Eye-related injuries in Australia

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Abbreviations

AIHW	Australian Institute of Health and Welfare
BEACH	Bettering the Evaluation and Care of Health
ED	Emergency department
GP	General Practitioner
ICD–10–AM	International Statistical Classification of Diseases and Related Health Problems 10th revision Australian Modification
n.e.c.	Not elsewhere classified
NHMD	National Hospital Morbidity Dataset
NOSI	National Occupational Health and Safety Commission Online Statistics Interactive
n.p.	Not published
VEMD	Victorian Emergency Minimum Dataset

Summary

Eye-related injuries in Australia is the third in a series of national reports providing an overview of eye health in Australia. This report contains information on eye injuries drawn from a range of data sources.

Key findings

Generally, eye injuries were found to be more common for males than for females, particularly those of working age.

General practice

- Eye injuries are only a small proportion (0.2%) of presentations to general practice, with 46% of presentations associated with a foreign body in the eye.
- Almost half of all eye injury presentations required medication and two in five required a procedural treatment.

Emergency departments

- Eye injury constitutes 6% of injury presentations to Victorian emergency departments (EDs).
- Four-fifths of presentations involved males; the majority were of working age.
- More than half of presentations were due to a foreign body in the eye.
- Only 3% of ED presentations required hospitalisation.

Hospitalisations

- More than two-thirds of hospitalised eye injury cases involved males.
- Fracture of bones around the eye and superficial injury around the eye were the most common first occurring eye diagnoses, constituting more than half of hospitalised eye injury cases.
- Falls, assault and transportation were the main types of mechanism of injury for eye-related hospitalisations.
- Hospitalised eye injuries involving Indigenous Australians occurred at a much higher rate (234 cases per 100,000) than for other Australians (79 per 100,000).

Workers compensation

- The most common diagnosis for eye-related injury and disease compensation claims was a foreign body in the eye. The median time lost from work because of a foreign body in the eye in 2004–05 was 1.5 weeks.
- The most common mechanism of injury for work-related eye injury was being hit by moving objects.

1 Introduction

Background

Eye-related injuries in Australia is the third in a series of national reports providing an overview of eye health in Australia. The first report in this series, *Eye health in Australia: a hospital perspective* (AHIW 2008), discusses all hospitalisations attributed to eye conditions in the period 2000–06 (see Box 1 for further background to this series of reports). The current report uses a variety of data sources, including hospital data, to describe eye conditions explicitly attributed to injury.

Box 1: Background to this report

In response to the World Health Assembly resolution WHA56.26 on the elimination of avoidable blindness in member states, the Australian Health Ministers' Conference endorsed the National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss *(the* Framework*). The* Framework *focuses on eliminating avoidable blindness and vision loss in Australia, providing an outline for nationally coordinated action by governments, health professionals, non-government organisations, industry and individuals to work in partnership (Commonwealth of Australia 2005).*

In the 2006 Federal Budget, the Australian Government allocated $13.8 million over 4 years to a new National Eye Health Initiative. This initiative supports a range of activities to raise public awareness of eye health issues and to strengthen the delivery of eye health care.

The Australian Government Department of Health and Ageing commissioned the AIHW through the National Eye Health Initiative to do this report. This follows on from work done for earlier publications: Vision problems among older Australians, *released in July 2005,* A guide to Australian eye health data, *released in May 2007,* Eye health in Australia: a hospital perspective*, released in August 2008, and* Eye health among Australian children, *released in November 2008.*

The key areas for action within the Framework *provide a brief outline of the challenges to be tackled and a series of actions that might be used to meet these challenges.*

The key area for action 5 – Improving the evidence base – outlines a need to look at existing health data sets for relevance to eye health, and to identify eye health research gaps. This report provides information for this action area by compiling statistics related to eye injuries.

Trauma to the eye is a leading cause of blindness in one eye (Fong 1995). Light travels through the front of the eye to the retina at the back of the eye where it forms an image which is then converted into electrical impulses that are sent via the optic

nerve to the brain. Decreased vision or even blindness can result from injury to the structures that are involved in this process.

Most eye injuries are likely to be minor, not resulting in loss of vision or other serious and lasting consequences. A small minority will have serious consequences (for example, traumatic removal of the eyeball). However, it is difficult to enumerate serious/long-lasting eye injuries given the available data.

Because of the differing nature of the data sources included in this report, it is difficult to present a succinct overview of the extent of eye injuries in Australia. Some commonalities are obvious among the data sources, however. For example, most serious eye injuries involve males, particularly those of working age.

Structure of the report

This report provides an insight into eye injuries in Australia. Persons with eye trauma may present to different parts of the health-care system including general practitioners, ophthalmologists, optometrists, emergency departments, or workplace health officers. In order to report on eye injuries in Australia as accurately as possible, several data sources have been used.

An outline of the report is as follows:

- Chapter 2 reports on eye injuries using the National Health Survey which contains self-reported eye injuries in the community.
- Chapter 3 reports on eye injuries in general practice using the Bettering the Evaluation and Care of Health (BEACH) data set.
- Chapter 4 reports on eye injuries which present to the ED (Victoria only) using the Victorian Emergency Minimum Dataset (VEMD).
- Chapter 5 reports on eye injuries requiring hospitalisation using the National Hospital Morbidity Database (NHMD).
- Chapter 6 reports on work-related eye injuries using the National Occupational Health and Safety Commission (NOHSC) Online Statistics Interactive (NOSI).
- Appendix 1 describes the various sources of data for this report and the methods of analysis.
- Appendix 2 contains tables of more detailed results.

Many, but not all, of the possible ways that eye injuries may present and be managed have been included in this report. Injuries that present directly to private consulting rooms of ophthalmologists or optometrists or that present directly to outpatients have not been included.

2 Eye injuries in the National Health Survey

Between August 2004 and June 2005 the Australian Bureau of Statistics' National Health Survey (NHS) interviewed approximately 25,900 people regarding their health status, use of health services and health-related risk factors (ABS 2006). People across all age groups and in all states and territories were sampled.

One aspect of this survey was whether respondents had had an injury in the 4 weeks before the survey that resulted in medical treatment or other action. The results of the survey found that 18.6% of males and 18.1% of females had had an injury which resulted in action in the previous 4 weeks. Only a small percentage of these injuries involved the eye (1.3% of injuries in males and 1.2% of injuries in females). These proportions indicate that an estimated 3.6 million Australians had sustained an injury in the 4 weeks before the survey, about 45,400 of which were eye injuries.

Males and females had a similar age distribution for all injuries resulting in action (Figure 2.1). For eye injuries resulting in action, however, different age distributions were noted for males and females. A higher proportion of eye injuries in young males 0–19 years of age (62.5%) resulted in action than for all injuries (35.3%). Conversely, a higher proportion of eye injuries in older females (60 years and over, 21.1%) resulted in action than for all injuries (11.4%).

Source: 2004–05 NHS.

Figure 2.1: Self-reported injury with action, all injuries and eye injuries, by sex and age, 2004–2005

3 Eye injuries in general practice

The Bettering the Evaluation and Care of Health (BEACH) data set includes information on clinical activities in general practice in Australia, and has been in operation since 1998 (AGPSCC 2008). Each year, approximately 1,000 general practitioners (GPs) record details regarding 100 consecutive consultations. This results in a national database of around 100,000 records annually.

Presentations

There were 1,716 eye injury problems managed at 1,713 encounters from April 2000 until December 2007 in the BEACH data set. Eye injury was only a small proportion of all problems managed by general practice (0.2%) (Table 3.1). In males, the proportion of encounters that involved eye injuries peaked in the working age groups (15–64 years). This pattern was not noted for females; the proportion of encounters involving an eye injury remained fairly stable across the age spectrum.

The majority of eye injuries were new presentations with eye injury (Table 3.1).

Table 3.1: General practice encounters involving eye injury, by sex and age, 2000–2007

	All eye injury						New presentation eye injury		
Age group	Cases			Age- and sex-specific rates of eye injury presentations per 100 encounters			Cases		
(years)	Males	Females	Persons[(a)]	Males	Females	Persons	Males	Females	Persons
<1	4	4	8	0.1%	0.1%	0.1%	4	4	8
1–4	23	17	40	0.1%	0.1%	0.1%	17	11	28
5–14	75	43	120	0.3%	0.2%	0.3%	54	32	86
15–24	175	53	229	0.7%	0.1%	0.3%	123	42	165
25–44	395	139	537	0.6%	0.1%	0.3%	274	100	374
45–64	299	175	478	0.4%	0.2%	0.2%	198	141	339
65–74	70	73	143	0.2%	0.2%	0.2%	50	57	107
75+	62	76	139	0.2%	0.1%	0.1%	47	55	102
Total[(a)]	**1,118**	**583**	**1,713**	**0.4%**	**0.1%**	**0.2%**	**767**	**442**	**1,209**

(a) Totals include some cases where age and/or sex was not specified.

Source: BEACH 2000-08. AGPSCC, University of Sydney, a collaborating unit of the AIHW.

Reasons for encounter

The reasons for encounter (expressed request for care) described by the patients, as recorded by the GP, for whom the GP managed an eye injury are varied. A foreign body was the most common reason for encounter in these circumstances (Table 3.2).

Table 3.2: General practice encounters with eye injury by reasons for encounter, 2000–2007

Reason for encounter[(a)]	Number	Number per 100 eye injury encounters (*n* = 1,713)
Foreign body in eye	526	30.7
Pain in eye	320	18.7
Injury eye, other	200	11.7
Red eye	240	14.0
Contusion or haemorrhage, eye	126	7.4
Eye sensation abnormal	60	3.5
Prescription	58	3.4
Follow-up unspecified (eye)	55	3.2
Eye symptom/complaint, other	38	2.2
Eye check-up	33	1.9
Trauma/injury not otherwise specified	25	1.5
Visual disturbance, other	22	1.3
Other reasons for encounter	544	31.8
Total [(a)]	**2,247**	**131.2**

(a) Reasons for encounter reflect the patients' expressed request for care as recorded by the GP. Up to three reasons may be recorded at each encounter, and hence total reasons exceeds case numbers (*n* = 1,713). Similarly, the total rate of reasons for encounter exceeds 100.

Source: BEACH 2000-08. AGPSCC, University of Sydney, a collaborating unit of the AIHW.

Diagnosis

More than two in five eye injuries were due to a foreign body in eye (see Table 3.3). Contusion (bruising) or haemorrhage (bleeding) in the eye also accounted for a large proportion of eye injury presentations. (Note that a glossary of terms is included at the end of the report.)

Table 3.3: General practice encounters with eye injury by diagnosis, 2000–2007

Eye diagnosis		No. of problems managed (Per 100 eye injury encounters, *n* = 1,713)	National annual estimate[(a)]
Foreign body in eye		780 (45.5)	102,000
Contusion/haemorrhage in eye		517 (30.2)	68,000
	Subconjunctival haemorrhage	325 (19.0)	43,000
	Periorbital haematoma	49 (2.9)	6,000
	Conjunctival haematoma	46 (2.7)	6,000
	Eye haemorrhage	42 (2.5)	6,000
	Retinal haemorrhage	23 (1.3)	3,000
	Eye injury/contusion	10 (0.6)	1,000
	Traumatic blackeye	10 (0.6)	1,000
	Hyphaema	8 (0.5)	1,000
	Bleeding, eye	4 (0.2)	1,000
Injury eye, other		419 (24.5)	55,000
	Corneal abrasion	226 (13.2)	30,000
	Eye injury	117 (6.8)	15,000
	Eye flash burn	21 (1.2)	3,000
	Eye injury/abrasion	29 (1.7)	4,000
	Welding flash	22 (1.3)	3,000
	Flash conjunctivitis	1 (0.1)	0
	Eye chemical burn	3 (0.2)	0
Total eye injuries[(b)]		**1,716 (100.2)**	**225,000**

(a) Number of national annual estimated encounters rounded to nearest 1,000.

(b) Total number of injuries exceeds case numbers (*n* = 1,713) because of multiple injuries in some cases.

Source: BEACH 2000-08. AGPSCC, University of Sydney, a collaborating unit of the AIHW.

Management

Medications and other treatments were the most common management given by the GP for persons with eye injury diagnoses (Table 3.4). Procedural treatments were required in 40.8 of every 100 eye injury encounters. Note that several managements can be recorded for each problem.

Table 3.4: General practice encounters with eye injury by management given, 2000–2007

Management given		Number	Number per 100 eye injury problems
Medications	Anti-infectives	654	38.1
	Anaesthetics	31	1.8
	Steroid preparations	21	1.2
	Pain relief	35	2.0
	Eye lubricants	32	1.9
	Other eye medications	57	3.3
	Other medications	11	0.7
	Total medications	*841*	*49.0*
Referrals	Specialist	161	9.4
	Other referrals	26	1.6
	Hospital & emergency department	30	1.7
	Total referrals	*202*	*11.8*
Imaging		20	1.2
Other treatments	Clinical treatments	333	19.4
	Procedural treatments	700	40.8
	Total other treatments	*1,033*	*60.2*
Pathology	Tests ordered	75	4.4
Total managements[(a)]		2,171	126.6

(a) Total number of managements exceeds case numbers because of multiple managements for some cases. Similarly, the total number of managements per 100 encounters exceeds 100.

Source: BEACH 2000-08. AGPSCC, University of Sydney, a collaborating unit of the AIHW.

4 Eye injuries in the Victorian Emergency Minimum Dataset

The Victorian Emergency Minimum Dataset (VEMD) is an ongoing surveillance database of injury presentations to 24-hour emergency departments (EDs) in Victoria. The VEMD records only the primary injury (see Appendix 1 for further details).

There were 102,538 records for eye injuries or foreign bodies in the eye in the VEMD database for the period 1999–06 (6.0% of the total number of records contained in the VEMD). Of these, most (97.3%, *n* = 99,747) were treated in the emergency department (ED) without admission to hospital. This chapter discusses only these cases, given that Victorian hospital admissions due to eye injury are included in the later analysis of national hospital data (Chapter 5).

Four-fifths of eye injury ED presentations occurred in males (Table 4.1). For both males and females, the majority of eye injury ED presentations involved working-age adults, with 79.4% of presentations in males and 62.5% of presentations in females in the 20–59 years age band.

Table 4.1: Victorian ED presentations due to eye injury, by sex and age, 1999–06

Age group (years)	Males	Females	Persons[(a)]
0–4	1,945 (2.4%)	1,404 (7.1%)	3,357 (3.4%)
5–9	2,097 (2.6%)	1,288 (6.5%)	3,387 (3.4%)
10–14	1,994 (2.5%)	893 (4.5%)	2,889 (2.9%)
15–19	4,812 (6.0%)	1,040 (5.3%)	5,867 (5.9%)
20–24	8,271 (10.4%)	1,627 (8.3%)	9,914 (9.9%)
25–29	9,231 (11.6%)	1,764 (9.0%)	11,011 (11.0%)
30–34	10,113 (12.7%)	1,781 (9.0%)	11,920 (12.0%)
35–39	9,208 (11.5%)	1,621 (8.2%)	10,854 (10.9%)
40–44	11,783 (14.8%)	2,495 (12.7%)	14,297 (14.3%)
45–49	6,201 (7.8%)	1,441 (7.3%)	7,659 (7.7%)
50–54	5,049 (6.3%)	1,216 (6.2%)	6,275 (6.3%)
55–59	3,537 (4.4%)	989 (5.0%)	4,537 (4.5%)
60–64	2,387 (3.0%)	710 (3.6%)	3,103 (3.1%)
65–69	1,478 (1.9%)	508 (2.6%)	1,987 (2.0%)
70–74	889 (1.1%)	331 (1.7%)	1,225 (1.2%)
75–79	485 (0.6%)	291 (1.5%)	777 (0.8%)
80+	328 (0.4%)	282 (1.4%)	610 (0.6%)
Total[(a)]	**79,864 (100.0%)**	**19,703 (100.0%)**	**99,747 (100.0%)**

(a) Totals include 78 cases with unreported age and/or sex.

Source: VEMD.

Activity at the time of injury

Almost one-quarter of eye injuries that resulted in an ED presentation occurred while working for income, with another 6.9% occurring while undertaking 'other work' (Table 4.2). Eye injuries occurring during leisure activities were also common, accounting for 23.6% of ED presentations. Two in five ED presentations due to eye injury (40.1%) had an 'other specified activity' or 'unspecified activity' recorded.

Table 4.2: Victorian ED presentations due to eye injury by activity when injured, 1999–06

Activity when injured	ED presentations
Working for income	24,466 (24.5%)
Leisure	23,590 (23.6%)
Other work	6,877 (6.9%)
Sports	2,214 (2.2%)
Vital activity, resting, sleeping or eating	1,775 (1.8%)
Education	557 (0.6%)
Being nursed, cared for	231 (0.2%)
Other specified activity	13,951 (14.0%)
Unspecified activity/missing	26,086 (26.1%)
Total	**99,747 (100.0%)**

Source: VEMD.

Intent

For the majority of ED presentations (92.6%) the event resulting in eye injury was an accident. Intent was not specified or was unable to be determined in 5.2% of the presentations. Injury was intentional in only a small proportion of ED presentations (1.7%), and most intentional injuries (96.7%) were attributed to assault.

External cause

The most common external cause of ED presentations due to eye injury in the VEMD was 'struck by/collision with object' (23.3%, Table 4.3). The cause of the injury was unspecified or missing from the record for one in five eye injury presentations.

Table 4.3: Victorian ED presentations due to eye injury, by sex and external cause, 1999–06

External cause	Males	Females	Persons[(a)]
Struck by/collision with object	18,838 (23.6%)	4,317 (21.9%)	23,226 (23.3%)
Struck by/collision with person	9,312 (11.7%)	2,381 (12.1%)	11,702 (11.7%)
Machinery	6,565 (8.2%)	91 (0.5%)	6,661 (6.7%)
Cutting, piercing object	5,254 (6.6%)	857 (4.3%)	6,125 (6.1%)
Burns, scalds, contact with hot objects	3,322 (4.2%)	1,091 (5.5%)	4,422 (4.4%)
Poisoning—other	450 (0.6%)	256 (1.3%)	707 (0.7%)
Fall up to 1 metre	311 (0.4%)	278 (1.4%)	589 (0.6%)
Animal-related	308 (0.4%)	254 (1.3%)	562 (0.6%)
Cold conditions	263 (0.3%)	70 (0.4%)	333 (0.3%)
Motor vehicle driver/passenger	190 (0.2%)	71 (0.4%)	261 (0.3%)
Other transport	131 (0.2%)	18 (0.1%)	149 (0.1%)
Hot conditions	76 (0.1%)	3 (0.0%)	79 (0.1%)
Poisoning—medication	29 (0.0%)	30 (0.2%)	59 (0.1%)
Fall over 1 metre	28 (0.0%)	20 (0.1%)	50 (0.1%)
Pedestrian	31 (0.0%)	7 (0.0%)	38 (0.0%)
Drowning, submersion	25 (0.0%)	10 (0.1%)	35 (0.0%)
Pedal cycle rider/passenger	30 (0.0%)	5 (0.0%)	35 (0.0%)
Motorcycle rider/passenger	n.p. (0.0%)	n.p. (0.0%)	32 (0.0%)
Other threats to breathing	n.p. (0.0%)	n.p. (0.0%)	21 (0.0%)
Other specified external causes	17,030 (21.3%)	4,642 (23.6%)	21,725 (21.8%)
Unspecified or missing external cause	17,627 (22.1%)	5,293 (26.9%)	22,936 (23.0%)
Total[(a)]	**79,864 (100.0%)**	**19,703 (100.0%)**	**99,747 (100.0%)**

(a) Totals include 180 cases for which sex was not specified.

n.p. = not published. Small cell counts have been suppressed to prevent patient identification.

Source: VEMD.

Diagnosis

About half of ED presentations for eye injury were due to a foreign body in the eye (52.7%, Table 4.4). A diagnosis of a foreign body in the eye was more common for males (57.3% of eye injury cases) than for females (33.7%). Foreign bodies in the eye were proportionately least common for the very young and very old.

Table 4.4: Victorian ED presentations due to eye injury, by age and whether diagnosis is foreign body in the eye, 1999–06

Age group (years)	All eye injury cases	Cases with foreign body in eye	% foreign body
0–4	3,357	954	28.4%
5–9	3,387	1,238	36.6%
10–14	2,889	929	32.2%
15–19	5,867	2,673	45.6%
20–24	9,914	5,237	52.8%
25–29	11,011	6,116	55.5%
30–34	11,920	6,746	56.6%
35–39	10,854	6,363	58.6%
40–44	14,297	8,031	56.2%
45–49	7,659	4,361	56.9%
50–54	6,275	3,504	55.8%
55–59	4,537	2,524	55.6%
60–64	3,103	1,652	53.2%
65–69	1,987	1,027	51.7%
70–74	1,225	583	47.6%
75–79	777	353	45.4%
80+	610	196	32.1%
Total[(a)]	**99,747**	**52,522**	**52.7%**

(a) Totals include up to 78 records with unreported age and/or nature of injury data.

Source: VEMD.

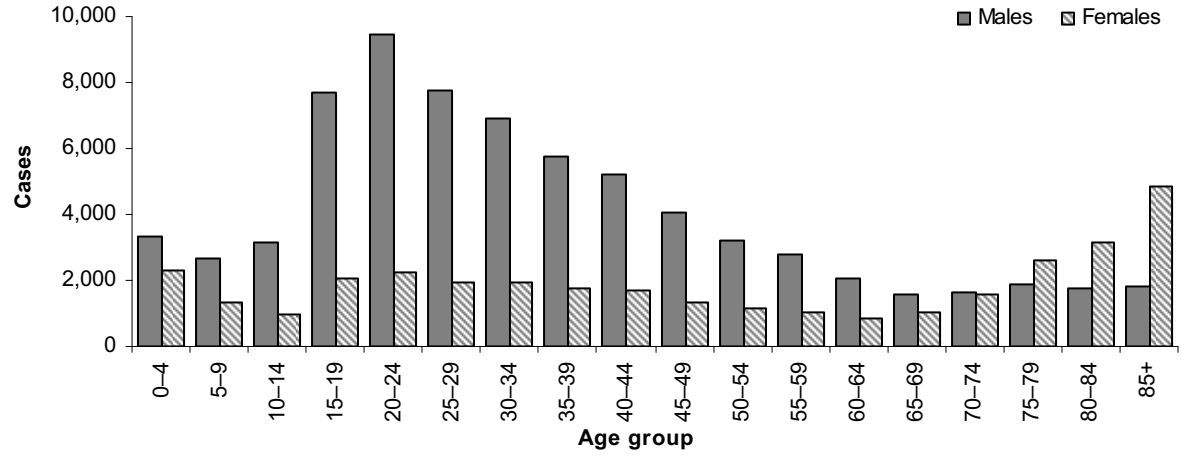
5 Hospitalisations for eye injury

The National Hospital Morbidity Database (NHMD) is a confidentialised summary database of hospital discharges from almost all hospitals in Australia (AIHW 2006). Simple counts of records can overestimate the number of injury cases that result in hospitalisation through the multiple counting of inter-hospital and intra-hospital transfers and re-admissions. This analysis estimates the number of eye injury *cases* for the study period by omitting records with a mode of admission of 'transfer from another acute hospital' (see Berry & Harrison 2006).

Each NHMD record can include multiple diagnosis codes. Cases have been included in this report if they include any eye injury diagnosis, not just as the principal diagnosis.

A limitation in using NHMD data to describe eye injury is that outcomes of hospitalised eye injuries that may become apparent after the completion of the hospitalisation are not captured in the data. Most eye injuries are likely to have been minor, but a small minority will have resulted in permanent visual impairment (e.g. avulsion of eye). In addition, because of the structure of the ICD-10-AM (NCCH 2000), we do not know whether the eye injuries identified here affect *both* eyes, an important factor in gauging the outcomes of such events.

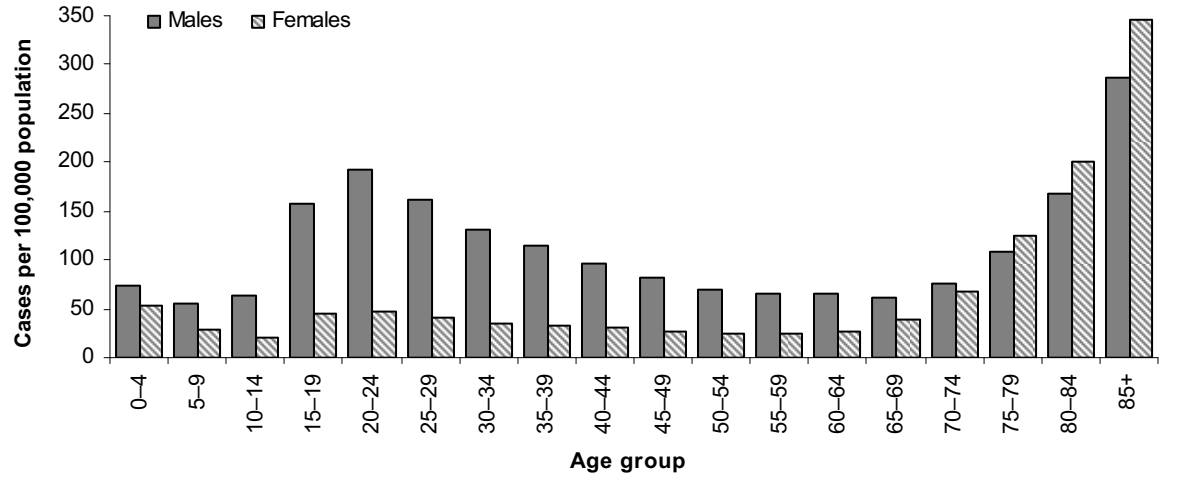
There were 106,306 hospitalised eye injury cases in the 1999–06 study period, representing 4.4% of all hospitalised injury cases thought to have been sustained in the community (as opposed to complications of surgical and medical care). Most hospitalised eye injury cases involved males (68.3%). One in five (20.1%) eye injury cases involved people aged 20–24 years, and in this age group 80.8% of cases involved males (Figure 5.1). For those aged 75 years and over (15.1% of cases), however, the majority of eye injury cases involved females (66.0%).



Source: NHMD.

Figure 5.1: Hospitalisations with an eye injury, by age and sex, 1999–06

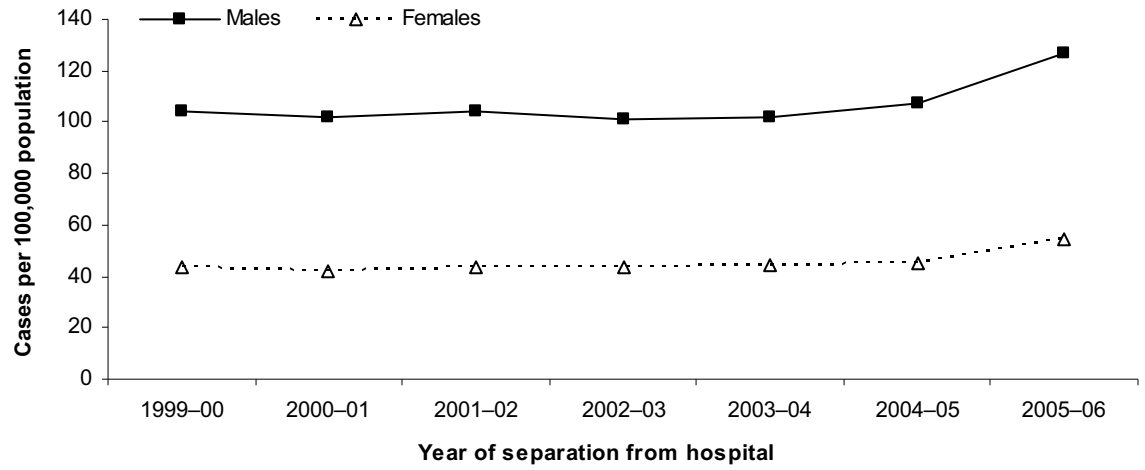
Annual average rates of hospitalised eye injury cases by sex and age present a slightly different pattern from case counts, however (Figure 5.2). In males there was a bimodal distribution with peaks in the 15–29 years and 85 years and over age bands. In females the single peak was in the 75 years and over age band.



Source: NHMD.

Figure 5.2: Annual average rate of eye injury hospitalisations per 100,000 population, by age and sex, 1999–06

The age-standardised rate of hospitalised eye injury cases over the period 1999–06 was 76.6 cases per 100,000 population. The age-standardised rate for males (106.9 per 100,000) was more than twice that for females (45.5 per 100,000). Hospitalised eye injury cases have occurred at a relatively constant rate from 1999–00 until 2004–05, but a slight increase in rate was observed for both sexes in 2005–06 (Figure 5.3).



Source: NHMD.

Figure 5.3: Age-standardised rates of eye injury hospitalisation, by sex, 1999–06

Diagnosis

About seven in every eight hospitalised eye injury cases had an injury of some kind as the principal diagnosis (86.9%, Table 5.1). Injury principal diagnoses were slightly more common for males than for females.

Half (50.2%) of all hospitalised eye injury cases in the 1999–06 period had eye injury as the principal diagnosis (i.e. the principal reason for the episode of care). A higher proportion of cases involving males had an eye injury principal diagnosis (53.6%) than those involving females (42.7%).

Table 5.1: Principal diagnosis for eye injury hospitalisations, by sex, 1999–06

ICD-10-AM chapter of principal diagnosis	Males	Females	Persons[(a)]
Certain infectious & parasitic diseases	74 (0.1%)	103 (0.3%)	177 (0.2%)
Neoplasms	318 (0.4%)	230 (0.7%)	548 (0.5%)
Diseases of the blood & blood-forming organs etc.	40 (0.1%)	39 (0.1%)	79 (0.1%)
Endocrine, nutritional & metabolic diseases	169 (0.2%)	209 (0.6%)	378 (0.4%)
Mental & behavioural disorders	998 (1.4%)	731 (2.2%)	1,729 (1.6%)
Diseases of the nervous system	584 (0.8%)	399 (1.2%)	983 (0.9%)
Diseases of the eye & adnexa	776 (1.1%)	466 (1.4%)	1,242 (1.2%)
Diseases of the ear & mastoid process	30 (0.0%)	24 (0.1%)	54 (0.1%)
Diseases of the circulatory system	733 (1.0%)	892 (2.6%)	1,625 (1.5%)
Diseases of the respiratory system	319 (0.4%)	236 (0.7%)	555 (0.5%)
Diseases of the digestive system	199 (0.3%)	206 (0.6%)	406 (0.4%)
Diseases of the skin & subcutaneous tissue	176 (0.2%)	153 (0.5%)	329 (0.3%)
Diseases of the musculoskeletal system etc.	152 (0.2%)	192 (0.6%)	344 (0.3%)
Diseases of the genitourinary system	95 (0.1%)	244 (0.7%)	339 (0.3%)
Pregnancy & childbirth & the puerperium	0 (0.0%)	138 (0.4%)	138 (0.1%)
Certain conditions originating in the perinatal period	5 (0.0%)	6 (0.0%)	11 (0.0%)
Congenital malformations & deformations etc.	10 (0.0%)	10 (0.0%)	20 (0.0%)
Symptoms, signs, abnormalities n.e.c.	847 (1.2%)	1027 (3.1%)	1,874 (1.8%)
Injury, poisoning & consequences of external causes:			
Eye injuries	38,954 (53.6%)	14,386 (42.7%)	53,343 (50.2%)
Injuries to head & neck	1,995 (27.5%)	7,764 (23.1%)	27,716 (26.1%)
Injuries to torso	2,028 (2.8%)	1,256 (3.7%)	3,284 (3.1%)
Injuries to upper limb	1,869 (2.6%)	2,027 (6.0%)	3,896 (3.7%)
Injuries to lower limb	1,431 (2.0%)	1,273 (3.8%)	2,704 (2.5%)
Other injury, poisoning & consequences of external causes	939 (1.3%)	519 (1.5%)	1,458 (1.4%)
Total injury, poisoning & consequences of external causes	*65,172 (89.7%)*	*27,225 (80.9%)*	*92,401 (86.9%)*
Factors influencing health status & contact with health services	1,943 (2.7%)	1,131 (3.4%)	3,074 (2.9%)
Total	**72,640 (100.0%)**	**33,661 (100.0%)**	**106,306 (100.0%)**

(a) Includes 5 cases for which sex was not specified.

Source: NHMD.

Periorbital fracture and superficial injury of the eyelid and periocular area were the most common diagnoses and together made up more than half of hospitalised eye injury cases (Table 5.2). A larger proportion of cases involving males sustained periorbital fractures than females (38.8% and 26.5%, respectively), whereas a larger proportion of cases of superficial eye injuries involved females (31.4% compared with 15.5% for males).

Table 5.2: First occurring eye diagnosis for eye injury hospitalisations, by sex, 1999–06

First occurring eye diagnosis	Males	Females	Persons
Superficial injury of eyelid & periocular area	11,260 (15.5%)	10,573 (31.4%)	21,835 (20.5%)
Open wound of eyelid & periocular area	8,636 (11.9%)	3,711 (11.0%)	12,347 (11.6%)
Periorbital fracture	28,182 (38.8%)	8,914 (26.5%)	37,097 (34.9%)
Injury of orbital cranial nerves[(a)]	221 (0.3%)	126 (0.4%)	347 (0.3%)
Injury of conjunctiva & corneal abrasion (no foreign body)	1,984 (2.7%)	963 (2.9%)	2,947 (2.8%)
Contusion of eyeball & orbital tissues	4,454 (6.1%)	2,312 (6.9%)	6,767 (6.4%)
Ocular laceration	2,070 (2.8%)	837 (2.5%)	2,907 (2.7%)
Penetrating wound	2,773 (3.8%)	585 (1.7%)	3,358 (3.2%)
Avulsion of eye (traumatic enucleation)	75 (0.1%)	34 (0.1%)	109 (0.1%)
Other injuries of eye & orbit	4,152 (5.7%)	2,656 (7.9%)	6,808 (6.4%)
Injury of eye & orbit, part unspecified	2,206 (3.0%)	1,112 (3.3%)	3,318 (3.1%)
Foreign body in external eye	4,911 (6.8%)	1,307 (3.9%)	6,219 (5.9%)
Burns	1,684 (2.3%)	505 (1.5%)	2,189 (2.1%)
Poisoning by eye drugs & preparations	26 (0.0%)	25 (0.1%)	51 (0.0%)
Total[(b)]	**72,640 (100.0%)**	**33,661 (100.0%)**	**106,306 (100.0%)**

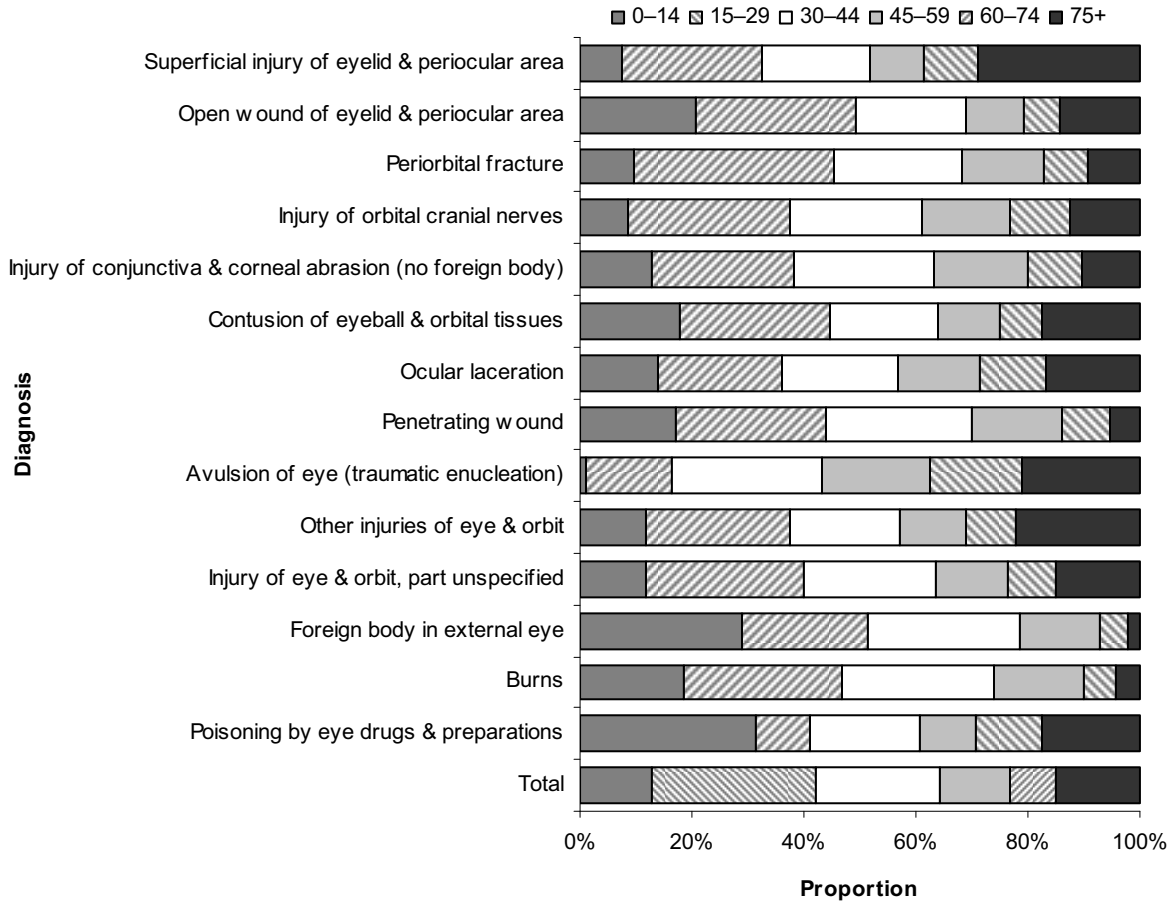
(a) Injury of orbital cranial nerves does not include ophthalmic and maxillary branches of the trigeminal nerve (see Appendix 1).

(b) Totals include 4 cases where diagnosis was 'burn with rupture and destruction of eyeball' and 7 cases where diagnosis was 'sequelae of injury of eye and orbit'.

Source: NHMD.

The types of eye injuries sustained differed with age (Figure 5.4). Three in ten cases with diagnoses of 'poisoning by eye drugs and preparations' (31.4%) and 'foreign body in external eye' (28.9%) involved children aged 0–14 years. Diagnoses of foreign bodies in the external eye were least common for older people, accounting for only 2.1% of cases involving people aged 75 years and over.

Superficial injuries of the eye and periocular area were more frequent for older people, with three in ten cases (29.1%) involving people aged 75 years and over.



Source: NHMD.

Figure 5.4: First occurring eye diagnosis for eye injury hospitalisations, by age group, 1999–06

Place of occurrence

More than a third of hospitalised eye injury cases (37.3%) were reported to have occurred at an 'unspecified place' or did not have a place of occurrence reported (Table 5.3). The most common *specified* place of occurrence for eye injury cases was the home, accounting for one in five cases overall (20.2%). A much higher proportion of cases involving females were reported to have occurred in the home (30.7%) than for cases involving males (15.3%). The most common specified place of occurrence for eye injury cases for males was a street and highway (17.6%). Only a small percentage of eye injury cases were reported to have occurred in industrial and construction areas and most of these involved males (3.1% compared with 0.3% for females).

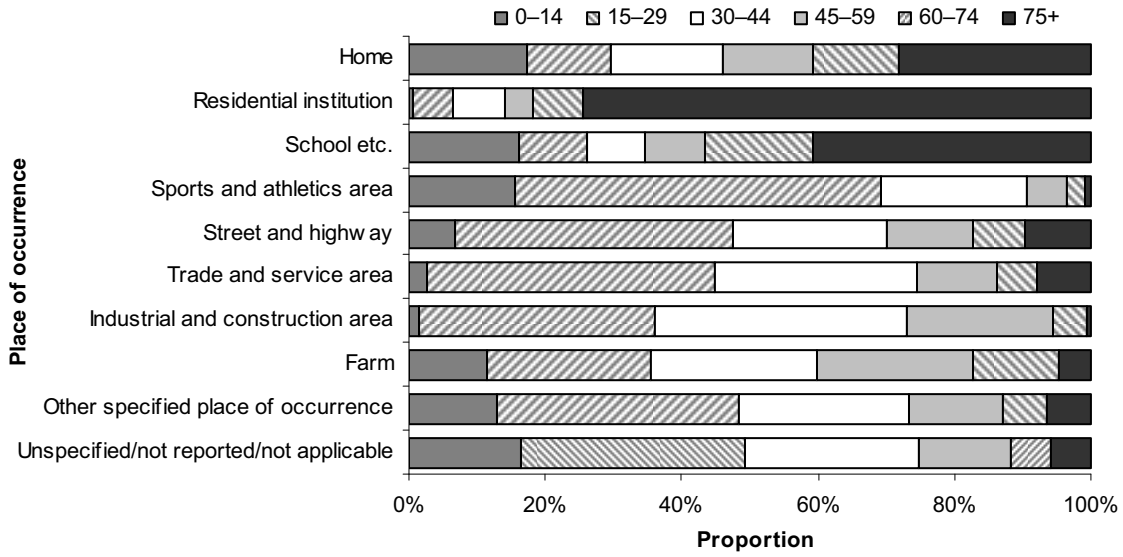
Table 5.3: Place of occurrence for eye injury hospitalisations, by sex, 1999–06

Place of occurrence	Males	Females	Persons[(a)]
Home	11,112 (15.3%)	10,322 (30.7%)	21,435 (20.2%)
Residential institution	1,298 (1.8%)	2,351 (7.0%)	3,650 (3.4%)
School, other institution & public administration area	3,170 (4.4%)	2,680 (8.0%)	5,850 (5.5%)
Sports & athletics area	3,249 (4.5%)	392 (1.2%)	3,641 (3.4%)
Street & highway	12,763 (17.6%)	5,657 (16.8%)	18,421 (17.3%)
Trade & service area	4,862 (6.7%)	1,028 (3.1%)	5,890 (5.5%)
Industrial & construction area	2,276 (3.1%)	89 (0.3%)	2,365 (2.2%)
Farm	837 (1.2%)	179 (0.5%)	1,016 (1.0%)
Other specified place of occurrence	3,390 (4.7%)	1,039 (3.1%)	4,430 (4.2%)
Unspecified place of occurrence	27,337 (37.6%)	8,702 (25.9%)	36,039 (33.9%)
Place not reported/not applicable	2,346 (3.2%)	1,222 (3.6%)	3,569 (3.4%)
Total[(a)]	**72,640 (100.0%)**	**33,661 (100.0%)**	**106,306 (100.0%)**

(a) Totals include 5 cases where sex was not specified.

Source: NHMD.

The reported place of occurrence for eye injury hospitalisations varies according to age (Figure 5.5). Three-quarters of cases with an eye injury reported to have occurred in a residential institution involved people aged 75 years and over (74.6%). Similarly, a high proportion of cases occurring in schools, other institutions and public administration areas involved people aged 75 years and over (40.6%). Conversely, more than half of cases reported to have occurred at a sports and athletics area involved young adults aged 15–29 years (53.6%).

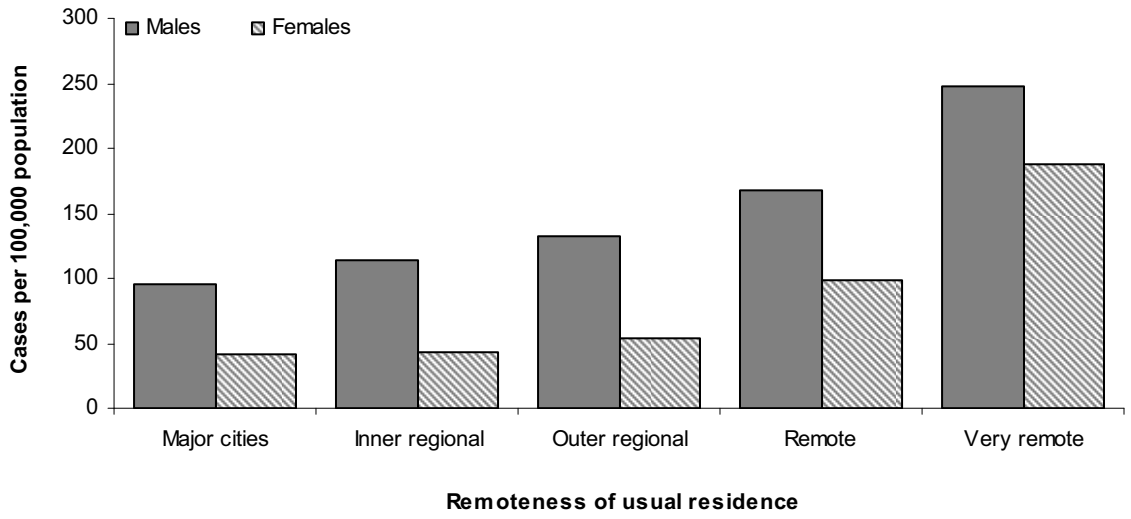


Source: NHMD.

Figure 5.5: Place of occurrence for eye injury hospitalisations, by age group, 1999–06

Place of usual residence

Information regarding the remoteness of the person's place of usual residence is available for NHMD records from July 2000. Rates of hospitalised eye injuries increased with increasing remoteness of usual residence (Figure 5.6). The average annual age-standardised rate of hospitalised eye injury for residents of *Major cities* was 68.9 per 100,000 population compared with 220.7 cases per 100,000 for residents of *Very remote* areas. For all remoteness areas, males had higher rates of hospitalised eye injury than females, with the smallest relative difference in *Very remote* areas.



Source: NHMD.

Figure 5.6: Age-standardised rate of eye injury hospitalisations, by sex and remoteness of usual residence, 2000–06

Table 5.4 describes the age-standardised rates for particular eye injury diagnoses by remoteness of usual residence for the period 2000–06. Rates for all types of eye injury cases rose with increasing remoteness of usual residence. The largest rise occurred in eye injury cases with 'foreign body in the external eye' as the first eye diagnosis. For these cases, the rate for residents of Australia's *Very remote* regions was 6.3 times that for residents of *Major cities*. Rates for cases with periorbital fractures as the first occurring eye diagnosis changed the least with increasing remoteness; the rate of periorbital fracture for residents of *Very remote* areas was 1.7 times that for residents of *Major cities*.

Table 5.4: Age-standardised rates per 100,000 population for eye injury hospitalisations, by first occurring eye diagnosis, by remoteness of usual residence, 2000–2006

Diagnosis	Major cities	Inner regional	Outer regional	Remote	Very remote
Superficial injury of eyelid & periocular area	14.3	14.6	19.2	37.6	59.3
Open wound of eyelid & periocular area	8.5	9.1	10.7	16.8	26.1
Periorbital fracture	25.3	27.9	30.0	31.5	43.0
Injury of orbital cranial nerves	0.2	0.2	0.4	0.4	0.7
Injury of conjunctiva & corneal abrasion (no foreign body)	1.9	1.9	2.8	4.9	12.5
Contusion of eyeball & orbital tissues	4.0	4.7	7.0	10.5	12.2
Ocular laceration	1.8	2.2	2.4	3.0	6.0
Penetrating wound	1.8	2.7	4.2	4.8	9.4
Foreign body in external eye	3.3	6.9	6.6	6.2	20.4
Burns	1.2	1.8	2.7	5.0	5.7
Other eye injuries	6.8	6.9	8.6	14.7	25.2
Total	**68.9**	**79.0**	**94.6**	**135.5**	**220.7**

Note: Directly age-standardised to the 2001 Australian population.

Source: NHMD.

Day and month of admission

Hospitalised eye injury cases were most commonly admitted on Saturdays in the 1999–06 period (16.3% of cases) and Saturdays accounted for the highest proportion of admissions in most months of the year (Table 5.5). A large proportion of eye injury cases were also admitted to hospital on Sundays (15.2%). The smallest proportion of cases were admitted to hospital on Tuesdays (13.1%).

These observations may be related to the types of activity in which serious eye injuries are sustained—the propensity for admissions on weekends suggests a relationship between sports, leisure and/or home maintenance and eye injury. Unfortunately, this can not be explored further because of more than three-quarters of hospitalised eye injury cases having a reported activity at time of injury of 'other', 'unspecified' or 'not reported' (77.4%).

The proportion of eye injury cases admitted to hospital did not fluctuate greatly by month.

Table 5.5: Month of admission by day of admission for eye injury hospitalisations, 1999–06

	Day of admission								
Month of admission	**Sun**	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Total**	**Mean**
January	1,266	1,254	1,254	1,261	1,229	1,217	1,522	**9,003**	**1,286**
February	1,327	1,111	1,232	1,059	1,125	1,236	1,395	**8,485**	**1,212**
March	1,450	1,210	1,155	1,350	1,309	1,502	1,536	**9,512**	**1,359**
April	1,439	1,147	1,174	1,125	1,227	1,395	1,564	**9,071**	**1,296**
May	1,373	1,301	1,207	1,228	1,299	1,336	1,412	**9,156**	**1,308**
June	1,272	1,137	1,079	1,171	1,337	1,265	1,413	**8,674**	**1,239**
July	1,284	1,098	1,090	1,056	1,236	1,247	1,516	**8,527**	**1,218**
August	1,459	1,125	1,182	1,098	1,151	1,262	1,321	**8,598**	**1,228**
September	1,260	1,189	1,083	1,178	1,213	1,204	1,343	**8,470**	**1,210**
October	1,402	1,197	1,163	1,140	1,203	1,382	1,420	**8,907**	**1,272**
November	1,285	1,324	1,219	1,101	1,177	1,312	1,388	**8,806**	**1,258**
December	1,309	1,190	1,136	1,308	1,234	1,433	1,487	**9,097**	**1,300**
Total	**16,126**	**14,283**	**13,974**	**14,075**	**14,740**	**15,791**	**17,317**	**106,306**	**1,286**
Mean	**1,344**	**1,190**	**1,165**	**1,173**	**1,228**	**1,316**	**1,443**		

Source: NHMD.

Mean length of stay

The mean length of stay for hospitalisations with an eye injury was 7.8 days (Table 5.6). The longest mean length of stay was for orbital cranial nerve injury (23.2 days). In one-third of cases with orbital cranial nerve injury as the first occurring diagnosis, it was the principal diagnosis (i.e. the main reason for the episode of hospital care).

The mean length of stay for cases involving females was slightly longer than for cases involving males for most types of eye injury.

Table 5.6: Mean length of stay (days) by first occurring eye diagnosis for eye injury hospitalisations, 1999–06

First occurring eye diagnosis	Males	Females	Persons
Superficial injuries of eyelid & periocular area	5.9	7.8	6.9
Open wound of eyelid & periocular area	5.0	7.4	5.7
Periorbital fracture	11.3	12.7	11.7
Injury of orbital cranial nerves	23.8	22.0	23.2
Injury of conjunctiva & corneal abrasion, no mention of foreign body	5.0	6.4	5.5
Contusion of eyeball & orbital tissues	4.7	7.6	5.7
Ocular laceration	8.6	6.0	7.9
Penetrating wound	3.7	5.4	3.9
Avulsion of eye	10.4	9.8	10.2
Other injuries of eye & orbit	4.9	7.2	5.8
Injury of eye & orbit, part unspecified	5.1	8.5	6.3
Foreign body in external eye	1.5	1.9	1.6
Burn of eye & adnexa	5.4	5.4	5.4
Poisoning by eye drugs & preparations	1.3	3.4	2.3
Sequelae of injury of eye & orbit	4.7	1.0	4.1
Total	**7.5**	**8.7**	**7.8**

Source: NHMD.

Mechanism of injury

Falls, assault and transport accidents were the three most common types of mechanism of injury for hospitalised eye injury cases in the period 1999–06 (Table 5.7). For females, falls were the most common (43.1%) whereas assault was the most common for males (27.1%).

Table 5.7: Mechanism of injury for eye injury hospitalisations, by sex, 1999–06

Mechanism	Males	Females	Persons[(a)]
Transport accident	13,891 (19.1%)	6,078 (18.1%)	19,971 (18.8%)
Falls	13,892 (19.1%)	14,509 (43.1%)	28,404 (26.7%)
Exposure to inanimate mechanical forces	14,467 (19.9%)	3,461 (10.3%)	17,928 (16.9%)
Exposure to animate mechanical forces	3,161 (4.4%)	959 (2.8%)	4,120 (3.9%)
Other accidental threats to breathing	42 (0.1%)	17 (0.1%)	59 (0.1%)
Exposure to electric current radiation & extreme air temperature & pressure	90 (0.1%)	6 (0.0%)	96 (0.1%)
Contact with heat & hot substances, exposure to smoke, fire & flames	615 (0.8%)	219 (0.7%)	834 (0.8%)
Contact with venomous animals & plants	29 (0.0%)	15 (0.0%)	44 (0.0%)
Exposure to forces of nature	26 (0.0%)	25 (0.1%)	51 (0.0%)
Accidental poisoning by/exposure to noxious substances	1,153 (1.6%)	429 (1.3%)	1,582 (1.5%)
Overexertion	25 (0.0%)	17 (0.1%)	42 (0.0%)
Assault	19,716 (27.1%)	5,186 (15.4%)	24,902 (23.4%)
Intentional self-harm	463 (0.6%)	269 (0.8%)	732 (0.7%)
Event of undetermined intent	175 (0.2%)	76 (0.2%)	251 (0.2%)
Legal intervention & operations of war	52 (0.1%)	8 (0.0%)	60 (0.1%)
Other & unspecified	4,843 (6.7%)	2,387 (7.1%)	7,230 (6.8%)
Total[(a)]	**72,640 (100.0%)**	**33,661 (100.0%)**	**106,306 (100.0%)**

(a) Includes cases where sex was not specified.

Source: NHMD.

Falls

The most common type of specified fall resulting in an eye injury for both males (16.9%) and females (27.4%) was 'fall on same level from slipping, tripping and stumbling'. The second most common type was 'other fall on same level' (16.1% and 20.8% respectively). Almost one-quarter of hospitalisations with an eye injury from a fall were attributed to an 'unspecified fall' (23.9%).

Over a third of eye injury cases attributed to falls had periorbital fracture as the first occurring eye diagnosis (36.7%). Periorbital fractures were particularly common results of falls involving ice-skates, skis, roller-skates or skateboards (80.9% of such cases) and falls while being carried or supported by other persons (79.9%).

Superficial wounds of the eyelid and periorbital area were also common after falls, with 32.0% (n = 9,088) of fall-related eye injury cases having this as the first occurring eye diagnosis. Superficial wounds were especially common for falls involving wheelchairs (43.2% of such cases) and falls on the same level from slipping, tripping and stumbling (38.8%).

For more details regarding fall-related eye injuries, see Appendix 2.

Violence

Assault composed the vast majority of violence-related eye injury cases (96.8%). Cases attributed to intentional self-harm and 'legal intervention and operations of war' accounted for the remainder of violence-related eye injuries (2.8% and 0.2%, respectively).

The most common means of assault was by bodily force (64.4% of eye injuries attributed to assault), followed by assault by blunt object (13.2%). Periorbital fractures were the most common result of assault-related eye injuries, accounting for 39.4% of cases (n = 9,816) and a quarter of assault-related eye injuries resulted in superficial injuries (26.1%).

There were 732 hospitalised eye injury cases attributed to intentional self-harm. The most common mechanisms of self-harm that resulted in eye injuries was 'intentional self-harm by exposure to drugs, biological substances, pesticides and other noxious substances' (29.2% of self-harm cases, n = 214). As for assault-related cases, periorbital fractures (35.1%) and superficial injuries (24.6%) were the most common results of eye injuries attributed to self-harm.

For more details regarding violence-related eye injuries, see Appendix 2.

Transport

Almost one-fifth (18.8%) of hospitalisations with an eye injury were transport-related. More than half of these cases involved a car occupant (51.3%).

Periorbital fractures were the most common type of first occurring eye diagnosis for transport-related cases, accounting for 52.8% of such injuries. Periorbital fractures were proportionately most common for pedestrians injured in transport accidents (69.1% of such injuries), and accounted for 46.2% of eye injuries sustained by car occupants injured in transport accidents.

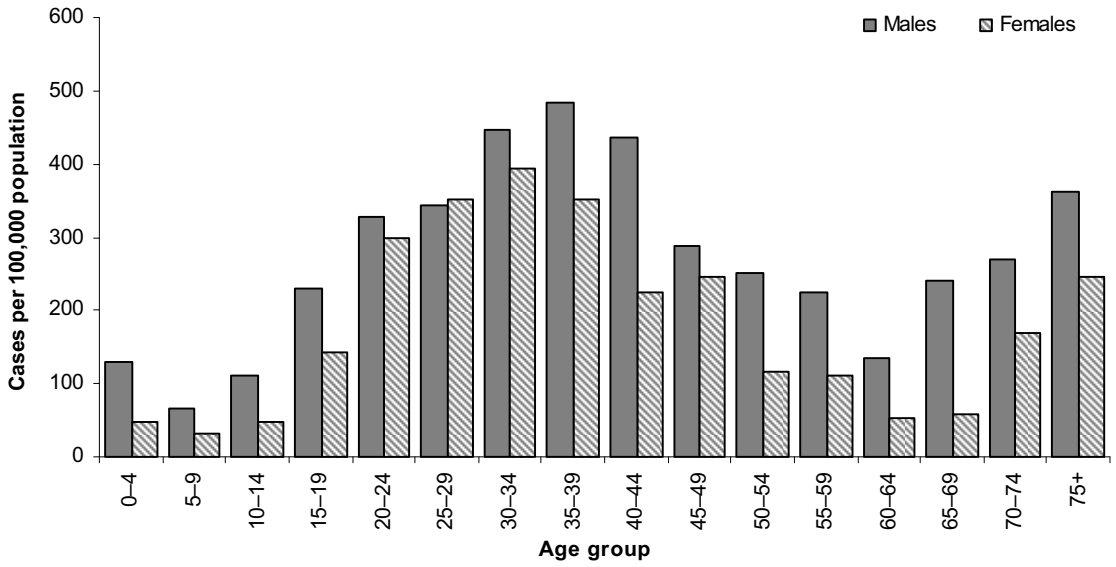
For more details regarding transport-related eye injuries, see Appendix 2.

Aboriginal and Torres Strait Islander peoples

Analysis of eye injuries among Aboriginal and Torres Strait Islander peoples is restricted to six jurisdictions (New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory) where the level of Indigenous identification in hospital data were of an acceptable quality (AIHW 2009).

The age-standardised rate of hospital eye injuries involving Indigenous Australians in the 2004–06 period was 233.9 cases per 100,000 population. This compares with a rate of 79.0 per 100,000 for the non-Indigenous population in the six states in scope for the analysis. The age-standardised rate of cases involving Indigenous males (280.5 per 100,000) was much higher than that for Indigenous females (192.9 per 100,000).

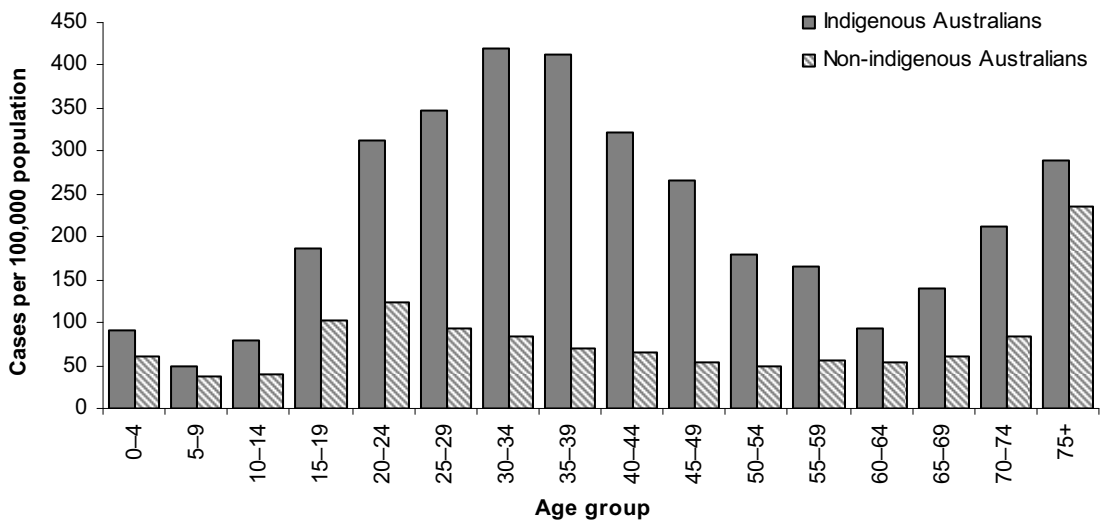
Annual average age-specific rates of eye injury cases for Indigenous Australians were highest for those aged 20–44 years and lowest for young children (Figure 5.7). This pattern is similar to that observed for non-Indigenous Australians (using the six-state model, Figure 5.8). As has been observed for other types of injuries (Helps & Harrison 2006), rates of eye injury hospitalisations are much higher for Indigenous Australians than for non-Indigenous Australians.



Note: Hospitalisations in the Northern Territory include public hospitals only.

Source: NHMD.

Figure 5.7: Average annual age-specific rates of eye injury hospitalisations among Indigenous Australians, New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, by age and sex, 2004–06

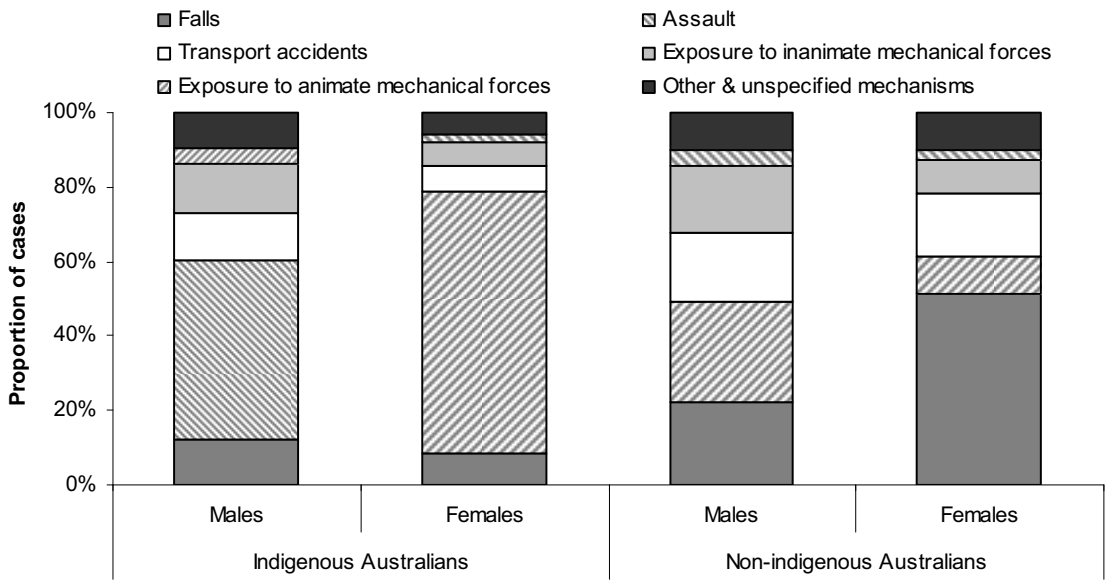


Note: Hospitalisations in NT only include public hospitals.

Source: NHMD.

Figure 5.8: Average annual age-specific rates of eye injury hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, by Indigenous status and age, 2004–06

Figure 5.9 illustrates that a much higher proportion of eye injury hospitalisation cases for Indigenous Australians were attributed to assault (males 48.3%, females 70.1%) than for non-Indigenous Australians (males 27.0%, females 10.2%). Conversely, a lower proportion of eye injury hospitalisations involving Indigenous Australians were attributed to accidental falls compared with non-Indigenous Australians.

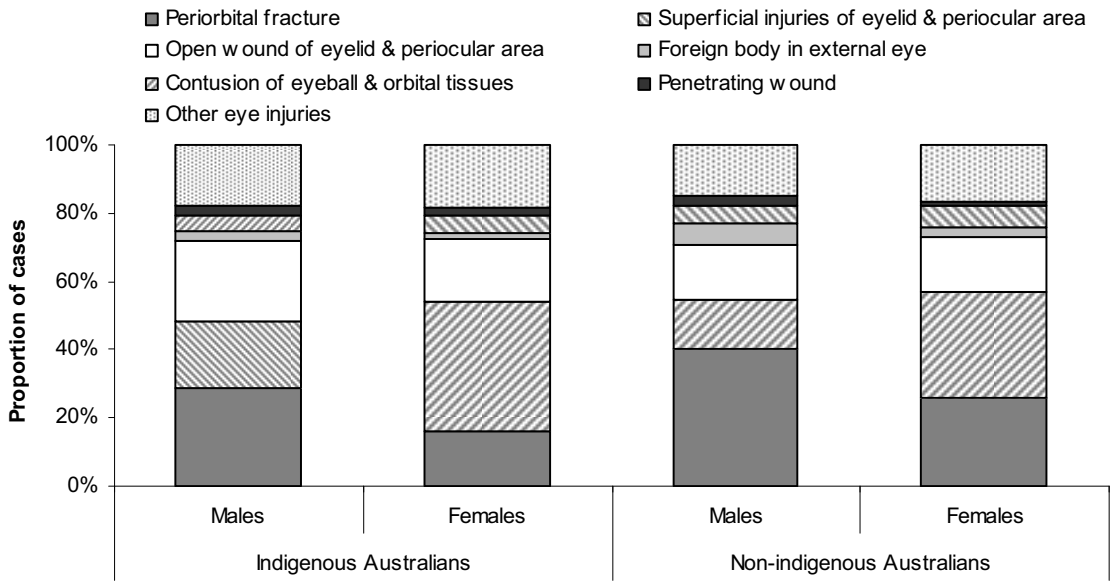


Note: Hospitalisations in the Northern Territory include public hospitals only.

Source: NHMD.

Figure 5.9: Mechanism of injury for eye injury hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, by Indigenous status, 2004–06

The most common first occurring eye diagnosis for hospitalised eye injury cases for both Indigenous and non-Indigenous males was periorbital fractures (28.5% and 40.0% respectively, see Figure 5.10). The most common for females was superficial injuries of eyelid and periocular area (Indigenous 37.7%, non-Indigenous 31.4%).



Note: Hospitalisations in the Northern Territory include public hospitals only.

Source: NHMD.

Figure 5.10: First occurring eye diagnosis for eye injury hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, by sex and Indigenous status, 2004–06

6 Eye-related workers compensation claims

The National Data Set for Compensation-based Statistics is a confidentialised database of accepted workers compensation claims which resulted in fatality, permanent incapacity or temporary incapacity with at least one working week lost. It includes both disease and injury but excludes journey claims. Data are available online from the National Occupational Health and Safety Commission Online Statistics Interactive (NOSI) system (ASCC 2008).

A total of 8,640 workers compensation claims with eye injury or disease as the primary diagnosis were contained in the NOSI database for the period July 1999 to June 2005. These cases constituted 1.0% of all workers compensation claims in this period. Most eye-related NOSI records involved males (86.9%).

Duration of absence from work because of eye injury varied by the type of injury sustained and over time (Table 6.1.) Median time lost because of eye injury in total decreased from 2.0 weeks in 2000–01 to 1.6 weeks in 2004–05. In 2004–05, injuries described as 'eye: other and multiple' resulted in the longest median time loss (2.0 weeks).

Table 6.1: Workers compensation eye-related claims, year of claim by eye part involved, 1999–2005

Year		Eyeball	Ocular adnexa	Eye: other & multiple	Eye: unspecified	Total
1999–00	Number of claims	525	80	670	550	1,820
2000–01	Number of claims	435	45	285	635	1,400
	Median total compensation payment	$1,400	$1,600	$1,500	$1,500	$1,500
	Median time lost from work (weeks)	1.6	1.8	2.0	2.0	2.0
2001–02	Number of claims	445	45	210	615	1,315
	Median total compensation payment	$1,400	$1,600	$1,900	$1,500	$1,500
	Median time lost from work (weeks)	1.9	1.7	1.8	1.8	2.0
2002–03	Number of claims	540	40	115	770	1,470
	Median total compensation payment	$1,200	$1,600	$1,300	$1,200	$1,200
	Median time lost from work (weeks)	2.0	1.9	1.7	1.8	1.9
2003–04	Number of claims	510	45	110	695	1,355
	Median total compensation payment	$1,400	$1,300	$1,600	$1,400	$1,400
	Median time lost from work (weeks)	1.5	1.4	1.8	1.5	1.6
2004–05	Number of claims	490	35	120	635	1,280
	Median total compensation payment	$1,600	$1,800	$1,500	$1,400	$1,500
	Median time lost from work (weeks)	1.6	1.2	2.0	1.6	1.6

Notes

1. The number of claims has been rounded to the nearest 5, therefore the sum of claims for each column may not equal the total.
2. Median cost and median time lost are available only from 2000–01 onwards.

Source: NOSI.

Foreign body on the external eye was the most common type of injury. It made up between 54.3% and 57.8% of eye-related claims over the study period and resulted in a median time lost of 1.4 to 1.7 weeks in the years between 2000–05. Open wounds were the next most common type of compensated eye injury (13.0%–14.8%) with the median time lost ranging between 2.0 and 2.4 weeks over the study period (Table A2.7).

Being hit by moving objects was the most common mechanism of injury, with between 690 and 855 claims and with 1.6–1.8 weeks lost off work. Hitting objects with a part of the body was the second most common mechanism, with 70–115 claims and 1.6–2.0 weeks lost off work (Table A2.8).

Appendix 1: Data sources and methods

In order to maintain confidentiality and because of difficulty in interpretation of small case counts, case counts between one and four have been suppressed. Sometimes, in order to prevent calculation of cells with small values, cells with values larger than four have also been suppressed.

National Health Survey

Between August 2004 and June 2005 the Australian Bureau of Statistics' National Health Survey interviewed approximately 25,900 people (in 19,501 dwellings) regarding their health status, use of health services and health-related risk factors (ABS 2006). People across all age groups and in all states and territories were sampled, but *Very remote* areas were excluded. In each sampled dwelling, one adult (18 years or over) and one child (where applicable) were included. The survey includes only private dwellings and hence excludes nursing homes, caravan parks and motels and other residential facilities. The survey includes Australian residents only (ABS 2006).

One aspect of this survey was whether respondents had had an injury in the 4 weeks before the survey resulting in medical treatment or other action. This included:

- consulting a health professional
- seeking medical advice
- receiving medical treatment
- reduced usual activities
- other treatment, e.g. medication, ice/heat pack, using bandaid (ABS 2006).

BEACH data set

Case selection criteria:

April 2000 to December 2007

International Classification of Primary Care (ICPC): F75, F76, F79.

The Bettering the Evaluation and Care of Health (BEACH) data set includes information on clinical activities in general practice in Australia and has been in operation since 1998 (AGPSCC 2008). An ever-changing random sample of about 1,000 general practitioners each year records details regarding 100 consecutive encounters. Consultations include telephone consultations. This results in an annual database of approximately 100,000 records.

Data are secondarily coded using the International Classification of Primary Care, Version 2 (WICC 1998). The codes F75 (contusion or haemorrhage in eye), F76 (foreign body in eye) and F79 (eye injury, other) are included in this report. This report includes encounters taking place between April 2000 and December 2007.

For management of problems:

- up to four medications can be recorded for each problem
- up to two other treatments can be recorded for each problem
- up to two referrals can be recorded for each encounter
- pathology includes tests ordered or undertaken in the management of this problem (up to five per encounter)
- imaging includes tests ordered or undertaken in the management of this problem (up to two per encounter).

Victorian Emergency Minimum Dataset

Case selection criteria:

July 1999 to June 2006

Nature of injury = eye injury (13) or body region = foreign body in eye (91).

The Victorian Emergency Minimum Dataset (VEMD) is an ongoing surveillance database of injury presentations to 24-hour emergency departments (EDs) in Victoria. It includes all Victorian public hospitals which receive the non-admitted emergency services grant and other hospitals as designated by the Department of Human Services (Victoria). The database began in October 1995 with full coverage from January 2004 (38 EDs, see Table A1.1). The VEMD records only the primary injury (DHS 2008).

Records analysed in this report include those where the nature of injury is an eye injury (13) or the body region injured is 'foreign body in eye' (91). This report includes presentations taking place between July 1999 and June 2006.

Table A1.1: Hospitals included in VEMD and year of inclusion

Starting date	Hospitals
From Oct 1995	Austin and Repatriation Medical Centre; Box Hill Hospital; Goulburn Valley Base Hospital; Northern Hospital; Northeast Health Wangaratta; Ballarat Base Hospital; Echuca Base Hospital; Maroondah Hospital; Royal Children's Hospital; Warrnambool Hospital; The Bendigo Hospital; The Geelong Hospital; Mildura Base Hospital; St Vincent's Public Hospital; Western Hospital (Footscray); Sunshine Hospital; Williamstown Hospital; Wimmera Base Hospital
From Nov 1995	Dandenong Hospital
From Dec 1995	Royal Victorian Eye and Ear Hospital; Frankston Hospital
From Jan 1996	Latrobe Regional Hospital
From July 1996	Alfred Hospital; Monash Medical Centre
From Sept 1996	The Angliss Hospital
From Jan 1997	Royal Melbourne Hospital
From Jan 1999	Werribee Mercy Hospital
From Dec 2000	Rosebud Hospital
From Jan 2004	Sale Hospital; Swan Hill Hospital; Sandringham Hospital; Wodonga Hospital; Royal Women's Hospital; Warragul Hospital; Mercy Women's Hospital; Hamilton Hospital; Bairnsdale Hospital
From April 2005	Casey Hospital

National Hospital Morbidity Database

Case selection criteria:

Eye injury in any diagnosis field

Date of discharge July 1999 to June 2006 (except for remoteness of residence and Indigenous status)

Excluding transfers from an acute care hospital (except for length of stay).

The National Hospital Morbidity Database (NHMD) is a confidentialised summary database of hospital discharges from almost all public and private hospitals in Australia. It excludes hospitals at military and correctional facilities and hospitals in offshore territories (AIHW 2006).

This report uses a broad definition of eye injury to include injuries around the orbit, e.g. periorbital fractures. It is important to include such injuries as these can be vision-threatening. NHMD cases with codes as listed in Table A1.2 in *any* field (i.e. not just the first diagnosis) have been included because although eye injury may not have been the principal injury it is, nevertheless, important.

In this report 'orbital cranial nerves' refers to the optic nerve and pathways, occulomotor nerve, trochlear nerve and abducens nerve. The ophthalmic and maxillary branches of the trigeminal nerve have not been included as these cannot be separated from the other branches of the trigeminal nerve in ICD–10–AM.

Table A1.2: Selection codes for hospital records of eye injury

ICD-10-AM code	Label
S00.1	Contusion of eyelid & periocular area
S00.2	Other superficial injuries of eyelid & periocular area
S01.1	Open wound of eyelid & periocular area
S02.1	Fracture of base of skull including orbital roof
S02.3	Fracture of orbital floor
S02.8	Fracture of other skull & facial bones including orbit not otherwise specified
S04.0	Injury of optic nerve & pathways
S04.1	Injury of occulomotor nerve
S04.2	Injury of trochlear nerve
S04.4	Injury of abducens nerve
S05.0	Injury of conjunctiva & corneal abrasion without mention of foreign body
S05.1	Contusion of eyeball & orbital tissues
S05.2	Ocular laceration & rupture with prolapse or loss of intraocular tissue
S05.3	Ocular laceration without prolapse or loss of intraocular tissue
S05.4	Penetrating wound of orbit with or without foreign body
S05.5	Penetrating wound of eyeball with foreign body
S05.6	Penetrating wound of eyeball without foreign body
S05.7	Avulsion of eye
S05.8	Other injuries of eye & orbit
S05.9	Injury of eye & orbit part unspecified
T15.0	Foreign body in cornea
T15.1	Foreign body in conjunctival sac
T15.8	Foreign body in other & multiple parts of external eye
T15.9	Foreign body on external eye part unspecified
T26.0	Burn of eyelid & periocular area
T26.1	Burn of cornea & conjunctival sac
T26.2	Burn with resulting rupture & destruction of eyeball
T26.3	Burn of other parts of eye & adnexa
T26.4	Burn of eye & adnexa part unspecified
T49.5	Poisoning by eye drugs & preparations
T90.4	Sequelae of injury of eye & orbit

NHMD case estimation

It is possible for one injury to produce more than one record in the NHMD because of inter-hospital transfers, intra-hospital transfers (including statistical separations) and re-admissions. Records that were recorded as inward transfers from another acute care hospital have been excluded for this report, in order to improve measurement of incident cases (see Berry & Harrison 2006).

However, in the calculation of number of bed-days for eye injury, inter-hospital transfers have been included in the numerator as a better measure of the burden on the hospital system from eye injury. That is, mean length of stay is total bed-days (including transfers) divided by estimated case count (excluding transfers).

Calculation of rates

Rates of hospitalised eye injury have been calculated using annual estimated resident populations.

Data as at 31 December have been used as the denominator in rate calculation, the midpoint of the financial year. Where 31 December population estimates are not available (population by remoteness of residence, population by Indigenous status), 30 June data for successive years have been averaged to provide a 31 December estimate.

The estimated resident population as at 30 June 2001 has been used in the calculation of age-standardised rates.

Remoteness of usual residence

This report also calculated rates of injury according to the remoteness of the person's usual residence. Remoteness categories were based on the Australian Standard Geographical Classification system for remoteness, but excluded the small proportion of the population classed as residents of *Migratory* remoteness areas of Australia (which account for those people who are off-shore on oil rigs, drilling platforms and other structures; on board vessels in and between Australian ports; or in transit on long-distance trains, buses and aircraft on Census night; see ABS 2007).

National Data Set for Compensation-based Statistics

Case selection criteria:

> *Bodily location of most severe injury or disease = eye*
>
> *Date of claim July 1999 to June 2005 (except for frequency and incidence rate which include July 2000 to June 2005 only).*

The National Data Set for Compensation-based Statistics is a confidentialised database of accepted workers compensation claims which resulted in fatality, permanent incapacity or temporary incapacity with at least one working week lost. It includes all states and territories, and both disease and injury. It excludes journey claims. The aim of the database is to aid in occupational injury and disease prevention. Much information is available online in the form of the NOSI system (ASCC 2008).

Claims are classified in the NOSI database according to the most severe injury or disease sustained by the worker, hence not all occurrences of eye injury or disease are identifiable here.

Median compensation payment may not include all payments and does not include an estimate of future costs. Loss of productivity and future liability costs are not included (ASCC 2008).

Appendix 2: Statistical tables

National Hospital Morbidity Database

Table A2.1: Age group at admission for eye injury hospitalisations, by sex, 1999–06

Age group (years)	Males	Females	Persons[(a)]
0-4	3,359 (59.4%)	2,291 (40.5%)	5,653 (100%)
5–9	2,678 (66.9%)	1,327 (33.1%)	4,005 (100%)
10–14	3,145 (76.4%)	971 (23.6%)	4,116 (100%)
15–19	7,698 (78.8%)	2,071 (21.2%)	9,769 (100%)
20–24	9,463 (80.8%)	2,245 (19.2%)	11,709 (100%)
25–29	7,733 (80.0%)	1,937 (20.0%)	9,670 (100%)
30–34	6,894 (78.2%)	1,919 (21.8%)	8,813 (100%)
35–39	5,785 (76.9%)	1,735 (23.1%)	7,520 (100%)
40–44	5,198 (75.4%)	1,699 (24.6%)	6,897 (100%)
45–49	4,033 (75.3%)	1,320 (24.7%)	5,353 (100%)
50–54	3,191 (73.7%)	1,136 (26.3%)	4,327 (100%)
55–59	2,765 (73.2%)	1,010 (26.8%)	3,775 (100%)
60–64	2,055 (70.9%)	845 (29.1%)	2,900 (100%)
65–69	1,564 (61.0%)	1,001 (39.0%)	2,565 (100%)
70–74	1,618 (51.1%)	1,548 (48.9%)	3,166 (100%)
75–79	1,859 (41.6%)	2,614 (58.4%)	4,473 (100%)
80–84	1,770 (35.8%)	3,172 (64.2%)	4,943 (100%)
85+	1,831 (27.5%)	4,820 (72.5%)	6,651 (100%)
Total[(a)]	**72,640 (68.3%)**	**33,661 (31.7%)**	**106,306 (100%)**

(a) Totals include 6 cases where age and/or sex was not specified.

Source: NHMD.

Table A2.2: First occurring eye diagnosis for eye injury hospitalisations, by sex, 1999–06

First occurring eye diagnosis	Males	Females	Persons
Superficial injury of eyelid & periocular area			
Contusion of eyelid & periocular area	9,537 (13.1%)	9,560 (28.4%)	19,099 (18.0%)
Other superficial injuries of eyelid & periocular area	1,723 (2.4%)	1,013 (3.0%)	2,736 (2.6%)
Total superficial injury of eyelid & periocular area	*11,260 (15.5%)*	*10,573 (31.4%)*	*21,835 (20.5%)*
Open wound of eyelid & periocular area	8,636 (11.9%)	3,711 (11.0%)	12,347 (11.6%)
Periorbital fracture			
Fracture of base of skull including orbital roof	13,389 (18.4%)	4,534 (13.5%)	17,924 (16.9%)
Fracture of orbital floor	9,043 (12.4%)	2,596 (7.7%)	11,639 (10.9%)
Fracture of other skull/facial bones including orbit n.e.c.	5,750 (7.9%)	1,784 (5.3%)	7,534 (7.1%)
Total periorbital fracture	*28,182 (38.8%)*	*8,914 (26.5%)*	*37,097 (34.9%)*
Injury of orbital cranial nerves[(a)]			
Injury of optic nerve & pathways	130 (0.2%)	34 (0.1%)	164 (0.2%)
Injury of occulomotor nerve	34 (0.0%)	26 (0.1%)	60 (0.1%)
Injury of trochlear nerve	34 (0.0%)	38 (0.1%)	72 (0.1%)
Injury of abducens nerve	23 (0.0%)	28 (0.1%)	51 (0.0%)
Total injury of orbital cranial nerves	*221 (0.3%)*	*126 (0.4%)*	*347 (0.3%)*
Injury of conjunctiva & corneal abrasion (no foreign body)	1,984 (2.7%)	963 (2.9%)	2,947 (2.8%)
Contusion of eyeball & orbital tissues	4,454 (6.1%)	2,312 (6.9%)	6,767 (6.4%)
Ocular laceration			
Ocular laceration with prolapse/loss of intraocular tissue	1,072 (1.5%)	421 (1.3%)	1,493 (1.4%)
Ocular laceration no prolapse/loss of intraocular tissue	998 (1.4%)	416 (1.2%)	1,414 (1.3%)
Total ocular laceration	*2,070 (2.8%)*	*837 (2.5%)*	*2,907 (2.7%)*
Penetrating wound			
Penetrating wound of orbit with or without foreign body	628 (0.9%)	166 (0.5%)	794 (0.7%)
Penetrating wound of eyeball with foreign body	1,258 (1.7%)	153 (0.5%)	1,411 (1.3%)
Penetrating wound of eyeball without foreign body	887 (1.2%)	266 (0.8%)	1,153 (1.1%)
Total penetrating wound	*2,773 (3.8%)*	*585 (1.7%)*	*3,358 (3.2%)*
Avulsion of eye (traumatic enucleation)	75 (0.1%)	34 (0.1%)	109 (0.1%)
Other injuries of eye & orbit	4,152 (5.7%)	2,656 (7.9%)	6,808 (6.4%)
Injury of eye & orbit, part unspecified	2,206 (3.0%)	1,112 (3.3%)	3,318 (3.1%)
Foreign body in external eye			
Foreign body in cornea	2,419 (3.3%)	634 (1.9%)	3,054 (2.9%)
Foreign body in conjunctival sac	517 (0.7%)	161 (0.5%)	678 (0.6%)
Foreign body in other & multiple parts of external eye	675 (0.9%)	159 (0.5%)	834 (0.8%)
Foreign body on external eye part unspecified	1,300 (1.8%)	353 (1.0%)	1,653 (1.6%)
Total foreign body in external eye	*4,911 (6.8%)*	*1,307 (3.9%)*	*6,219 (5.9%)*
Burns			
Burn of eyelid & periocular area	328 (0.5%)	125 (0.4%)	453 (0.4%)
Burn of cornea & conjunctival sac	783 (1.1%)	233 (0.7%)	1,016 (1.0%)
Burn of other parts of eye & adnexa	79 (0.1%)	29 (0.1%)	108 (0.1%)
Burn of eye & adnexa part unspecified	491 (0.7%)	117 (0.3%)	608 (0.6%)
Total burns	*1,684 (2.3%)*	*505 (1.5%)*	*2,189 (2.1%)*
Poisoning by eye drugs & preparations	26 (0.0%)	25 (0.1%)	51 (0.0%)
Total[(b)]	**72,640 (100.0%)**	**33,661 (100.0%)**	**106,306 (100.0%)**

(a) Injury of orbital cranial nerves does not include ophthalmic and maxillary branches of the trigeminal nerve (see Appendix 1).

(b) Totals include 4 cases where diagnosis was 'burn with rupture and destruction of eyeball' and 7 cases where diagnosis was 'sequelae of injury of eye and orbit'.

Source: NHMD.

Table A2.3: External cause of fall-related eye injury hospitalisations, by sex, 1999–06

External cause		Males	Females	Persons[(a)]
W00	Fall on same level involving ice & snow	0 (0.0%)	n.p. (0.0%)	n.p. (0.0%)
W01	Fall on same level from slipping, tripping & stumbling	2,346 (16.9%)	3,980 (27.4%)	6,326 (22.3%)
W02	Fall involving ice-skates, skis, roller-skates or skateboards	356 (2.6%)	47 (0.3%)	403 (1.4%)
W03	Other fall on same level due to collision with, or pushing by, another person	329 (2.4%)	64 (0.4%)	393 (1.4%)
W04	Fall while being carried or supported by other persons	77 (0.6%)	62 (0.4%)	139 (0.5%)
W05	Fall involving wheelchair	75 (0.5%)	87 (0.6%)	162 (0.6%)
W06	Fall involving bed	571 (4.1%)	828 (5.7%)	1,399 (4.9%)
W07	Fall involving chair	329 (2.4%)	356 (2.5%)	685 (2.4%)
W08	Fall involving other furniture	117 (0.8%)	119 (0.8%)	236 (0.8%)
W09	Fall involving playground equipment	182 (1.3%)	107 (0.7%)	290 (1.0%)
W10	Fall on & from stairs & steps	1,210 (8.7%)	1,137 (7.8%)	2,347 (8.3%)
W11	Fall on & from ladder	799 (5.8%)	99 (0.7%)	898 (3.2%)
W12	Fall on & from scaffolding	117 (0.8%)	n.p. (0.0%)	n.p. (0.4%)
W13	Fall from, out of or through building or structure	1,208 (8.7%)	250 (1.7%)	1,458 (5.1%)
W14	Fall from tree	132 (1.0%)	44 (0.3%)	176 (0.6%)
W15	Fall from cliff	72 (0.5%)	35 (0.2%)	107 (0.4%)
W16	Diving or jumping into water causing injury other than drowning or submersion	50 (0.4%)	10 (0.1%)	60 (0.2%)
W17	Other fall from one level to another	833 (6.0%)	328 (2.3%)	1,162 (4.1%)
W18	Other fall on same level	2,237 (16.1%)	3,012 (20.8%)	5,250 (18.5%)
W19	Unspecified fall	2,852 (20.5%)	3,941 (27.2%)	6,793 (23.9%)
Total[(a)]		**13,892 (100.0%)**	**14,509 (100.0%)**	**28,404 (100.0%)**

(a) Totals include 3 cases where sex was not specified.

n.p. = not published. Small cell counts have been suppressed to prevent patient identification.

Source: NHMD.

Table A2.4: External cause of fall-related eye injury hospitalisations, first occurring eye diagnosis, 1999–06

External cause	Superficial injuries	Open wound of eyelid & periocular area	Periorbital fracture	Injury of orbital cranial nerves	Injury of conjunctiva & corneal abrasion without mention of foreign body	Contusion of eyeball & orbital tissues	Ocular laceration	Penetrating wound	Other injuries of eye & orbit	Injury of eye & orbit part unspecified	Foreign body in eye	Other eye injuries	Total [(a)]
Fall on same level from slipping, tripping & stumbling	2,453	946	1,595	12	71	432	95	42	494	177	n.p.	n.p.	6,326
Fall involving ice-skates, skis, roller-skates or skateboards	33	26	326	0	n.p.	5	0	n.p.	7	n.p.	0	0	403
Other fall on same level due to collision with, or pushing by, another person	64	58	221	6	n.p.	15	n.p.	n.p.	16	6	n.p.	0	393
Fall while being carried or supported by other persons	16	n.p.	111	0	0	n.p.	0	0	n.p.	n.p.	0	0	139
Fall involving wheelchair	70	16	50	0	n.p.	8	n.p.	0	12	n.p.	0	0	162
Fall involving bed	597	246	234	n.p.	23	95	25	n.p.	148	26	n.p.	0	1,399
Fall involving chair	239	120	216	0	n.p.	31	9	5	49	11	0	n.p.	685
Fall involving other furniture	49	66	72	0	n.p.	13	9	n.p.	15	5	0	0	236
Fall involving playground equipment	34	49	171	n.p.	n.p.	9	n.p.	n.p.	15	5	n.p.	0	290
Fall on & from stairs & steps	496	227	1,341	n.p.	20	82	24	9	94	49	n.p.	0	2,347
Fall on & from ladder	107	57	674	5	n.p.	15	5	n.p.	19	9	n.p.	0	898
Fall on & from scaffolding	n.p.	n.p.	93	n.p.	n.p.	n.p.	n.p.	0	0	0	n.p.	0	119
Fall from, out of or through building or structure	143	84	1,136	n.p.	12	25	n.p.	9	35	5	n.p.	0	1,458
Fall from tree	20	17	120	0	5	n.p.	n.p.	n.p.	6	n.p.	n.p.	0	176
Fall from cliff	17	8	75	0	0	n.p.	0	0	n.p.	n.p.	0	0	107
Diving or jumping into water causing injury other than drowning or submersion	n.p.	11	39	0	n.p.	n.p.	n.p.	0	n.p.	n.p.	n.p.	0	60
Other fall from one level to another	179	97	750	n.p.	11	26	6	6	59	24	n.p.	n.p.	1,162
Other fall on same level	1,906	764	1,531	n.p.	56	300	84	36	436	121	n.p.	5	5,250
Unspecified fall	2,649	908	1,678	6	72	518	78	37	595	247	n.p.	n.p.	6,793
Total[(a)]	**9,088**	**3,710**	**10,434**	**49**	**288**	**1,584**	**350**	**160**	**2,009**	**696**	**21**	**15**	**28,404**

n.p. = not published. Small cell counts have been suppressed to prevent patient identification.

(a) Totals include 1 case for fall on same level involving ice and snow.

Source: NHMD.

Table A2.5: External cause of violence-related eye injury hospitalisations, by sex, 1999–06

External cause	Males	Females	Persons
Intentional self-harm			
Self-harm by exposure to drugs, biological substances, pesticides & other noxious substances	89 (0.4%)	125 (2.3%)	214 (0.8%)
Self-harm by hanging, strangulation & suffocation	34 (0.2%)	13 (0.2%)	47 (0.2%)
Self-harm by firearm discharge	n.p. (0.4%)	n.p. (0.1%)	78 (0.3%)
Self-harm by smoke, fire & flames	n.p. (0.0%)	n.p. (0.1%)	13 (0.1%)
Self-harm by sharp object	46 (0.2%)	24 (0.4%)	70 (0.3%)
Self-harm by blunt object	9 (0.0%)	8 (0.1%)	17 (0.1%)
Self-harm by jumping from a high place	70 (0.3%)	39 (0.7%)	109 (0.4%)
Self-harm by jumping or lying before moving object	36 (0.2%)	16 (0.3%)	52 (0.2%)
Self-harm by crashing of motor vehicle	38 (0.2%)	17 (0.3%)	55 (0.2%)
Self-harm by other & unspecified means	57 (0.3%)	20 (0.4%)	77 (0.3%)
Total intentional self-harm	*463 (2.3%)*	*269 (4.9%)*	*732 (2.8%)*
Assault			
Assault by drugs, chemicals & noxious substances	19 (0.1%)	5 (0.1%)	24 (0.1%)
Assault by hanging, strangulation & suffocation	5 (0.0%)	16 (0.3%)	21 (0.1%)
Assault by firearm discharge	38 (0.2%)	5 (0.1%)	43 (0.2%)
Assault by explosive material	13 (0.1%)	12 (0.2%)	25 (0.1%)
Assault by smoke, fire & flames	9 (0.0%)	11 (0.2%)	20 (0.1%)
Assault by steam, hot vapours & hot objects	11 (0.1%)	6 (0.1%)	17 (0.1%)
Assault by sharp object	897 (4.4%)	214 (3.9%)	1,111 (4.3%)
Assault by blunt object	2,710 (13.4%)	588 (10.8%)	3,298 (12.8%)
Assault by pushing from high place, before moving object or assault by crashing of motor vehicle	18 (0.1%)	8 (0.1%)	26 (0.1%)
Assault by bodily force	12,881 (63.6%)	3,150 (57.6%)	16,031 (62.3%)
Sexual assault by bodily force	13 (0.1%)	73 (1.3%)	86 (0.3%)
Neglect, maltreatment	140 (0.7%)	488 (8.9%)	628 (2.4%)
Assault by other & unspecified means	2,962 (14.6%)	610 (11.2%)	3,572 (13.9%)
Total assault	*19,716 (97.4%)*	*5,186 (94.8%)*	*24,902 (96.8%)*
Legal intervention & operations of war			
Legal intervention	n.p. (0.2%)	n.p. (0.1%)	53 (0.2%)
Operations of war	n.p. (0.0%)	n.p. (0.0%)	7 (0.0%)
Total legal intervention & operations of war	*52 (0.3%)*	*8 (0.1%)*	*60 (0.2%)*
Sequelae of assault, legal interventions or war	21 (0.1%)	6 (0.1%)	27 (0.1%)
Total	**20,252 (100.0%)**	**5,469 (100.0%)**	**25,721 (100.0%)**

n.p. = not published. Small cell counts have been suppressed to prevent patient identification.

Source: NHMD.

Table A2.6: External cause of transport-related eye injury hospitalisations, by sex, 1999–06

External cause	Males	Females	Persons[(a)]
Pedestrian injured in transport accident	1,839 (13.2%)	1,097 (18.0%)	2,936 (14.7%)
Pedal cyclist injured in transport accident	1,926 (13.9%)	375 (6.2%)	2,301 (11.5%)
Motorcycle rider injured in transport accident	2,047 (14.7%)	226 (3.7%)	2,274 (11.4%)
Occupant of three-wheeled motor vehicle injured in transport accident	9 (0.1%)	16 (0.3%)	25 (0.1%)
Car occupant injured in transport accident	6,552 (47.2%)	3,693 (60.8%)	10,245 (51.3%)
Occupant of pick-up truck or van injured in transport accident	228 (1.6%)	51 (0.8%)	279 (1.4%)
Occupant of heavy transport vehicle injured in transport accident	297 (2.1%)	21 (0.3%)	318 (1.6%)
Bus occupant injured in transport accident	43 (0.3%)	52 (0.9%)	96 (0.5%)
Other land transport accidents	598 (4.3%)	476 (7.8%)	1,074 (5.4%)
Water transport accidents	164 (1.2%)	35 (0.6%)	199 (1.0%)
Air & space transport accidents	66 (0.5%)	6 (0.1%)	72 (0.4%)
Other & unspecified transport accidents	122 (0.9%)	30 (0.5%)	152 (0.8%)
Total[(a)]	**13,891 (100.0%)**	**6,078 (100.0%)**	**19,971 (100.0%)**

(a) Totals include 2 cases where sex was not specified.

Source: NHMD.

Table A2.6: First occurring eye diagnosis for transport-related eye injury hospitalisations, by transport type, 1999–06

	Transport type										
First occurring eye diagnosis	**Pedestrian**	**Pedal cyclist**	**Motorcycle rider**	**Car occupant**	**Occupant of pick-up truck or van**	**Occupant of heavy transport vehicle**	**Bus occupant**	**Water transport accidents**	**Air & space transport accidents**	**Other & unspecified transport accidents**	**Total**
Superficial injuries of eyelid & periocular area	404	451	374	1,664	52	44	23	n.p.	n.p.	178	3,207
Open wound of eyelid & periocular area	201	398	242	1,834	29	49	n.p.	26	n.p.	111	2,905
Periorbital fracture	2,028	1,178	1,307	4,734	153	167	42	113	45	777	10,544
Injury of orbital cranial nerves	14	9	27	116	n.p.	n.p.	n.p.	n.p.	0	11	181
Injury of conjunctiva & corneal abrasion, no mention of foreign body	44	30	31	245	8	8	n.p.	5	n.p.	14	389
Contusion of eyeball & orbital tissues	93	60	66	425	10	12	8	9	6	52	741
Ocular laceration	7	7	7	105	n.p.	n.p.	0	6	n.p.	12	151
Penetrating wound	6	11	12	111	n.p.	n.p.	0	n.p.	0	8	156
Avulsion of eye	0	0	n.p.	11	0	0	0	n.p.	0	n.p.	16
Other injuries of eye & orbit	92	111	115	646	13	18	6	13	8	58	1,080
Injury of eye & orbit, part unspecified	40	40	79	231	n.p.	n.p.	n.p.	n.p.	n.p.	19	422
Foreign body in external eye	n.p.	6	12	116	n.p.	10	n.p.	n.p.	0	7	161
Burn of eye & adnexa	n.p.	0	n.p.	7	0	n.p.	0	n.p.	n.p.	n.p.	18
Total	**2,936**	**2,301**	**2,274**	**10,245**	**279**	**318**	**96**	**199**	**72**	**1,251**	**19,971**

n.p. = not published. Small cell counts have been suppressed to prevent patient identification.

Source: NHMD.

Table A2.7: Workers compensation eye injury or disease related claims, nature of injury and eye part involved, by year of claim, 2000–2005

		2000–01			2001–02			2002–03			2003–04			2004–05		
Nature of injury	**Eye part**	**No. of claims**	**% of claims**	**Median time lost[(a)]**	**No. of claims**	**% of claims**	**Median time lost[(a)]**	**No. of claims**	**% of claims**	**Median time lost[(a)]**	**No. of claims**	**% of claims**	**Median time lost[(a)]**	**No. of claims**	**% of claims**	**Median time lost[(a)]**
Contusion with intact skin & crushing injury (without fracture)	Eyeball	15	1.3	1.2	20	1.8	2.0	25	2.0	2.4	20	1.8	2.0	15	1.4	2.0
	Ocular adnexa	—	—	—	5	0.6	2.0	—	—	—	—	—	—	—	—	—
	Other/multiple	20	1.6	2.6	25	1.9	2.4	15	1.0	6.2	5	0.5	2.0	15	1.3	2.0
	Unspecified	40	3.2	1.9	35	3.0	1.7	45	3.5	2.3	50	4.1	2.0	45	4.2	2.2
	Total	*80*	*6.2*	*2.0*	*90*	*7.3*	*2.0*	*90*	*6.7*	*2.4*	*80*	*6.8*	*2.0*	*80*	*7.1*	*2.0*
Foreign body on external eye	Eyeball	235	18.0	1.5	230	19.4	2.0	285	21.6	1.8	265	22.4	1.2	240	21.5	1.4
	Ocular adnexa	20	1.5	1.8	10	1.0	1.1	10	0.8	2.8	—	—	—	—	—	—
	Other/multiple	120	9.3	1.8	75	6.1	1.7	40	3.1	1.6	30	2.4	2.0	35	3.0	2.0
	Unspecified	370	28.7	1.7	375	31.2	1.6	425	31.9	1.8	375	31.5	1.4	330	29.7	1.6
	Total	*740*	*57.4*	*1.6*	*690*	*57.8*	*1.7*	*765*	*57.3*	*1.8*	*675*	*56.6*	*1.4*	*600*	*54.3*	*1.5*
Burns	Eyeball	40	3.0	1.7	40	3.5	1.8	55	4.0	2.1	50	4.2	1.6	50	4.7	1.4
	Ocular adnexa	—	—	—	—	—	—	5	0.4	1.8	—	—	—	—	—	—
	Other/multiple	25	2.0	2.0	25	1.9	1.7	20	1.5	1.4	10	0.8	1.5	20	1.8	2.0
	Unspecified	60	4.7	2.0	50	4.2	2.0	105	7.8	1.4	75	6.4	1.4	65	6.1	1.8
	Total	*125*	*9.8*	*2.0*	*115*	*9.7*	*1.9*	*180*	*13.7*	*1.7*	*140*	*11.5*	*1.5*	*140*	*12.8*	*1.7*
Poisoning & toxic effects of substances	Eyeball	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ocular adnexa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other/multiple	10	0.7	1.0	—	—	—	—	—	—	—	—	—	—	—	—
	Unspecified	—	—	—	5	0.4	1.0	5	0.5	3.8	—	—	—	15	1.2	1.2
	Total	*10*	*0.8*	*1.1*	*10*	*0.8*	*1.0*	*10*	*0.8*	*4.0*	*5*	*0.5*	*1.2*	*15*	*1.3*	*1.2*

(continued)

Table A2.7 (continued): Workers compensation eye injury or disease related claims, nature of injury and eye part involved, by year of claim, 2000–2005

		2000–01			2001–02			2002–03			2003–04			2004–05		
Nature of injury	**Eye part**	**No. of claims**	**% of claims**	**Median Time Lost[(a)]**	**No. of claims**	**% of claims**	**Median Time Lost[(a)]**	**No. of claims**	**% of claims**	**Median Time Lost[(a)]**	**No. of claims**	**% of claims**	**Median Time Lost[(a)]**	**No. of claims**	**% of claims**	**Median Time Lost[(a)]**
Open wound (without amputation)[(b)]	Eyeball	50	3.7	2.0	60	5.0	1.8	50	3.9	4.2	45	3.7	3.1	50	4.5	2.5
	Ocular adnexa	15	1.1	1.2	20	1.6	1.8	15	1.1	1.2	25	2.1	1.4	20	1.8	1.2
	Other/multiple	55	4.4	2.6	35	2.8	2.8	10	0.9	4.7	25	2.0	2.0	15	1.4	2.0
	Unspecified	55	4.4	2.0	65	5.4	2.2	95	7.1	2.0	80	6.7	2.0	55	5.2	1.6
	Total	*175*	*13.5*	*2.1*	*175*	*14.8*	*2.0*	*175*	*13.0*	*2.4*	*170*	*14.4*	*2.0*	*145*	*13.0*	*2.0*
Superficial injury	Eyeball	55	4.2	1.2	45	3.6	1.7	50	3.8	1.4	45	3.7	1.8	55	5.0	1.8
	Ocular adnexa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other/multiple	15	1.0	1.4	10	0.9	1.5	—	—	—	—	—	—	10	0.7	1.6
	Unspecified	55	4.1	2.0	25	2.3	2.0	35	2.6	1.6	35	3.1	1.4	25	2.2	1.3
	Total	*125*	*9.5*	*2.0*	*80*	*6.9*	*1.8*	*90*	*6.8*	*1.5*	*85*	*7.1*	*1.6*	*90*	*8.1*	*1.6*
Total	Eyeball	400	30.8	1.6	410	34.5	1.9	475	35.9	2.0	445	37.1	1.5	425	38.3	1.6
	Ocular adnexa	40	3.1	1.8	40	3.5	1.7	35	2.7	1.9	35	3.1	1.4	30	2.6	1.2
	Other/multiple	260	20.1	2.0	175	14.6	1.8	95	7.0	1.7	75	6.4	1.8	95	8.5	2.0
	Unspecified	595	46.1	2.0	570	47.5	1.8	725	54.4	1.8	640	53.4	1.5	560	50.6	1.6
	Total	*1,295*	*100.0*	*2.0*	*1,195*	*100.0*	*2.0*	*1,330*	*100.0*	*1.9*	*1,195*	*100.0*	*1.6*	*1,105*	*100.0*	*1.6*

(a) Median time lost from work in weeks.

(b) In 2004–05 there were approximately 5 claims (0.5%) with a median time lost from work of 28.3 weeks owing to 'traumatic amputation including enucleation of eye'.

Notes

1. The number of claims has been rounded to the nearest 5; therefore the sum of claims for each column may not equal the total.
2. 'Other & unspecified' is not shown separately but is included in the total.

Source: NOSI.

Table A2.8: Workers compensation eye injury or disease related claims, mechanism of injury and eye part involved, by year of claim, 2000–2005

		2000–01			2001–02			2002–03			2003–04			2004–05		
Mechanism of injury	**Eye part**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**
Falls, trips & slips of a person	Eyeball	—	—	—	5	$77500	14.5	—	—	—	—	—	—	—	—	—
	Ocular adnexa	—	—	—	5	$2,600	1.7	—	—	—	—	—	—	5	$1,600	1.0
	Other/multiple	10	$2,100	1.6	5	$1,400	1.8	—	—	—	—	—	—	—	—	—
	Unspecified	5	$2,200	2.0	10	$2,200	2.5	5	$5,400	7.3	15	$1,400	1.4	5	$1,400	2.0
	Total	20	$1,800	2.0	25	$2,800	2.0	15	$2,900	4.9	20	$2,100	1.5	20	$1,600	1.6
Hitting objects with a part of the body	Eyeball	35	$1,400	1.6	35	$1,500	1.7	35	$1,600	1.9	30	$1,500	2.0	30	$2,200	1.8
	Ocular adnexa	10	$1,600	2.0	—	—	—	—	—	—	10	$1,200	1.3	—	—	—
	Other/multiple	15	$1,800	1.8	10	$4,600	2.1	5	$200	2.0	15	$1,400	1.3	5	$2,400	2.3
	Unspecified	55	$1,600	2.0	50	$1,800	1.8	50	$1,300	2.0	40	$1,200	1.5	30	$1,300	1.6
	Total	115	$1,600	1.8	100	$1,800	1.8	90	$1,400	2.0	95	$1,400	1.6	70	$1,800	1.8
Being hit by moving objects	Eyeball	265	$1,400	1.4	275	$1,400	1.9	330	$1,200	1.8	295	$1,400	1.4	275	$1,600	1.6
	Ocular adnexa	20	$1,600	1.8	25	$1,600	1.8	20	$1,300	1.8	20	$1,500	1.4	20	$1,900	1.2
	Other/multiple	145	$1,600	2.0	100	$2,100	1.8	50	$1,500	1.7	40	$1,700	2.0	40	$1,600	2.0
	Unspecified	370	$1,500	1.8	350	$1,300	1.7	455	$1,200	1.8	400	$1,400	1.6	355	$1,400	1.6
	Total	800	$1,500	1.8	755	$1,400	1.8	855	$1,200	1.8	755	$1,400	1.6	690	$1,500	1.6
Heat, radiation & electricity	Eyeball	15	$2,000	2.2	10	$1,300	1.4	10	$2,100	3.6	20	$1,000	1.0	20	$1,000	1.1
	Ocular adnexa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other/multiple	—	—	—	10	$1,400	1.3	—	—	—	—	—	—	—	—	—
	Unspecified	25	$1,300	1.8	15	$2,000	2.0	40	$1,000	1.2	25	$900	1.2	10	$1,300	2.0
	Total	45	$1,400	2.0	40	$1,400	1.7	55	$1,200	1.4	45	$1,000	1.1	35	$1,300	1.5

(continued)

Table A2.8 (continued): Workers compensation eye injury or disease related claims, year of claim by eye part and mechanism of injury, 2000–2005

		2000–01			2001–02			2002–03			2003–04			2004–05		
Mechanism of injury	**Eye part**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**	**No. of claims**	**Median payout[a]**	**Median time lost[b]**
Chemicals & other substances	Eyeball	50	$1,100	1.2	60	$1,200	2.0	80	$1,200	1.9	75	$1,000	1.7	75	$1,600	1.6
	Ocular adnexa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other/multiple	50	$1,200	1.6	25	$1,300	1.5	25	$1,200	1.4	10	$1,000	1.8	25	$1,500	2.0
	Unspecified	115	$1,400	2.0	125	$1,600	1.8	125	$1,100	2.0	115	$1,400	1.6	110	$1,300	1.6
	Total	215	$1,200	1.8	215	$1,400	1.8	230	$1,200	1.9	200	$1,300	1.7	210	$1,400	1.6
Biological factors	Eyeball	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ocular adnexa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other/multiple	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Unspecified	—	—	—	—	—	—	—	—	—	5	$3,600	0.8	5	$2,500	2.0
	Total	10	$900	1.0	—	—	—	—	—	—	10	$2,000	1.0	10	$2,100	1.7
Total	Eyeball	400	$1,400	1.6	410	$1,400	1.9	475	$1,200	2.0	445	$1,400	1.5	425	$1,600	1.6
	Ocular adnexa	40	$1,600	1.8	40	$1,600	1.7	35	$1,600	1.9	35	$1,300	1.4	30	$1,800	1.2
	Other/multiple	260	$1,500	2.0	175	$1,900	1.8	95	$1,300	1.7	75	$1,600	1.8	95	$1,500	2.0
	Unspecified	595	$1,500	2.0	570	$1,500	1.8	725	$1,200	1.8	640	$1,400	1.5	560	$1,400	1.6
	Total	1,295	$1,500	2.0	1,195	$1,500	2.0	1,330	$1,200	1.9	1,195	$1,400	1.6	1,105	$1,500	1.6

(a) Median total compensation payment.

(b) Median time lost from work in weeks.

Notes

1. The number of claims has been rounded to the nearest 5; therefore the sum of claims for each column may not equal the total.
2. In 2000–01 there were approximately 10 claims due to 'body stressing' with a median total compensation payment of $1,100 and a median of 1.6 weeks off work, and approximately 5 claims in 2004–05 with a median total compensation payment of $500 and a median of 2.0 weeks off work. This is included in the total.
3. 'Other & unspecified' are not shown separately but are included in the total.

Source: NOSI.

Glossary of terms

Abrasion Superficial damage to an epithelial layer (e.g. skin or cornea)

Abducens nerve The sixth cranial nerve. It carries motor impulses to lateral rectus muscle that moves the eyeball

Adnexa Appendages of the eye

Avulsion of eye Traumatic removal of eyeball

Conjunctiva Lining of the eyelids and front of sclera (white of the eye)

Conjunctivitis Inflammation of the conjunctiva

Contusion Bruise

Cornea Curved transparent layer in front of iris and pupil

Fracture Broken bone

Haematoma Contained abnormal bleeding

Haemorrhage Abnormal bleeding

Hyphaema Bleeding into the space between the iris and the inner layer of cornea

Indigenous A person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community with which he or she is associated

Intraocular Inside the eyeball

Neoplasm Cancer

Occulomotor nerve The third cranial nerve. It carries motor impulses to several muscles (inferior rectus, medial rectus, superior rectus and inferior oblique) that move the eyeball. Via the parasympathetic nervous system it also supplies sphincter pupillae (that contracts the pupil) and causes lens thickening by shortening of the suspensory ligament of the lens

Ophthalmologist Eye specialist

Optic nerve The second cranial nerve. It carries sensory impulses from the eye to the brain

Orbital Pertaining to the eye socket

Orbital cranial nerves Includes optic cranial nerve and pathways, occulomotor cranial nerve, trochlear cranial nerve and abducens cranial nerve. Two branches of the trigeminal nerve (ophthalmic and maxillary) are also located in the orbit but these are not included in this report

Periocular Around the eye

Periorbital Around the eye socket

Periorbital fracture Broken bone around the eye socket. In this report includes fracture of base of skull including orbital roof, fracture of orbital floor and fracture of other skull and facial bones including orbit not otherwise specified.

Retina The light-sensitive layer at the rear of the eyeball with photoreceptors (rods and cones)

Subconjunctival Below the conjunctiva

Traumatic enucleation Traumatic removal of eyeball

Trochlear nerve The forth cranial nerve. It carries motor impulses to superior oblique muscle that moves the eyeball

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