

# Stair-Related Falls

Each day, more than 10 Ontarians are hospitalized because of a fall on stairs or steps. Ontarians 60 years and older account for three-fifths.

## Results

In Ontario, there were a total of 3,858 injury hospitalizations due to a fall on stairs or steps during the 2002/03 fiscal year. Females accounted for more than three-fifths of the stair-related injury hospitalizations. The average age of persons hospitalized with a stair-related injury was 60 years. Peaks in the number of injury hospitalizations were observed among females 61-88 years, males 76-84 years, and children under 5 for both sexes (Figure 1).

For stair-related injuries, injuries to the lower limb, head or neck, and upper limb were most common (Figure 2). Different injury patterns were observed by age. For example, for children under 5 years, the most frequent types of injuries sustained were head injuries, such as intracranial injuries and skull fractures, and fractures to the shoulder or upper arm. In contrast, hip fractures were the most common type of injury for Ontarians 80 years and older.

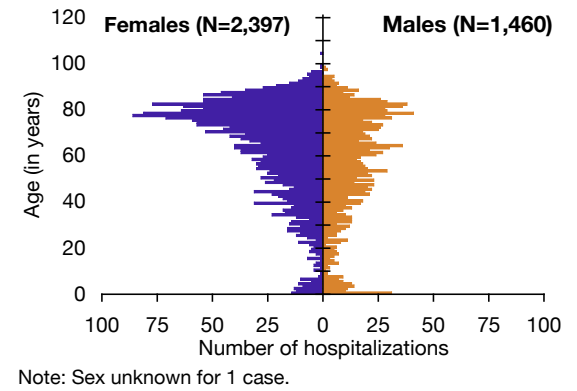
The highest number of stair-related injury hospitalizations was observed in December and the lowest number was seen in February (Figure 3).

The 3,858 cases accounted for more than 35,000 days in acute care hospitals, with an average length of stay of 9.3 days. In general, the length of hospital stay increased with age to an average of 16.5 hospital days for Ontarians 90 years and older. About 70% of cases were discharged home and 18% were transferred to another inpatient facility (e.g., rehabilitation centre). Nearly 4% of persons hospitalized with a stair-related injury died during their hospital stay.

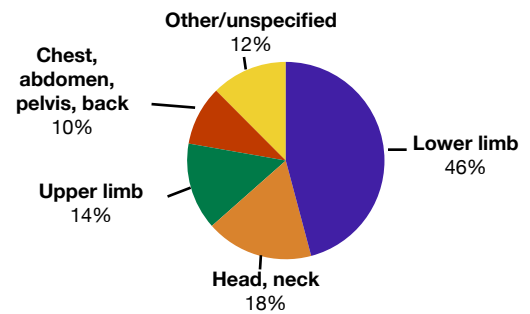
In Ontario, the age-standardized hospitalization rate for stair-related injuries was 31.2 per 100,000 population (Table 1). By region, the highest number of injuries and the lowest rate were observed in Toronto. Conversely, the fewest number of injuries and the highest rate was seen in the North region.

In all of the regions, the highest stair-related hospitalization rate was seen among Ontarians 80 years and older, followed by persons 70-79 years and 60-69 years (Table 2). In general, injury rates increased with age from five to 80 years of age and older.

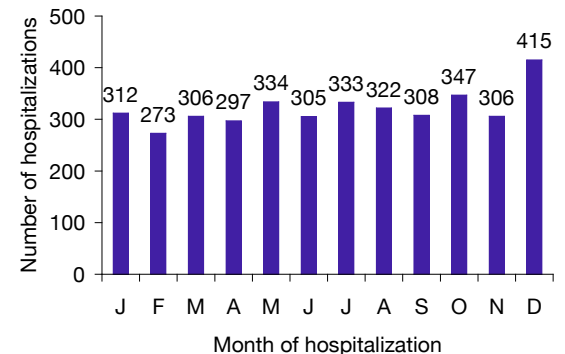
**FIGURE 1. Stair-related injury hospitalizations by age and sex (Ontario, 2002/2003)**



**FIGURE 2. Site of injury for stair-related injury hospitalizations (Most responsible diagnosis, Ontario, 2002/03)**



**FIGURE 3. Stair-related injury hospitalizations by month of admission (Ontario, 2002/2003)**



**TABLE 1. Regional comparison of stair-related injury hospitalizations (Ontario, 2002/03)**

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Number	611	439	523	590	628	546	434	3,858
Rate per 100,000 <sup>a</sup>	35.3	33.1	28.0	31.4	22.5	31.0	44.2	31.2
Average age (in years)	63	60	58	60	60	63	59	60
% female	65	63	62	64	59	62	60	62

a. Age-standardized rate per 100,000 population.  
 Notes: Region of residence unknown/outside of Ontario for 87 hospitalizations. Unknown sex for 1 case.

## Ontario Injury Compass

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**TABLE 2. Regional comparison of stair-related injury hospitalizations by age (Ontario, 2002/03)**

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
<b>Rate per 100,000 population<sup>a</sup> (Number)</b>								
<5 years	21.7 (20)	34.1 (23)	17.1 (24)	22.4 (26)	17.9 (28)	7.9 (7)	16.0 (8)	19.4 (138)
5-19 years	3.5 (11)	4.7 (11)	5.8 (25)	3.9 (16)	6.5 (28)	4.5 (14)	10.1 (19)	5.5 (127)
20-59 years	22.6 (187)	22.7 (143)	14.7 (175)	19.4 (205)	13.0 (195)	19.8 (176)	34.6 (170)	19.6 (1,287)
60-69 years	65.9 (82)	58.7 (58)	64.9 (87)	68.6 (97)	43.4 (89)	74.4 (93)	93.0 (75)	65.3 (594)
70-79 years	152.7 (152)	117.6 (99)	136.7 (124)	120.9 (121)	90.6 (144)	141.4 (136)	147.2 (84)	128.2 (880)
80+ years	326.5 (159)	280.5 (105)	222.6 (88)	289.4 (125)	189.0 (144)	252.4 (120)	309.7 (78)	261.8 (832)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 87 hospitalizations.

## Discussion

This Compass highlights patterns of stair-related injury hospitalizations in Ontario. These injuries occur among all age groups with peaks among seniors and children under 5 years. Similar patterns of injury have been reported in other analyses conducted in Ontario and Canada.<sup>1-4</sup>

Several different factors have been associated with stair-related falls and injuries. For example, stairway characteristics, such as excessive height, narrow width, non-uniform risers, slippery surfaces, lack of properly fitted handrails, and inadequate lighting, can play a role.<sup>2,5-9</sup> Other environmental factors like loose rugs or objects left on stairs or landings are also potential tripping hazards that may lead to a stair-related fall.<sup>2,5,6</sup> Personal factors, such as medication or substance use, vision, and balance, also warrant consideration.<sup>2,5</sup>

While more than 10 Ontarians are hospitalized each day because of a fall on stairs or steps, the magnitude of the issue is even more staggering. Many more people fall down stairs and seek medical treatment in the emergency department or from their family physician. Despite this, the public may not be aware of the risk of falling down stairs. In order to teach people that “accidents” are usually predictable and preventable, SMARTRISK has created a series of public service announcements (PSAs) in partnership with the Grey Bruce Health Unit for their “No More Accidents” campaign. One of the PSAs focused specifically on stair-related falls.<sup>10</sup>

## References

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2. Public Health Agency of Canada. *Report on Seniors' Falls in Canada*. Ottawa: Minister of Public Works and Government Services Canada, 2005. Cat.No.: HP25-1/20005E.
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9. Templer JA. *The staircase: Studies of hazards, falls and safer design*. Cambridge, MA: The MIT Press, 1992.
10. SMARTRISK Navigator Story. *Hear the “No More Accidents” PSAs*. Available at: [www.smartrisk.ca/ContentDirector.aspx?tp=603&dd=2](http://www.smartrisk.ca/ContentDirector.aspx?tp=603&dd=2).

## Managing the risk

**Stairs are everywhere. Hence, virtually everyone is at potential risk for falling down stairs. Here are some tips that can be used to help reduce the risk for injury:**

- ❖ Watch for tripping hazards. Keep stairs and landings clear of objects that may cause someone to trip or distract their attention. Securely fasten stair coverings and remove loose rugs from the top or bottom of stairways.
- ❖ Ensure stairs are well lit. Make light switches accessible from both the top and bottom.
- ❖ Provide sturdy handrails on both sides that are the full length of the stairs.
- ❖ Don't be in a rush. Take your time when going up or down stairs.
- ❖ Wear footwear that fits properly and has a non-slip sole. Remove your reading glasses.
- ❖ Avoid stair coverings that can make it difficult to distinguish between steps. If the edges of the stairs are not clear, paint a stripe on the edge in a contrasting colour.
- ❖ If stairs are slippery or in poor condition, repair or replace the surfaces with a non-slip rough finish.
- ❖ Make sure safety gates are properly installed to keep infants and toddlers from falling down the stairs.
- ❖ Be aware of the risks. A stair-related fall PSA to increase public awareness can be obtained from SMARTRISK or the Grey Bruce Health Unit.

## For Further Information

Public Health Agency of Canada, Aging and Seniors  
[www.phac-aspc.gc.ca/seniors-aines/index\\_pages/publications\\_e.htm#injury](http://www.phac-aspc.gc.ca/seniors-aines/index_pages/publications_e.htm#injury)  
Canada Mortgage and Housing Corporation-Preventing falls on stairs  
[www.03.cmhc-schl.gc.ca/b2c/b2c/init.do?language=en&shop=Z01EN&arealD=000000024&productID=000000024000000028](http://www.03.cmhc-schl.gc.ca/b2c/b2c/init.do?language=en&shop=Z01EN&arealD=000000024&productID=000000024000000028)  
SafeCanada.ca-Home Safety and Security  
[www.safecanada.ca/link\\_e.asp?category=1&topic=93](http://www.safecanada.ca/link_e.asp?category=1&topic=93)  
Safe Kids Canada  
[www.safekidscanada.ca](http://www.safekidscanada.ca)  
Health Canada-Consumer Product Safety  
[www.hc-sc.gc.ca/cps-spc/advisories-avis/aw-am/index\\_e.html](http://www.hc-sc.gc.ca/cps-spc/advisories-avis/aw-am/index_e.html)  
Cochrane Injuries Group  
[www.cochrane-injuries.lshtm.ac.uk](http://www.cochrane-injuries.lshtm.ac.uk)  
SMARTRISK Catalogue of Best Practices  
[www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207](http://www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207)

## Methods

Hospitalization data included acute care hospitalizations for falls on or from stairs or steps in Ontario from the 2002/03 fiscal year. Data were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information (CIHI). Stair-related falls were classified according to the International Classification of Diseases, 10th revision (ICD-10) using code W10. About 4% of cases resulted in an in-hospital death. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes.