

Spinal Cord Injuries

Each year in Ontario, about 300 people are hospitalized with a spinal cord injury. Falls from one level to another and motor vehicle occupant injuries are the most common causes of hospitalization.

Results

In Ontario, during the 2004/05 fiscal year, there were a total of 296 spinal cord injury hospitalizations. More than two-thirds of the hospitalizations were cervical spinal cord injuries followed by thoracic spinal cord injuries, which represented more than one-fifth of all spinal cord injury cases (Table 1).

Males accounted for about 71% of the spinal cord injury hospitalizations. Among males, the highest numbers of injuries were seen in the 40-49 and 50-59 year age groups (Table 2). For females, the number of injuries peaked in the 80+ and 60-69 year age groups. Overall, the average age of injury was 51 years. There was no significant difference ($p>0.05$) in the average age of injury between males and females (average age of 50 years for males and 55 years for females).

Unintentional falls and transport incidents were the most common external causes of spinal cord injury, followed by being unintentionally struck by an object or person, and violence (Figure 1). More specifically, stair falls, other types of falls from a height, and motor vehicle occupant injuries were the most frequent causes of injury.

July and August had the highest numbers of injuries (Figure 2). The lowest numbers were observed in April and December.

About 48% of hospitalized cases were transferred to another inpatient facility (e.g., rehabilitation hospital), 29% were discharged home, 13% were transferred to another facility (e.g., long term care facility), and 9% died after admission to hospital.

TABLE 1. Location of spinal cord injury (Ontario, 2004/05)

Level	Number (%)
Cervical spinal cord	201 (68%)
Thoracic spinal cord	62 (21%)
Lumbar spinal cord	28 (9%)
Other	5 (2%)
Total	296 (100%)

TABLE 2. Spinal cord injuries by age and sex (Ontario, 2004/2005)

Age group	Male	Female	Total
	Number (%)	Number (%)	Number (%)
<20 years	15 (7%)	8 (9%)	23 (8%)
20-29 years	28 (13%)	7 (8%)	35 (12%)
30-39 years	23 (11%)	8 (9%)	31 (10%)
40-49 years	38 (18%)	13 (15%)	51 (17%)
50-59 years	37 (18%)	9 (11%)	46 (16%)
60-69 years	25 (12%)	15 (18%)	40 (14%)
70-79 years	32 (15%)	8 (9%)	40 (14%)
80+ years	13 (6%)	17 (20%)	30 (10%)
Total	211 (100%)	85 (100%)	296 (100%)

Note: Percentages do not add up to 100% due to rounding.

FIGURE 1. External cause of spinal cord injury (Ontario, 2004/05)

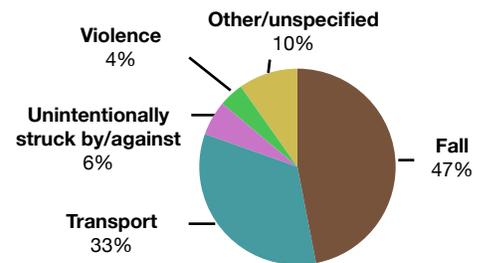


FIGURE 2. Month of spinal cord injury (Ontario, 2004/05)

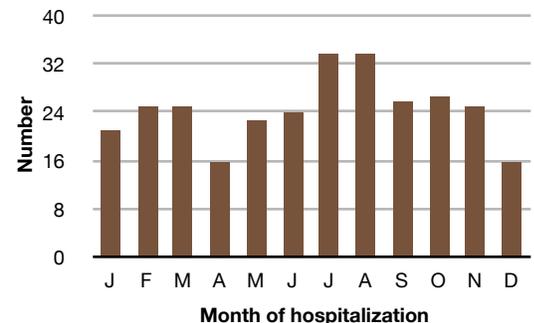


TABLE 3. Regional comparison of spinal cord injury hospitalizations (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Number	48	27	36	42	57	48	29	296
Rate per 100,000 ^a	2.7	2.1	1.6	1.9	1.9	2.7	3.1	2.2
Average age (in years)	58	48	48	44	57	49	48	51
% male	65	85	69	74	68	71	83	71

a. Age-standardized rate per 100,000 population.

b. Note: Region of residence unknown/outside of Ontario for 9 hospitalizations.



Ontario Injury Compass

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TABLE 4. Regional comparison of spinal cord injury hospitalizations by age group (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
	Number (Rate) ^a							
<29 years	5 (0.8)	7 (1.6)	9 (0.9)	13 (1.5)	10 (1.0)	10 (1.6)	4 (1.3)	58 (1.2)
30-49 years	12 (2.6)	8 (2.2)	11 (1.4)	12 (1.7)	11 (1.3)	12 (2.3)	14 (5.4)	82 (2.1)
50-69 years	16 (4.8)	6 (2.3)	7 (1.6)	12 (2.7)	15 (3.0)	18 (5.0)	6 (2.9)	86 (3.4)
70+ years	15 (9.4)	6 (4.5)	9 (5.6)	5 (2.8)	21 (8.3)	8 (5.1)	5 (5.5)	70 (6.2)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 9 hospitalizations.

The 296 hospitalized cases accounted for over 6,000 days in acute care hospitals with an average length of stay of 20.6 days. The highest average length of acute care hospital stay was observed for stair falls (average of 43.3 days)

By region, the lowest injury hospitalization rate was observed in the Central West region and the highest rate was seen in the North region (Table 3). Regional variations were seen in the numbers and rates of injury by age group (Table 4).

Discussion

This Compass highlights patterns of hospitalization for spinal cord injury. It is important to note that hospitalizations represent only one window of surveillance. For example, 9% of cases died after admission to hospital. These cases were included in this analysis but there are likely other people who died at the scene and were not admitted for treatment in hospital.

Canadian research studies have examined the incidence and epidemiology of spinal cord injuries.¹⁻⁶ One study published in 2006 noted that patterns of injury appear to be changing.¹ For example, the authors noted the average age of injury is increasing compared to historical reports, with a high proportion of injuries observed among older adults due to falls.¹

While spinal cord injuries are relatively infrequent, they can impose substantial economic costs to society.⁷⁻⁸ A report funded by the Ontario Neurotrauma Foundation (ONF), conservatively estimated the lifetime costs to the healthcare system for a single spinal cord injury at over \$2 million.⁷ The economic burden largely relates to the severity of the injury and the nature of the resulting disability. The costs are highest in the first year after injury, primarily due to emergency, hospital, and rehabilitation costs.⁷⁻⁸ ONF is also examining longer-term issues associated with re-hospitalization after injury.

References

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Managing the risk

There are many causes of spinal cord injury. Falls and transport incidents are the leading causes of injury. Here are some tips to help reduce the risks for injury:

- ❖ **Look First.** Be aware of your surroundings. For example, when driving be aware of the traffic around you and while at home check for potential tripping hazards. Remove obstacles around the house, such as loose rugs and clutter. Provide sturdy handrails on both sides that are the full length of the stairs.
- ❖ **Buckle up your seat belt** and ensure other occupants do too. Secure or buckle children into age and weight-appropriate child safety seats.
- ❖ **Drive sober.** Alcohol is commonly associated with collisions. Other factors, such as drugs, external distractions, and other passengers can also impair your ability to drive. Driving requires your full attention.

For Public Health Practitioners:

- ❖ One Ontario-based study suggests “future public health efforts need to expand their focus to include strategies for prevention of falls and awareness of the need for improved home safety among the elderly.” (Pickett et al., 2006)
- ❖ ONF funds research on prevention of spinal cord injury, enhancing quality of life for those living with spinal cord injury, ongoing management and prevention of secondary medical complications, and health system issues. ONF, with the Ontario Public Health Association, also supports Injury Prevention Managers to discuss issues in moving evidence-based injury prevention practices to implementation. Refer to www.OnInjuryResources.ca for more information about the best practices catalogue.

For Further Information

Ontario Neurotrauma Foundation (ONF)
www.onf.org
Rick Hansen Foundation
www.rickhansen.com
Canadian Paraplegic Association Ontario
www.cpaont.org
ThinkFirst Foundation of Canada
www.thinkfirst.ca

Methods

Emergency department data were obtained from the National Ambulatory Care Reporting System and data for acute care hospitalizations were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information for the 2004/05 fiscal year. Spinal cord injuries were classified according to the International Classification of Diseases, 10th revision (ICD-10) using codes: S14.0, S14.10, S14.11, S14.12, S14.13, S14.18, S14.19, S24.0, S24.10, S24.11, S24.12, S24.13, S24.18, S24.19, S34.0, S34.10, S34.11, S34.12, S34.13, S34.18, S34.19, T06.0, and T06.1. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes.