

Head Injuries

Each hour in Ontario, two people visit an emergency department and every two hours one person is hospitalized with a traumatic head injury. Stair falls and slips or trips on the same level are the most common causes of injury.

Results

In Ontario, during the 2004/05 fiscal year, there were a total of 16,603 emergency department visits and 5,113 hospitalizations with a traumatic head injury. For emergency department visits, peaks in the numbers of injuries were seen among those 9-22 years and infants under 1 year of age. For hospitalizations, the highest numbers of injuries were seen among infants, adults 77-83 years, and teens 17-19 years of age (Figure 1).

Males accounted for 65% of emergency department visits and 66% of hospitalizations. Among males, the highest numbers of emergency department visits and hospitalizations were seen among the 15-19 year age group. For females, the number of emergency department visits peaked in the 15-19 year age group and for hospitalizations the highest number was observed among the 80-84 year age group.

Unintentional falls were the most common external cause of traumatic head injury for both emergency department visits and hospitalizations (Figure 2). Specifically for emergency department visits, stair falls, slips and trips on the same level, being struck by an object or person while playing hockey or other sports, and motor vehicle occupant injuries were the most common causes of injury. For hospitalizations, stair falls, slips and trips on the same level, motor vehicle occupant, and pedestrian injuries were the most frequent causes of injury.

About 76% of persons who visited an emergency department were discharged to their place of residence, 18% were admitted to hospital, and fewer than 1% died after arrival in the emergency department. For hospitalized cases, about 63% were discharged home, 17% were transferred to another inpatient facility (e.g., rehabilitation hospital), and 10% died in hospital. The 5,113 hospitalized cases accounted for more than 45,000 days in acute care hospitals with an average length of stay of 8.9 days.

FIGURE 1. Head injuries by age and sex (Ontario, 2004/2005)

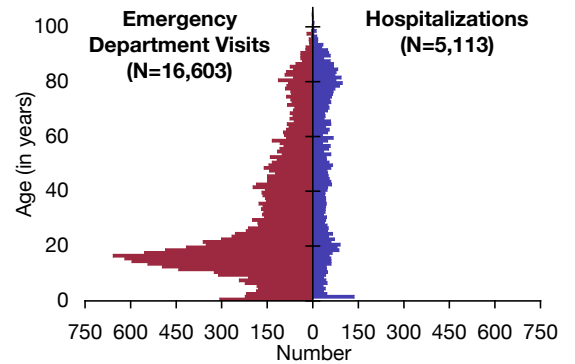
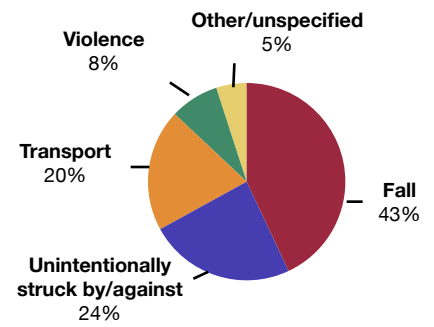


FIGURE 2. External cause of head injury (Ontario, 2004/05)

Emergency Department Visits



Hospitalizations

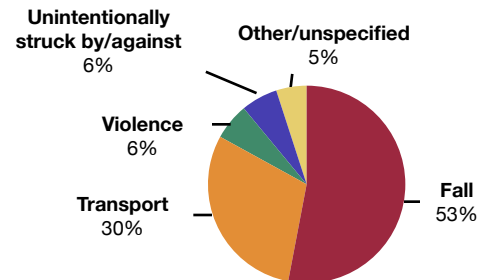


TABLE 1. Regional comparison of head injuries (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits								
Number	2,823	1,584	2,167	2,782	2,183	2,896	1,818	16,603
Rate per 100,000 ^a	185.1	135.9	93.8	129.2	85.2	182.2	221.2	136.9
Average age (in years)	28	32	30	29	36	31	29	31
% male	66	66	66	64	64	63	65	65
Hospitalizations								
Number	817	579	708	734	950	657	556	5,113
Rate per 100,000 ^a	48.4	44.8	31.0	33.2	33.2	37.4	60.8	39.3
Average age (in years)	46	47	44	46	54	50	47	48
% male	69	70	65	63	64	64	66	66

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 350 emergency department visits and 112 hospitalizations.



