	*18*	3.2%
Injury of other muscles & tendons at wrist & hand level	*24*	4.2%
Crush injury of hand & wrist	36	6.3%
Crushing injury of thumb & other finger(s)	*32*	5.6%
Crushing injury of other & unspecified parts of wrist & hand	*4*	0.7%
Traumatic amputation at hand & wrist level	116	20.3%
Traumatic amputation of other single finger (not thumb) (includes partial)	*80*	14.0%
Traumatic amputation of two or more fingers alone (includes partial)	*21*	3.7%
Traumatic amputation of thumb (includes partial)	*15*	2.6%
Other principal diagnosis	10	1.8%
Total	**571**	**100.0%**

A1.4.2 Contact with knife, sword or dagger

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *W26 in the left most external cause (ExtCauseLeftStr)*

Age and sex

86.2% of work-related hand and wrist injury admissions with a mechanism of injury of 'Contact with knife, sword or dagger' were in males. Males and females had a similar age profile (Table A4.2.1).

Appendix Table 4.5: Age group at admission by sex for work-related hand and wrist injury with a mechanism of injury of contact with knife, sword or dagger, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Females	Males	Persons
0–14[†]						
15–19	162	26	188	15.3%	15.3%	15.3%
20–24	242	33	275	22.8%	19.4%	22.3%
25–29	181	25	206	17.0%	14.7%	16.7%
30–34	136	24	160	12.8%	14.1%	13.0%
35–39	89	13	102	8.4%	7.6%	8.3%
40–44	104	13	117	9.8%	7.6%	9.5%
45–49	58	14	72	5.5%	8.2%	5.8%
50–54	41	10	51	3.9%	5.9%	4.1%
55–59	34	6	40	3.2%	3.5%	3.2%
60–64	10	5	15	0.9%	2.9%	1.2%
65+[†]						
Total	**1062**	**170**	**1232**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

In females, half of all hand and wrist injury admissions with a mechanism of injury of 'Contact with knife, sword or dagger' occurred in a trade and service area. More than one quarter of 'Contact with knife, sword or dagger' injuries in males occurred in an industrial and construction area (Table A4.2.2).

[*] See data issues for further details on selection criteria.

Appendix Table 4.6: Place of occurrence by sex for work-related hand and wrist injury with a mechanism of injury of contact with knife, sword or dagger, in Australia, 2002–2004

	Cases			Per cent		
Place of occurrence of injury	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Trade & service area	385	85	470	36.3%	50.0%	38.1%
Shop & store	*168*	*21*	*189*	*15.8%*	*12.4%*	*15.3%*
Café hotel & restaurant	*125*	*46*	*171*	*11.8%*	*27.1%*	*13.9%*
Other specified trade & service area	*50*	*6*	*56*	*4.7%*	*3.5%*	*4.5%*
Unspecified trade & service area	*42*	*12*	*54*	*4.0%*	*7.1%*	*4.4%*
Industrial & construction area	290	23	313	27.3%	13.5%	25.4%
Construction area[†]	*23*			*2.2%*		
Factory & plant	*179*	*15*	*194*	*16.9%*	*8.8%*	*15.7%*
Other & unspecified industrial & construction area[†]	*88*			*8.3%*		
Farm[†]	46			4.3%		
Countryside	13	0	13	1.2%	0.0%	1.1%
Other specified place of occurrence	88	21	109	8.3%	12.4%	8.8%
Unspecified place of occurrence/no place code	240	39	279	22.6%	22.9%	22.6%
Total	**1062**	**170**	**1232**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and percentages not shown due to small case numbers; see note in data issues.

Industry sector

The majority of work-related hand and wrist injury hospitalisations due to contact with a knife, sword or dagger occurred in the 'Other specified work for income ' and 'Unspecified working for income' categories (601, 48.8%). More than one quarter of hand and wrist work-related injury admissions due to contact with a knife, sword or dagger occurred in the wholesale and retail trade industry.

Diagnosis

Open wound (469, 38.1%) and injury of muscle and tendon (412, 33.4%) were the two most common diagnosis groupings for hand and wrist work injury related hospitalisations due to contact with knife, sword or dagger. Males and females had a similar profile (Table A4.2.3).

Appendix Table 4.7: Principal diagnosis by sex for work-related hand and wrist injury with a mechanism of injury of contact with knife, sword or dagger, in Australia, 2002–2004

	Cases			Per cent		
Diagnosis	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Open wound of hand & wrist	398	71	469	37.5%	41.8%	38.1%
Open wound of finger(s) without damage to nail	*253*	*46*	*299*	*23.8%*	*27.1%*	*24.3%*
Open wound of finger(s) with damage to nail	*45*	*9*	*54*	*4.2%*	*5.3%*	*4.4%*
Other open wound of wrist & hand	*100*	*16*	*116*	*9.4%*	*9.4%*	*9.4%*
Fracture of wrist & hand†	11			1.0%		
Injury of nerves at wrist & hand level	174	37	211	16.4%	21.8%	17.1%
Injury of digital nerve of thumb	*28*	*5*	*33*	*2.6%*	*2.9%*	*2.7%*
Injury of other nerves at wrist & hand level	*146*	*32*	*178*	*13.7%*	*18.8%*	*14.4%*
Injury of blood vessels at wrist & hand level	51	10	61	4.8%	5.9%	5.0%
Injury of muscle & tendon at wrist & hand level	376	36	412	35.4%	21.2%	33.4%
Injury of flexor muscle & tendon of other finger at wrist & hand level	*75*	*6*	*81*	*7.1%*	*3.5%*	*6.6%*
Injury of extensor muscle & tendon of thumb at wrist & hand level	*116*	*12*	*128*	*10.9%*	*7.1%*	*10.4%*
Injury of extensor muscle & tendon of other finger at wrist & hand level	*126*	*14*	*140*	*11.9%*	*8.2%*	*11.4%*
Injury of other muscles & tendons at wrist & hand level	*59*	*4*	*63*	*5.6%*	*2.4%*	*5.1%*
Traumatic amputation at wrist & hand level	45	10	55	4.2%	5.9%	4.5%
Traumatic amputation of other single finger	*37*	*10*	*47*	*3.5%*	*5.9%*	*3.8%*
Other traumatic amputation at wrist & hand level	*8*	*0*	*8*	*0.8%*	*0.0%*	*0.6%*
Other injury of wrist & hand†	7			0.7%		
Total	**1062**	**170**	**1232**	**100.0%**	**100.0%**	**100.0%**

† Cases and percentages not shown due to small case numbers; see note in data issues.

A1.4.3 Contact with non-powered hand tool

Selection criteria[*]

- *Hand and wrist diagnosis in diag1 field*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *W27 in the left most external cause (ExtCauseLeftStr)*

Age and sex

87.8% of hand and wrist work injury related admissions with a mechanism of injury 'Contact with non-powered hand tool' were in males. There was a similar age distribution for males and females (Table A4.3.1).

Appendix Table 4.8: Age group at admission by sex for work-related hand and wrist injury with a mechanism of injury of contact with non-powered hand tool, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14						
15–19	49	6	55	9.4%	8.2%	9.2%
20–24	88	9	97	16.8%	12.3%	16.2%
25–29	83	12	95	15.8%	16.4%	15.9%
30–34	84	12	96	16.0%	16.4%	16.1%
35–39	48	11	59	9.2%	15.1%	9.9%
40–44	66	7	73	12.6%	9.6%	12.2%
45–49	42	8	50	8.0%	11.0%	8.4%
50–54[†]	36			6.9%		
55–59[†]	19			3.6%		
60+[†]	9			1.7%		
Total	**524**	**73**	**597**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

Almost one third of hand and wrist work-related admissions with a mechanism of injury of 'Contact with a non-powered hand tool' occurred at an industrial and construction area and a factory and plant was the most common site. A higher proportion occurred at a trade and service area in females than in males (Table A4.3.2).

[*] See data issues for further details on selection criteria.

Appendix Table 4.9: Place of occurrence by sex for work-related hand and wrist injury with a mechanism of injury of contact with non-powered hand tool, in Australia, 2002–2004

Place of occurrence of injury	Cases	Per cent		
		Males	Females	Persons
School, other specified institution & public administrative area	43	2.5%	41.1%	7.2%
Trade & service area	67	9.9%	20.5%	11.2%
Shop & store	*25*	*3.2%*	*11.0%*	*4.2%*
Other trade & service area	*42*	*6.7%*	*9.6%*	*7.0%*
Industrial & construction area	176	32.4%	8.2%	29.5%
Construction area	*28*	*5.3%*	*0.0%*	*4.7%*
Factory & plant[†]	*78*			
Other specified industrial & construction area	*31*	*5.9%*	*0.0%*	*5.2%*
Unspecified industrial & construction area[†]	*39*			
Farm[†]	35			
Other specified place of occurrence	51	8.6%	8.2%	8.5%
Unspecified place of occurrence/no place code	225	40.5%	17.8%	37.7%
Total	**597**	**100.0%**	**100.0%**	**100.0%**

[†] Cases and percentages not shown due to small case numbers; see note in data issues.

Industry sector

Almost half (49.2%) of hand and wrist work-related admissions with a mechanism of injury of 'Contact with a non-powered hand tool' occurred in the other specified work for income (126, 21.1%) or unspecified working for income (168, 28.1%) categories. The construction industry was the most common specified industry (86, 14.4%).

Diagnosis

Open wound was the most common type of injury for hand and wrist work-related hospitalisations with a mechanism of injury of 'Contact with non-powered hand tool'. Females had a lower proportion of fractures and traumatic amputations than males but a higher proportion of nerve injury (Table A4.3.3).

Appendix Table 4.10: Principal diagnosis by sex for work-related hand and wrist injury with a mechanism of injury of contact with non-powered hand tool, in Australia, 2002–2004

Diagnosis	Cases	Per cent		
		Males	Females	Persons
Open wound of wrist & hand	238	40.3%	37.0%	39.9%
Open wound of finger(s) without damage to nail	*127*	*20.2%*	*28.8%*	*21.3%*
Open wound of finger(s) with damage to nail	*48*	*8.4%*		
Other open wound of wrist & hand†	*63*	*11.6%*		
Fracture of wrist & hand†	73	13.4%		
Fracture of other finger (not thumb) distal phalanx†	*37*	*6.7%*		
Other fracture of wrist & hand†	*36*	*6.7%*		
Injury of nerves at wrist & hand level	43	6.5%	12.3%	7.2%
Injury of muscle & tendon at wrist & hand level	113	20.0%	11.0%	18.9%
Injury of extensor muscle & tendon of thumb at wrist & hand level†	*40*	*7.3%*		
Injury of extensor muscle & tendon of other finger (not thumb) at wrist & hand level†	*47*	*8.4%*		
Other injury of muscle & tendon at wrist & hand level†	*26*	*4.4%*		
Traumatic amputation at wrist & hand level	63	11.3%	5.5%	10.6%
Traumatic amputation of other single finger (not thumb) †	*43*	*7.6%*		
Other traumatic amputation at wrist & hand level†	*20*	*3.6%*		
Other injury of wrist & hand	67	8.6%	30.1%	11.2%
Total	**597**	**100.0%**	**100.0%**	**100.0%**

† Cases and percentages not shown due to small case numbers; see note in data issues.

A1.4.4 Contact with other powered hand tools and household machinery (excluding powered lawnmower)

*Selection criteria:**

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *W29 in the left most external cause (ExtCauseLeftStr)*

Age and sex

There were 1461 admissions with a mechanism of injury of 'Contact with other powered hand tools and household machinery' (not powered lawnmower), with the majority of these in males (95.4%) (Table A4.4.1).

Appendix Table 4.11: Age group at admission by sex for work-related hand and wrist injury with a mechanism of injury of contact with other powered hand tools and household machinery (excluding powered lawnmower), in Australia, 2002–2004

Age group at admission (years)	Cases	Per cent		
		Males	Females	Persons
0–14	0	0.0%	0.0%	0.0%
15–19	168	11.0%	20.9%	11.5%
20–24	282	19.7%	11.9%	19.3%
25–29	193	13.5%	7.5%	13.2%
30–34	160	10.9%	11.9%	11.0%
35–39	141	9.7%	9.0%	9.7%
40–44	165	11.0%	16.4%	11.3%
45–49	118	8.0%	9.0%	8.1%
50–54	86	5.8%	7.5%	5.9%
55–59†	78			
60-64†	48			
65-69	11	0.8%	0.0%	0.8%
70+	11	0.8%	0.0%	0.8%
Total	**1461**	**100.0%**	**100.0%**	**100.0%**

† Percentages not shown due to small case numbers; see note in data issues.

Place of occurrence

The most common place of occurrence in males for hand and wrist injury related hospitalisations due to contact with other powered hand tools and household machinery was an industrial and construction area (41.9%), whereas for females the most common place of occurrence was a trade and service area (43.3%). Almost forty per cent occurred at an unspecified place of occurrence (Table A4.4.2).

* See data issues for further details on selection criteria.

Appendix Table 4.12: Place of occurrence by sex for work-related hand and wrist injury with a mechanism of injury of contact with other powered hand tools and household machinery (excluding powered lawnmower), in Australia, 2002–2004

	Cases			Per cent		
Place of occurrence of injury	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Home	27	0	27	1.9%	0.0%	1.8%
Trade & service area	103	29	132	7.4%	43.3%	9.0%
Shop & store	*46*	*15*	*61*	*3.3%*	*22.4%*	*4.2%*
Other & unspecified trade & service area	*57*	*14*	*71*	*4.1%*	*20.9%*	*4.9%*
Industrial & construction area	584	19	603	41.9%	28.4%	41.3%
Construction area	*161*	*4*	*165*	*11.5%*	*6.0%*	*11.3%*
Factory & plant	*192*	*9*	*201*	*13.8%*	*13.4%*	*13.8%*
Other & unspecified industrial & construction area	*231*	*6*	*237*	*16.6%*	*9.0%*	*16.2%*
Farm	21	0	21	1.5%	0.0%	1.4%
Other specified place of occurrence	93	7	100	6.7%	10.4%	6.8%
Unspecified place of occurrence/no place code	566	12	578	40.6%	17.9%	39.6%
Total	**1394**	**67**	**1461**	**100.0%**	**100.0%**	**100.0%**

Industry sector

The construction industry had the highest proportion of admissions due to contact with other powered hand tools and household machinery (not powered lawnmower) that were specified to a specific industry (288, 26.6%). Half of all hand and wrist injury admissions due to contact with other powered hand tools and household machinery occurred in 'other specified work for income' and 'unspecified working for income' categories.

Diagnosis

Almost forty per cent of hand and wrist related work admissions due to contact with a powered hand tool or household machinery (excluding lawnmower) were due to open wounds (564 admissions). Female and males had a similar pattern (Table A4.4.3).

Appendix Table 4.13: Principal diagnosis by sex for work-related hand and wrist injury with a mechanism of injury of contact with other powered hand tools and household machinery (excluding powered lawnmower), in Australia, 2002–2004

Diagnosis	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
Open wound of hand & wrist	532	32	564	38.2%	47.8%	38.6%
Open wound of finger(s) without damage to nail	*274*	*19*	*293*	19.7%	28.4%	20.1%
Open wound of finger(s) with damage to nail†			*134*			9.2%
Other open wound of wrist & hand†			*137*			9.4%
Fracture of wrist & hand	225	12	237	16.1%	17.9%	16.2%
Fracture of other finger distal phalanx	*78*	*8*	*86*	5.6%	11.9%	5.9%
Fracture of other parts of wrist & hand	*147*	*4*	*151*	10.5%	6.0%	10.3%
Injury of nerves at wrist & hand level	113	5	118	8.1%	7.5%	8.1%
Injury of digital nerve of other finger†			*54*			3.7%
Injury of other nerves at wrist & hand level†			*64*			4.4%
Injury of blood vessels at wrist & hand level	26	0	26	1.9%	0.0%	1.8%
Injury of muscle & tendon at wrist & hand level	227	4	231	16.3%	6.0%	15.8%
Injury of extensor muscle & tendon of other finger at wrist & hand level†			*118*			8.1%
Injury of other muscles & tendons at wrist & hand level†			*113*			7.7%
Traumatic amputation at wrist & hand level	239	9	248	17.1%	13.4%	17.0%
Traumatic amputation of other single finger (includes partial)	*142*	*6*	*148*	10.2%	9.0%	10.1%
Traumatic amputation of thumb (includes partial) †			*57*			3.9%
Other traumatic amputation at wrist & hand level†			*43*			2.9%
Other injury of wrist & hand	32	5	37	2.3%	7.5%	2.5%
Total	**1394**	**67**	**1461**	**100.0%**	**100.0%**	**100.0%**

† Numbers not shown due to small case numbers, see note in data issues.

A1.5 Selection by place of injury

A1.5.1 Café, hotel and restaurant

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Y92.53 in the left most place code (PlaceLeftStr)*

Age and sex

There was a more even sex distribution amongst work-related hand and wrist injury admissions occurring at a 'Café, hotel and restaurant', with 65.5% occurring in males, compared with 90.9% for all working for income related hand and wrist injury admissions. More than sixty per cent of work-related hand and wrist injury hospitalisations occurring at a 'Café, hotel and restaurant' occurred in the 15–29 year age bracket (Table A5.1.1).

Appendix Table 5.1: Age group at admission by sex for work-related hand and wrist injury with a place of occurrence of Café, hotel & restaurant, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14[†]						
15–19	57	36	93	15.6%	18.7%	16.6%
20–24	104	54	158	28.4%	28.0%	28.3%
25–29	58	35	93	15.8%	18.1%	16.6%
30–34	46	15	61	12.6%	7.8%	10.9%
35–39	31	11	42	8.5%	5.7%	7.5%
40–44	29	14	43	7.9%	7.3%	7.7%
45–49	21	11	32	5.7%	5.7%	5.7%
50–54	13	7	20	3.6%	3.6%	3.6%
55–59[†]			7			1.3%
60–64[†]			7			1.3%
65–69[†]						
Total	**366**	**193**	**559**	**100.0%**	**100.0%**	**100.0%**

[†] Numbers and percentages not shown due to small case numbers, see note in data issues.

Industry sector

Wholesale and retail trade was the most common industry amongst work-related hand and wrist injury admissions occurring at a 'Café, hotel and restaurant' with 234 admissions (41.9%). There were 292 admissions (52.2%) with an 'Other specified work for income' industry code (Table A5.1.2).

Mechanism

Contact with knife, sword or dagger was the most common mechanism of injury and accounted for 30.6% of all hand and wrist work-related injury admissions which occurred in a 'Café, hotel and restaurant'. 'Assault' (33, 5.9%) and 'Contact with heat and hot substances' (27, 4.8%) were much more common in injuries occurring at a 'Café, hotel and restaurant', than for all hand and wrist work-related injury hospitalisations (Table A5.1.2).

[*] See data issues for further details on selection criteria.

Appendix Table 5.2: Mechanism of injury by sex for work-related hand and wrist injury with a place of occurrence of Café, hotel & restaurant, in Australia, 2002–2004

		Per cent		
Mechanism of injury	**Cases**	**Males**	**Females**	**Persons**
Exposure to inanimate mechanical forces	441	76.8%	82.9%	78.9%
Contact with knife, sword or dagger	*171*	*34.2%*	*23.8%*	*30.6%*
Contact with sharp glass	*103*	*16.9%*	*21.2%*	*18.4%*
Foreign body or object entering through skin	*41*	*6.6%*	*8.8%*	*7.3%*
Contact with other & unspecified machinery	*57*	*6.6%*	*17.1%*	*10.2%*
Exposure to other & unspecified inanimate mechanical forces	*69*	*12.6%*	*11.9%*	*12.3%*
Assault	33	9.0%	0.0%	5.9%
Contact with heat & hot substances	27	5.2%	4.1%	4.8%
Fall	25	2.5%	8.3%	4.5%
Other & unspecified mechanism	33	6.6%	4.7%	5.9%
Total	**559**	**100.0%**	**100.0%**	**100.0%**

Month and day of admission

There was a much more even spread of cases across the day of the week and month of year with hand and wrist work-related injuries that occurred at a 'Café, hotel and restaurant' than for all hand and wrist hospitalised injuries. The peak month of admission was January and the peak day of admission was Tuesday (Table A5.1.3).

Appendix Table 5.3: Month and day of admission for work-related hand and wrist injury with a place of occurrence of Café, hotel & restaurant, in Australia, 2002–2004

Month of admission	**Day of admission**							
	Sun	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Total**
January	1.3%	1.6%	1.3%	0.9%	2.9%	1.4%	1.1%	**10.4%**
February	0.7%	0.7%	1.3%	1.1%	1.3%	1.4%	1.1%	**7.5%**
March	0.9%	1.3%	1.6%	0.9%	0.5%	1.8%	1.4%	**8.4%**
April	0.7%	0.7%	0.9%	1.1%	1.8%	1.8%	1.4%	**8.4%**
May	1.1%	0.9%	2.0%	1.8%	1.8%	1.4%	1.1%	**10.0%**
June	0.9%	0.7%	0.9%	1.1%	0.9%	1.6%	0.7%	**6.8%**
July	0.9%	1.1%	2.1%	1.1%	0.4%	1.3%	1.6%	**8.4%**
August	0.7%	0.9%	1.1%	0.4%	0.2%	0.9%	2.1%	**6.3%**
September	0.7%	1.1%	1.4%	2.3%	0.2%	1.1%	1.1%	**7.9%**
October	1.6%	0.4%	1.1%	1.8%	0.7%	1.1%	0.9%	**7.5%**
November	1.3%	1.6%	2.0%	1.3%	0.5%	1.1%	1.1%	**8.8%**
December	1.1%	2.1%	1.4%	1.6%	1.8%	0.9%	0.7%	**9.7%**
Total	**11.8%**	**13.1%**	**17.0%**	**15.2%**	**12.9%**	**15.7%**	**14.3%**	**100.0%**

Diagnosis

29.0% of all work-related hand and wrist injuries that occurred at a 'Café, hotel and restaurant' were open wounds (162 cases). Injury of muscles and tendons was also common (136 cases, 24.3%) (Table A5.1.4).

Appendix Table 5.4: Principal diagnosis by sex for work-related hand and wrist injury with a place of occurrence of Café, hotel & restaurant, in Australia, 2002–2004

	Cases			Per cent		
Diagnosis	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Open wound	108	54	162	29.5%	28.0%	29.0%
Open wound of finger(s) without damage to nail	*61*	*33*	*94*	*16.7%*	*17.1%*	*16.8%*
Open wound of other parts of wrist & hand	*18*	*11*	*29*	*4.9%*	*5.7%*	*5.2%*
Open wound of finger(s) with damage to nail†	*16*			*4.4%*		
Other open wound†	*13*			*3.6%*		
Fracture of wrist & hand	46	15	61	12.6%	7.8%	10.9%
Injury of nerves at wrist & hand level	45	47	92	12%	24%	16%
Injury of digital nerve of other finger	*24*	*29*	*53*	*6.6%*	*15.0%*	*9.5%*
Injury of other nerves at wrist & hand level	*21*	*18*	*39*	*5.7%*	*9.3%*	*7.0%*
Injury of blood vessels at wrist & hand level	16	6	22	4.4%	3.1%	3.9%
Injury of muscles & tendons at wrist & hand level	100	36	136	27.3%	18.7%	24.3%
Injury of flexor muscle & tendon of other finger at wrist & hand level	24	9	33	6.6%	4.7%	5.9%
Injury of extensor muscle & tendon of thumb at wrist & hand level	25	10	35	6.8%	5.2%	6.3%
Injury of extensor muscle & tendon of other finger at wrist & hand level	35	11	46	9.6%	5.7%	8.2%
Injury of other muscles & tendons at wrist & hand level	16	6	22	4.4%	3.1%	3.9%
Traumatic amputation at wrist & hand level	21	15	36	5.7%	7.8%	6.4%
Traumatic amputation of other single finger†	16			4.4%		
Other traumatic amputation at wrist & hand level†	5			1.4%		
Burn of wrist & hand	22	13	35	6.0%	6.7%	6.3%
Other	8	7	15	2.2%	3.6%	2.7%
Total	**366**	**193**	**559**	**100.0%**	**100.0%**	**100.0%**

† Numbers and percentages not shown due to small case numbers, see note in data issues.

A1.5.2 Factory and plant

Selection criteria[*]

- *Hand and wrist diagnosis in diag1*
- *While working for income (U73.0)*
- *July 2002 to June 2004*
- *Y92.62 in the left most place code (PlaceLeftStr)*

Age and sex

The majority (93.3%) of hand and wrist hospitalised work-related injuries that occurred at a factory were in males. The peak number of hospitalisations was in the 20–24 year old age group (14.6%) (Table A5.2.1).

Appendix Table 5.5: Age group at admission by sex for work-related hand and wrist injury with a place of occurrence of a factory and plant, in Australia, 2002–2004

Age group at admission (years)	Cases			Per cent		
	Males	Females	Persons	Males	Females	Persons
0–14[†]						
15–19	289	10	299	10.5%	5.1%	10.2%
20–24	408	21	429	14.9%	10.6%	14.6%
25–29	372	22	394	13.6%	11.1%	13.4%
30–34	366	21	387	13.3%	10.6%	13.2%
35–39	302	23	325	11.0%	11.6%	11.1%
40–44	309	34	343	11.3%	17.2%	11.7%
45–49	258	23	281	9.4%	11.6%	9.6%
50–54	198	22	220	7.2%	11.1%	7.5%
55–59	143	17	160	5.2%	8.6%	5.4%
60–64[†]	62			2.3%		
65–69[†]	26			0.9%		
70–74[†]		0			0.0%	
Total	**2742**	**198**	**2940**	**100.0%**	**100.0%**	**100.0%**

[†] Numbers and/or percentages not shown due to small case numbers, see note in data issues.

Industry sector

The majority of persons with a hand and wrist injury admission with a place of occurrence of a factory or plant were in the manufacturing industry (1674, 56.9%) (Table A5.2.2)

[*] See data issues for further details on selection criteria.

Appendix Table 5.6: Industry sector by sex for work-related hand and wrist injury with a place of occurrence of a factory and plant, in Australia, 2002–2004

Industry sector	Cases	Per cent		
		Males	Females	Persons
Agriculture & forestry & fishing	88	3.0%	3.5%	3.0%
Mining	13	0.5%	0.0%	0.4%
Manufacturing	1674	56.7%	60.6%	56.9%
Construction†	165			
Wholesale & retail trade	148	5.0%	6.1%	5.0%
Transport & storage	54	2.0%	0.0%	1.8%
Government administration & defence†			0.0%	
Health services†				
Other specified work for income	452	15.4%	14.6%	15.4%
Unspecified working for income	340	11.5%	13.1%	11.6%
Total	**2940**	**100.0%**	**100.0%**	**100.0%**

† Numbers and/or percentages not shown due to small case numbers, see note in data issues.

Mechanism

Exposure to inanimate mechanical forces (92.0%) was the most common mechanism of injury in persons hospitalised due to work-related hand and wrist injury that occurred in a factory or plant (Table A5.2.3).

Appendix Table 5.7: Mechanism of injury by sex for work-related hand and wrist injury with a place of occurrence of a factory and plant, in Australia, 2002–2004

Mechanism of injury	Cases	Per cent		
		Males	Females	Persons
Struck by thrown, projected or falling object	114	4.0%	2.0%	3.9%
Caught, crushed, jammed or pinched in or between other objects	311	11.3%	6.6%	11.0%
Caught, crushed, jammed or pinched in or between door†	10			
Striking against or struck by other objects†	47			
Contact with lifting & transmission devices, not elsewhere classified	93	3.2%	3.0%	3.2%
Contact with sharp glass	52	1.8%	2.0%	1.8%
Contact with knife, sword or dagger	194	6.5%	7.6%	6.6%
Contact with non-powered hand tool†	78			
Contact with powered lawn mower or other powered hand tools & household machinery	205	7.1%	4.5%	7.0%
Contact with metalworking machinery	292	10.3%	4.5%	9.9%
Contact with woodworking & forming machinery	286	10.1%	5.1%	9.7%
Contact with other & unspecified machinery	681	21.5%	46.0%	23.2%
Foreign body or object entering through skin	216	7.5%	5.1%	7.3%
Exposure to other & unspecified inanimate mechanical forces	114	4.0%	2.5%	3.9%
Other & unspecified	234	7.9%	8.6%	8.0%
Total	**2940**	**100.0%**	**100.0%**	**100.0%**

† Percentages not shown due to small case numbers, see note in data issues.

Diagnosis

Three diagnosis groups accounted for 67.0% of all hand and wrist work-related injury hospitalisations that occurred in a factory and plant; and these groupings were: open wounds (767, 26.1%), fractures (632, 21.5%) and amputations (571, 19.4%). Males and females had a similar profile (Table A5.2.4).

Appendix Table 5.8: Principal diagnosis by sex for work-related hand and wrist injury with a place of occurrence of a factory and plant, in Australia, 2002–2004

	Cases			Per cent		
Diagnosis	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Superficial injury of wrist & hand	43	10	53	1.6%	5.1%	1.8%
Open wound of wrist & hand	718	49	767	26.2%	24.7%	26.1%
Open wound of finger(s) without damage to nail	*357*	*27*	*384*	*13.0%*	*13.6%*	*13.1%*
Open wound of finger(s) with damage to nail	*227*	*11*	*238*	*8.3%*	*5.6%*	*8.1%*
Open wound of other parts of wrist & hand	*134*	*11*	*145*	*4.9%*	*5.6%*	*4.9%*
Fracture of wrist & hand	583	49	632	21.3%	24.7%	21.5%
Fracture of other finger (not thumb) distal phalanx	*280*	*20*	*300*	*10.2%*	*10.1%*	*10.2%*
Other fracture of wrist & hand	*303*	*29*	*332*	*11.1%*	*14.6%*	*11.3%*
Dislocation & sprain & strain of wrist & hand	42	4	46	1.5%	2.0%	1.6%
Nerve injury of hand & wrist	174	11	185	6.3%	5.6%	6.3%
Injury of digital nerve of other finger	*97*	*6*	*103*	*3.5%*	*3.0%*	*3.5%*
Injury of other nerves of hand & wrist	*77*	*5*	*82*	*2.8%*	*2.5%*	*2.8%*
Blood vessel injury of hand & wrist[†]	73			2.7%		
Injury of muscles & tendons at wrist & hand level	401	17	418	14.6%	8.6%	14.2%
Injury of extensor muscle & tendon of other finger at wrist & hand level	*217*	*8*	*225*	*7.9%*	*4.0%*	*7.7%*
Injury of other muscles & tendons at wrist & hand level	*184*	*9*	*193*	*6.7%*	*4.5%*	*6.6%*
Crushing injury of hand & wrist	103	14	117	3.8%	7.1%	4.0%
Traumatic amputation of hand & wrist	538	33	571	19.6%	16.7%	19.4%
Traumatic amputation of other single finger	*377*	*25*	*402*	*13.7%*	*12.6%*	*13.7%*
Other traumatic amputation of hand & wrist	*161*	*8*	*169*	*5.9%*	*4.0%*	*5.7%*
Burn of hand & wrist[†]	49	4	53	1.8%	2.0%	1.8%
Other injury[†]	18			0.7%		
Total	**2742**	**198**	**2940**	**100.0%**	**100.0%**	**100.0%**

[†] Numbers and/or percentages not shown due to small case numbers, see note in data issues.

A1.6 Data issues

Inclusion criteria

Records that met the following criteria are included in this report:

- Australian hospital separations that had a date of separation between 1 July 2002 and 30 June 2004, coded with third edition of ICD-10-AM (National Centre for Classification in Health 2002).
- Cases coded as while working for income (U73.0)
- Mode of admission excluding cases where transfer from another acute-care hospital has occurred (excluding length of stay calculations – see below)
- Wrist and hand injury as outlined below (excluding comparison tables of chapter 1) (Table A6.1).

Appendix Table 6.1: Case inclusion codes for hand and wrist injury hospitalisations

ICD-10-AM code	Diagnosis
S60	Superficial injury of wrist and hand
S61	Open wound of wrist and hand
S62	Fracture at wrist and hand level
S63	Dislocation, sprain and strain of joints and ligaments at wrist and hand level
S64	Injury of nerves at wrist and hand level
S65	Injury of blood vessels at wrist and hand level
S66	Injury of muscle and tendon at wrist and hand level
S67	Crushing injury of wrist and hand
S68	Traumatic amputation of wrist and hand
S69	Other and unspecified injuries of wrist and hand
T23	Burn of wrist and hand
T33.5[§]	Superficial frostbite of wrist and hand
T34.5[§]	Frostbite with tissue necrosis of wrist and hand
T05.0[§]	Traumatic amputation of both hands
T05.1[§]	Traumatic amputation of one hand and other arm [any level, except hand]
T05.2[§]	Traumatic amputation of both arms [any level]
T05.6[§]	Traumatic amputation of upper and lower limbs in any combination
T11.6[§]	Traumatic amputation of upper limb, level unspecified

[§] There were no cases with any of these diagnoses.
Codes are from the third edition of ICD-10-AM. (National Centre for Classification in Health 2002).

Appendix Table 6.2: Selection criteria for hand and wrist injury hospitalisations, in Australia, 2002–2004

Records occurring from 1 July 2002 to 30 June 2004	Males	Females	Persons
Records with an ICD-10-AM 'While working' (U73.0 & U73.1)	64 978	21 559	86 537
Records with an ICD-10-AM 'While working for income' (U73.0)	47 099	8393	55 492
Records with an ICD-10-AM 'While working for income' (U73.0) & excluding cases transferred from another acute care hospital	43 822	7956	51 778
Records with an ICD-10-AM 'While working for income' (U73.0), excluding cases transferred from another acute care hospital & with a 'Hand or wrist injury'[†] in any field	17 725	1907	19 632
Records with an ICD-10-AM 'While working for income' (U73.0), excluding cases transferred from another acute care hospital & with a 'Hand or wrist injury'[†] in diag1	15 197	1515	16 712

[†] Only includes the codes as outlined in Table A6.1 above.

Exclusion criteria

- Sequelae have not been included (T90–T98). These are small in number (<4 cases with injury diagnosis). Additionally, most (except for T92.2) do not specify the hand and wrist as separate from upper limb.
- Injuries involving multiple body regions have not been included (e.g. T00.2).
- Injuries of upper limb that are not specified to hand and wrist have not been included (i.e. T11, T35.4, T69.0)
- Traumatic ischaemia of muscle (compartment syndrome) (T79.6) has not been included as this has not been specified to region.
- Complications peculiar to reattachment and amputation (T87.0) as this has only been specified to upper limb.
- Codes not specific to injury have not been included (e.g. the M codes).

Small case numbers

Case numbers of 4 or less have been suppressed in order to protect confidentiality and due to difficulty in interpretation of small case numbers. Percentages calculated from small case numbers have also been suppressed. Sometimes the total and other cells are also suppressed so that small case numbers cannot be calculated.

Length of stay

Mean length of stay has been calculated by dividing bed days (including inward transfers) by the case count (excluding inward transfers). Including inward transfers for the numerator allows a more accurate estimation of length of stay to be calculated.

References

National Centre for Classification in Health (2002) The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification, (ICD–10–AM), third edition: University of Sydney.

National Health Data Committee (2003) National Health Data Dictionary, Version 12. AIHW cat. no. HWI 43. Canberra: Australian Institute of Health and Welfare.