

Fall-related emergency department presentations for older Queenslanders, 2007-08

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Key points

- During 2007-08, a total of 1,118 fall-related presentations for adults aged 65 years and over were recorded by QISU participating emergency departments, with 5 times that number likely to have presented statewide during the study period. The rate of fall-related presentations increased with age, and was consistently higher among females compared to males across all age groups.
- Most of these falls occurred at home (58%), followed by residential aged-care facilities (10%). The most common activity at time of the fall was resting, sleeping, and personal activities of daily living (29%), followed by “leisure” activities (18%), which included sporting and hobby pursuits.
- The mechanism of falls were predominantly slip or trip on the same level (40%), falls from less than 1 metre (13%) and falls by stumbling on same level (12%).
- The leading body regions injured following a fall were head (15%), hip (11%) and forearm (9%), and the most common type of fall-related injury was fractures (30%).
- The majority of cases were triaged as category 4 „semi urgent’ (47%) or category 3 „urgent’ (42%). Most presentations were discharged following treatment in the ED (68%), with 27% admitted to hospital for further treatment.

Introduction

Population studies show that around 20% of falls among adults aged 65 years and over result in injury requiring medical treatment,^{1, 2} and around 5% result in a fracture injury.³ As such, a considerable proportion of older adults experiencing falls are likely to present to emergency departments (EDs) for treatment of their fall-related injuries.

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Estimates from the UK show that fall-related ED presentations account for 20% of all presentations among adults aged 65 years and over.⁴ Older fallers discharged directly home from an ED have a high prevalence of risk factors for further falls, are at risk of further functional decline. Around 50% will experience another fall within 12 months.⁴⁻⁶ This has led to the development of a number of screening tools for use in the ED setting. Identification of older adults at high-risk of future falls allows provision of additional assessment and management. One example is the FROP-Com screening tool developed in Australia.⁶

This chapter examines fall-related ED presentations for Queenslanders aged 65 years and over using Queensland Injury Surveillance Unit (QISU) data for the year, 2007-08.

Methodology and data capture

QISU collects injury surveillance data at point of triage in a sample of EDs across Queensland. The current database contains nearly 500,000 injury presentations dating from January 1999. Participating sites have varied during the collection period. It is estimated that QISU data capture represents approximately 20% of the adult injury-related ED attendances across the state. Therefore, QISU data interpretations will under-represent the total number of fall-related injuries in older persons presenting to hospital EDs in Queensland. During the 2007-08 period, QISU data was collected from 15 hospitals, of which 13 provided adult data.

Data are collected at triage by trained triage nurses during the initial presentation, either via electronic or paper format. Larger EDs collect data via the Emergency Department Information System (EDIS) software, while smaller EDs collect data using either the Hospital Based Corporate Information System (HBCIS) electronic system or paper forms. The electronic and paper data are sent to QISU, where it is cleaned and coded using the National Data Standards for Injury Surveillance (NDS-IS Version 2.1c-1998). Variables include patient demographics, a narrative text descriptor of the presenting problem/injury event, date/time of injury, intent, external cause, place of injury occurrence, activity when injured, major injury factor, mechanism of injury, principal diagnosis and nature of injury (derived from the International Classification of Disease code), triage category and mode of ED separation.

The injury surveillance data is more detailed than data available through the EDIS and HBCIS systems, and allows broader search strategies and greater case ascertainment, particularly for falls.

Data issues

Although EDIS is estimated to capture 95% of all ED presentations across the state, the EDIS system does not routinely capture injury mechanism data unless the injury surveillance module is activated. Although there is an ICD code for fall, this is not used in the current Queensland Health version of EDIS. Therefore, identification of falls within the EDIS system relies solely on

text search strategies within the triage text field. A search using the QISU database is able to identify additional falls cases, where the triage text did not identify a fall related mechanism, but the fall was coded by the triage nurse within the injury surveillance screen. This strategy will also identify additional cases where the fall may not be the primary event, but still contributed to injury.

Therefore, QISU data for the 2007-08 financial year was searched for persons aged 65 years and over, where the triage text or coded data indicated a fall:

- External cause codes for fall (9=Fall-low, 10=fall-high)
- Mechanism codes for a fall (01–09)
- Triage text containing: “fall”, “fell”, “tripped”, “slipped”, “pushed” and “stairs”.

ED presentations during 2007-08 from the QISU dataset

During 2007-08, a total of 1,118 fall-related ED presentations were recorded in the QISU database involving adults aged 65 years and over. It is estimated that this represents one fifth of the number of falls presentations statewide for this age group. Therefore, the age-specific rate is estimated to be 1,094 per 100,000 population. The rate of presentations increased with age, and was consistently higher among females compared to males across all age groups (Table 1, Figure 1).

Table 1: Number and estimated rate of fall-related ED presentations from the QISU database, 65+, 2007-08

Age Group	Sex	No. of episodes in QISU database	Estimated no. of episodes in QLD	2007-08 Population	Estimated rate per 100,000
65-69	Males	90	450	79,956	563
	Females	134	670	78,373	855
	All	224	1120	158,329	707
70-74	Males	78	390	59,208	659
	Females	120	600	60,766	987
	All	198	990	119,974	825
75-79	Males	69	345	46,555	741
	Females	116	580	52,911	1096
	All	185	925	99,466	930
80-84	Males	84	420	30,904	1,359
	Females	140	700	41,744	1,677
	All	224	1120	72,648	1,542
85+	Males	86	430	20,811	2066
	Females	201	1005	39,964	2515
	All	287	1435	60,775	2361
All ages	Males	407	2035	237,434	857
	Females	711	3555	273,758	1,299
	All	1,118	5590	511,192	1,094

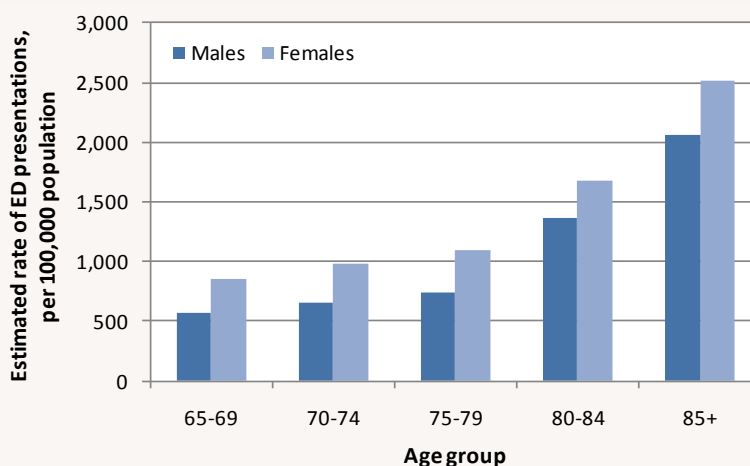


Figure 1: Estimated rate of fall-related ED presentations in QLD, age, 65+, 2007-08

Injury intent

Nearly all (98%) of the fall-related injury presentations involving adults aged over 65 years were coded as unintentional. A small number of cases (n=6) which were coded as an intentional injury; „maltreatment by a partner’, „unspecified assault’ or „intentional self harm’. The remaining cases were classified as „intent not specified’, „other specified intent’ or „event of undetermined intent’. It is possible that true intent is not fully disclosed at triage.

Location and place

The location of falls-related injury incidents among adults aged 65 years and over is presented in Table 2. The most common location was in the home (58%). This was followed by residential aged-care facilities (10%), with a slightly higher proportion of females than males in this group (11% vs. 9%, respectively). Hospital or other health service locations accounted for around 6% of the presentations.

Table 2: Location of falls, ED presentations from the QISU dataset, 65+, 2007-08

Location of injury	Male, n (%)	Female, n (%)	Total, n (%)
Home	233 (57%)	414 (58%)	647 (58%)
Residential aged-care facility	37 (9%)	77 (11%)	114 (10%)
Hospital or other health service	23 (6%)	39 (5%)	62 (6%)
Street or highway	26 (6%)	34 (5%)	60 (5%)
Other specified place	42 (10%)	69 (10%)	111 (10%)
Unspecified place	11 (3%)	50 (7%)	61 (5%)
Total	407	711	1,118

Activity at time of injury

The activity for many of the falls-related injury presentations was coded as „other specified activity’ or „unspecified activity’ in 40% of cases, as shown in Table 3. In these situations, the activity is either not disclosed at triage, or does not fit within the appropriate codes supplied. Of those that were coded with an identifiable activity, the most common activity was resting, sleeping, eating and personal activities of daily living (29%). The next most common activity was “leisure” activity (18%), which included informal sporting activity (swimming, horse riding, cycling) and hobby pursuits (fishing, gardening, playing).

Table 3: Activity at time of fall, ED presentations from the QISU dataset, 65+, 2007-08

Activity when injured	Male, n (%)	Female, n (%)	Total, n (%)
Resting, sleeping, eating, other personal activities of daily living	113 (28%)	215 (30%)	328 (29%)
Unspecified activity	81 (20%)	170 (24%)	251 (22%)
Leisure activity	83 (20%)	114 (16%)	197 (18%)
Other specified activity	71 (17%)	120 (17%)	191 (17%)
Other type of work (incl. unpaid housework)	26 (6%)	54 (8%)	80 (7%)
Being nursed or cared for	19 (5%)	27 (4%)	46 (4%)
Working for income (incl. travel to & from work)	12 (3%)	5 (1%)	17 (2%)
Organised sports activity	2 (<1%)	5 (1%)	7 (1%)
Engaged in formal educational activity	0 (0%)	1 (<1%)	1 (<1%)
Total	407	711	1,118

Mechanism of injury

The top 10 mechanisms of injuries for fall-related ED presentations among older adults are presented in Table 4, accounting for 96% of the falls (n=1,084). The most common mechanism was a fall by „slip or trip on the same level’ (a fall precipitated by a specific trip or slip hazard, n=429 (38%)). Falls from less than 1 metre and falls by „stumbling on same level’ (a fall precipitated by an action of the person) were the next most common mechanisms, accounting for around 12% of presentations each. The mechanism of the fall may not have been clear at triage in some instances, and 8% of presentations were coded as an “unspecified fall”. There were 75 cases of „fall on or from stairs’ (7%). Falls “from a height (>1m)” accounted for only 23 (2%) of the total presentations.

In other instances, the fall may be due to medical reasons (syncope, vertigo) and the fall may be coded as “other specified fall”, which accounted for 84 cases (8%). In cases where the person fell onto a solid or sharp object and injured themselves, the mechanism of injury is

coded as „contact with static object’ (n=51, 5%) or „cutting tearing’ (n=35, 3%). Ten percent of fall injuries resulted from “acute over extension/exertion” (n=25, 2%).

Table 4: Top 10 mechanism of injury for fall-related ED presentations from the QISU dataset, adults 65+, 2007-08

Mechanism of fall injury	Male, n (%)	Female, n (%)	Total, n (%)
Fall by slipping, tripping on same level	144 (37%)	285 (42%)	429 (40%)
Fall from low height (<1m)	53 (13%)	85 (12%)	138 (13%)
Fall by stumbling on same level	38 (10%)	94 (14%)	132 (12%)
Unspecified fall	28 (7%)	58 (8%)	86 (8%)
Other specified fall	30 (8%)	54 (8%)	84 (8%)
Fall on or from stairs	29 (7%)	46 (7%)	75 (7%)
Contact with static object	22 (6%)	29 (4%)	51 (5%)
Cutting, tearing	20 (5%)	15 (2%)	35 (3%)
Acute over extension/exertion	10 (3%)	15 (2%)	25 (2%)
Fall from height (>1m)	20 (5%)	3 (<1%)	23 (2%)
Top 10 Total	394	648	1,078

Nature of injury

The top 8 injuries resulting from falls among older adults are presented in Table 5, accounting for 97% of the falls (n=1,084). The leading injuries were fractures (n=329, 30%), followed by superficial injury (n=257, 24%) and open wound (n=216, 20%). One third (34%) of falls in females resulted in a fracture, compared to 23% in males. For males, an open wound was more common, accounting for 27% of fall related injuries, compared to 16% in females.

Table 5: Nature of injury for fall-related ED presentations from the QISU dataset, 65+, 2007-08

Nature of Injury	Male, n (%)	Female n (%)	Total n (%)
Fracture (excludes tooth)	91 (23%)	238 (34%)	329 (30%)
Superficial (includes bruise; excludes eye)	89 (23%)	168 (24%)	257 (24%)
Open wound (excludes eye)	103 (27%)	113 (16%)	216 (20%)
Sprain or strain	47 (12%)	89 (13%)	136 (13%)
Injury of unspecified nature	32 (8%)	46 (7%)	78 (7%)
Intracranial injury (includes concussion)	8 (2%)	16 (2%)	24 (2%)
Dislocation (includes ruptured disc, cartilage, ligament)	10 (3%)	14 (2%)	24 (2%)
Injury to muscle or tendon	8 (2%)	12 (2%)	20 (2%)
Total	388	696	1,084

The leading body region injured as a result of a fall was head (n=170, 15%), followed by hip (n=124, 11%) and forearm (n=98, 9%)(Table 6). The top 6 body locations listed accounted for almost 53% of body locations injured. The 170 presentations for head-related injuries included: open wound (n=93, 55%) or superficial injury (n=45, 27%). Intracranial injury after a fall was sustained in 24 cases (14%). The 124 hip-related injuries included: fracture (n=69; 70%), superficial injury (n=30, 24%) or sprain/strain (n=12, 10%). Of the 98 forearm-related injuries, these included fracture (n=63, 64%), open wound (n=23, 24%) and superficial injury (n=10, 10%).

Table 6: Bodily location of injury, fall-related ED presentations from the QISU dataset, 65+, 2007-08

Bodily location of injury	Male, n (%)	Female, n (%)	Total, n (%)
Head (excludes face)	72 (18%)	98 (14%)	170 (15%)
Hip	34 (8%)	90 (13%)	124 (11%)
Forearm	21 (5%)	77 (11%)	98 (9%)
Lower leg	34 (8%)	35 (5%)	69 (6%)
Shoulder	28 (7%)	40 (6%)	68 (6%)
Thorax	27 (7%)	37 (5%)	64 (6%)
Unspecified bodily location	23 (6%)	40 (6%)	63 (6%)
Knee	22 (5%)	35 (5%)	57 (5%)
All other body locations	146 (36%)	259 (36%)	405 (36%)
Total	407	711	1,118

Injury severity

The triage score reflects injury severity and indicates the time within which a patient should be attended to. The majority of cases were triaged as category 4 „semi urgent‘ (47%) or category 3 „urgent‘ (42%), as shown in Table 7. The proportion of presentations triaged to category 3 was higher for females than males (45% vs. 37%, respectively), which may reflect both greater age and injury severity (fractures).

Table 7: Triage category of fall-related ED presentations from the QISU dataset, 65+, 2007-08

Triage Category	Male, n (%)	Female, n (%)	Total, n (%)
1: Resuscitation (immediate)	0 (0%)	1 (<1%)	1 (<1%)
2: Emergency (10 minutes)	19 (5%)	25 (4%)	44 (4%)
3: Urgent (30 minutes)	149 (37%)	317 (45%)	466 (42%)
4: Semi urgent (60 minutes)	195 (48%)	327 (46%)	522 (47%)
5: Non urgent (120 minutes)	43 (11%)	39 (5%)	82 (7%)
Unspecified	1 (<1%)	2 (<1%)	3 (<1%)
Total	407	711	1,118

Mode of separation

Nearly one third of patients were either admitted to hospital from ED (n=297; 27%) or transferred to another hospital for further management (n=49, 4%)(Table 8). The majority of fall-related ED presentations completed their ED service and were discharged (68%). Only one fall-related presentation was coded as „died in ED’. A small proportion of fall-related presentations left after treatment commenced (<1%), or did not wait for treatment (<1%).

Table 8: Outcome of fall-related ED presentations from the QISU dataset, 65+, 2007-08

Mode of separation	Male, n (%)	Female, n (%)	Total, n (%)
ED service event completed – discharged	280 (69%)	478 (67%)	758 (68%)
Admitted (excluding ED Bed)	102 (25%)	195 (27%)	297 (27%)
Transfer to another hospital	21 (5%)	28 (4%)	49 (4%)
Did not wait	3 (1%)	6 (1%)	9 (1%)
Left after treatment commenced	1 (<1%)	3 (<1%)	4 (<1%)
Died in ED	0 (0%)	1 (0%)	1 (<1%)
Total	407	711	1,118

Suggested citation:

Swaminathan, Barker & Black (2011). Fall-related emergency department presentations for older Queenslanders, 2007-08. Queensland Health, Brisbane.

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For additional information and resources on falls prevention, please visit the Queensland Health “Stay On Your Feet®” website at:
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