Ontario Injury Compass

is produced by

SMARTRISK

with support from

The Ontario Public

Health Association

and

The Government of Ontario

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TABLE 2. Regional comparison of head injuries by age group (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits - Number (Rate)^a								
<9 years	514 (281.3)	166 (124.0)	274 (88.9)	370 (139.0)	278 (95.0)	390 (213.4)	245 (261.9)	2,278 (156.0)
10-19 years	943 (430.6)	493 (302.8)	663 (201.5)	984 (309.7)	457 (154.5)	882 (403.0)	617 (510.7)	5,128 (308.2)
20-39 years	626 (147.9)	428 (135.3)	593 (84.0)	647 (110.0)	590 (68.8)	728 (160.3)	443 (207.1)	4,158 (116.8)
40-59 years	399 (88.6)	269 (77.7)	354 (52.8)	431 (65.4)	387 (54.1)	477 (96.7)	298 (112.4)	2,688 (74.7)
60-79 years	230 (97.8)	137 (72.8)	189 (70.3)	238 (83.3)	291 (81.1)	263 (109.7)	156 (107.6)	1,540 (89.4)
80+ years	111 (187.6)	91 (187.3)	94 (174.4)	112 (189.6)	180 (193.6)	156 (268.4)	59 (197.4)	811 (201.9)
Hospitalizations - Number (Rate)^a								
<9 years	85 (46.5)	53 (39.6)	90 (29.2)	78 (29.3)	87 (29.7)	56 (30.6)	38 (40.6)	508 (34.8)
10-19 years	129 (58.9)	79 (48.5)	108 (32.8)	120 (37.8)	60 (20.3)	70 (32.0)	64 (53.0)	642 (38.6)
20-39 years	146 (34.5)	110 (34.8)	131 (18.6)	122 (20.7)	152 (17.7)	128 (28.2)	114 (53.3)	931 (26.2)
40-59 years	164 (36.4)	123 (35.5)	135 (20.1)	141 (21.4)	170 (23.8)	123 (24.9)	134 (50.5)	1,019 (28.3)
60-79 years	166 (70.6)	125 (66.4)	150 (55.8)	167 (58.5)	257 (71.6)	151 (63.0)	134 (92.5)	1,170 (68.0)
80+ years	127 (214.6)	89 (183.2)	94 (174.4)	106 (179.4)	224 (241.0)	129 (222.0)	72 (240.9)	843 (209.9)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 350 emergency department visits and 112 hospitalizations.

By region, the lowest overall injury rates were observed in the Central West region and the highest rates were seen in the North region (Table 1). Regional variations were seen in the numbers and rates of injury by age group (Table 2).

Discussion

This Compass highlights patterns of head injury for persons who visit an emergency department or are admitted to an acute care hospital. One Ontario research study published in 2004 highlighted the value of examining multiple sources of data to obtain the full profile of head injury.¹ It is important to note that people who receive treatment in other settings, such as an outpatient clinic, or those who die at the scene are not included in this analysis.

Several Canadian research studies have examined the incidence and epidemiology of head injuries.¹⁻⁸ A national analysis by the Canadian Institute for Health Information indicated that overall hospital admissions for head injury have declined in the past decade but severe injuries have increased. Children and youth experienced the largest declines in hospital admissions. Despite the encouraging declines in overall admissions, thousands of Ontarians sustain head injuries each year. The Ontario Neurotrauma Foundation (ONF) funds research on prevention of traumatic brain injury, enhancing quality of life for those living with traumatic brain injury, and optimal models of treatment and service within the health system and through to the community.

References

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Managing the risk

Head injuries can have an impact on our thinking, speech, social behaviour, and mobility. Here are some tips to help reduce the risks for injury:

- ❖ Wear the appropriate helmet and gear for the activity you are doing and make sure it fits properly. Helmets prevent head and brain injuries. For example, in cycling, helmets are effective for all ages and for all types of crashes. Worn properly, helmets reduce risks for brain injury by 88% and head injury by 85%.
- ❖ Shaken baby syndrome is an important concern as shaking can lead to death or lifelong neurological damage. Caregivers should seek to improve their understanding of responses to crying. If crying becomes frustrating, put the baby in the crib and walk away for a few minutes to calm down.
- ❖ If you have suffered a previous head injury, you are more likely to sustain greater damage if you injure yourself again. Follow the advice of your health care professional for return to sport and work after an injury

For Public Health Practitioners:

- ❖ Refer to the online compendium of Best Practices at www.OnInjuryResources.ca. It is a collaborative initiative of the ONF and the Ontario Injury Prevention Resource Centre.

For Further Information

Ontario Neurotrauma Foundation (ONF)

www.onf.org

ThinkFirst Foundation of Canada

www.thinkfirst.ca

The Brain Injury Association of Canada

www.biac-aicl.ca

Ontario Brain Injury Association

www.obia.on.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. Head injuries were classified according to the International Classification of Diseases, 10th revision (ICD-10). Note that some persons were seen in an emergency department and then admitted to hospital; however, persons can be admitted to hospital without visiting an emergency department. Deaths occurring outside of the hospital setting are not included in this analysis. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes.