

Hockey Injuries

Each year, nearly 500 Ontarians are hospitalized with a hockey-related injury and thousands more seek medical care in an emergency department.

Results

In Ontario, there were 487 hockey-related injury hospitalizations during the 2002/03 fiscal year. Males accounted for 93% of these hospitalizations. Hockey injuries were most common among young people 10-19 years of age (Figure 1).

Approximately 35% of the hockey injury hospitalizations occurred as a result of striking against or bumping into another person (Table 1). Striking against or being struck by an object accounted for the remaining injury hospitalizations. Injuries caused by a hockey puck or stick were similar in terms of frequency and represented 20% of the injury hospitalizations.

Different patterns of injury were observed for hockey injuries caused by contact with a person, compared to those involving contact with an object (Figure 2). For a hockey injury caused by contact with a person, an upper limb injury was the diagnosis most responsible for hospitalization in 34% of cases, followed closely by a lower limb injury (34%). In particular, fractures to the forearm or lower leg were most common. For a hockey injury caused by contact with an object, a lower limb injury was the diagnosis most responsible for hospitalization in 35% of cases, followed by an injury to the head or neck (30%). Specifically, fractures to the lower leg, head, or face were most common.

The 487 cases accounted for more than 1,000 days in an acute care hospital, with an average length of stay of 2.1 days. About 95% of cases were discharged home and 4% were transferred to another inpatient facility (e.g., rehabilitation centre).

Hockey injury hospitalizations were most common in November and the lowest number of injury hospitalizations was observed in June.

In Ontario, the age-standardized hospitalization rate for hockey injuries was 4.3 per 100,000 population (Table 2). By region, the highest number of injuries was observed in the Central West region and the highest injury rate was seen in the North. The lowest number and rate of hockey-related injury hospitalizations were seen in Toronto.

Regional variations in injury patterns were observed by age (Table 3). In general, the numbers and rates of hockey-related injury hospitalizations were highest among the 10-14 and 15-19 year age groups.

FIGURE 1. Hockey injury hospitalizations by age (Ontario, 2002/2003)

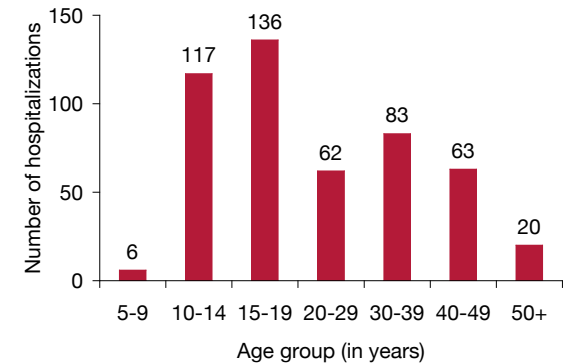
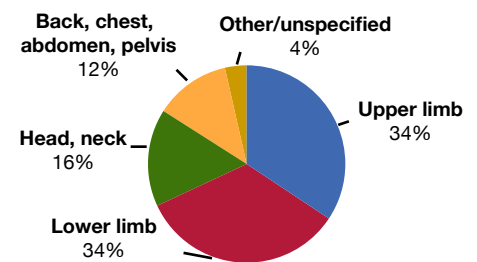


TABLE 1. Type of hockey injury hospitalization (Ontario, 2002/03)

Type of hockey injury	Number	%
Contact with another person	169	35
Hockey puck	50	10
Hockey stick	50	10
Other object	218	45
Total	487	100

FIGURE 2. Site of injury by type of hockey injury hospitalization (Most responsible diagnosis, Ontario, 2002/03)

Contact with another person (N=169)



Hockey puck, hockey stick, or other object (N=318)

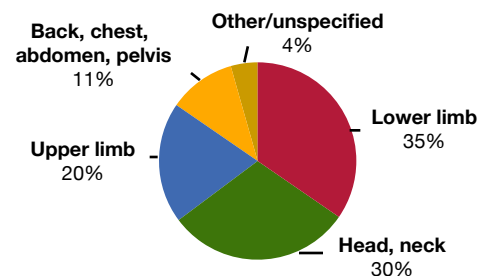


TABLE 2. Regional comparison of hockey injury hospitalizations (Ontario, 2002/03)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Number	76	64	88	71	39	71	68	487
Rate per 100,000 ^a	5.1	5.8	4.3	3.8	1.6	4.8	7.8	4.3
Average age (in years)	25	22	25	23	32	26	25	25
% male	97	92	94	97	92	96	84	93

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 10 hospitalizations.

Ontario Injury Compass

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TABLE 3. Regional comparison of hockey injury hospitalizations for select age groups (Ontario, 2002/03)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Rate per 100,000 population^a (Number)								
10-14 years	19.8 (21)	25.5 (20)	19 (27)	10.9 (15)	1.4 (<5)	12.5 (13)	27.4 (17)	15.2 (117)
15-19 years	18.8 (20)	27.4 (21)	13.1 (18)	19.9 (26)	4.3 (6)	21 (21)	29.2 (19)	18.0 (136)
20-29 years	5.0 (10)	3.4 (5)	4.5 (13)	3.6 (8)	1.8 (7)	3.9 (8)	8.8 (10)	4.0 (62)
30-39 years	3.5 (8)	5.6 (10)	4.4 (16)	2.2 (7)	2.3 (11)	6.6 (17)	8.9 (12)	4.2 (83)
40-49 years	5.3 (12)	3.5 (6)	3.2 (10)	3.6 (11)	2.2 (8)	3.3 (8)	5.8 (8)	3.6 (63)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 10 hospitalizations.

Discussion

Hockey is one of Ontario's most popular sports, with more than 200,000 players registered with the Ontario Hockey Federation and Hockey Northern Ontario alone.¹ There are likely thousands of players that are not registered with these organizations. Hence, there is a large population at potential risk for injury.

This Compass highlights patterns of hockey-related injury hospitalizations in Ontario. Similar patterns of injury have been reported in other provincial analyses.^{2,3} The data outlined in this Compass are valuable for presenting general patterns of injury around the province. However, a few limitations of the hospitalization data warrant consideration. For example, it was not possible to specify the type of hockey (e.g., ice, field, or ball hockey) or differentiate between participants, spectators, or coaches. Also, there was lack of detail about the circumstances surrounding the injury as it was only possible to generally state that a person, hockey stick, puck or other object was involved.

Hospitalizations represent only one aspect of hockey injuries. A media release by the Canadian Institute for Health Information reported almost 8,000 visits to the emergency department for hockey-related injuries in 2002/03.⁴ However, this was a modest estimate as these data included only about 60% of emergency department visits.⁴

There is some evidence that education programs and rule changes have decreased hockey injuries in Canada. For example, Dr. Tator and colleagues have noted a decrease in catastrophic spinal injuries in Canadian ice hockey, especially injuries that result from checking or pushing from behind.⁵ Similarly, work by Dr. Pashby has found that eye protection decreases injuries. With the rule change in the 1970s that requires minor league players to wear CSA approved helmets and face shields, no blinding eye injuries have occurred among players wearing a CSA approved full-face protector.⁶

References

1. Hockey Canada. *About Hockey Canada*. Available at: www.hockeycanada.ca.
2. Canadian Institute for Health Information (CIHI). *Ontario Trauma Registry Analytic Bulletin: Sport and Recreational Injury Hospitalizations in Ontario, 2002-2003*. Toronto: CIHI; 2004.
3. CIHI. *Ontario Trauma Registry Analytic Bulletin: Hospitalizations due to Major Sports and Recreational Injuries in Ontario, 1999/2000*. Toronto: CIHI; 2001.
4. CIHI. *Hockey injuries in Ontario*. Media Release: July 2, 2003 (Ottawa).
5. Tator CH, Provvienza CF, Lapczak L, Carson J, Raymond D. Spinal injuries in Canadian ice hockey: documentation of injuries sustained from 1943-1999. *Can J Neurol Sci* 2004;31:460-6.
6. Pashby T. Eye injuries in Canadian sports and recreation, 1972-2002. *Can J Ophthalmol* 2002;37:253-5.

Managing the risk

Hockey is a favourite pastime of many Ontarians. Here are some tips that can be used to help reduce the risk for injury:

- ❖ Make sure you have all of the necessary equipment and that it is worn correctly and fits properly. Hockey equipment, such as helmets and face shields, should be CSA approved. Never tamper with equipment as it may weaken the protection and ability to prevent injury.
- ❖ Protective gear prevents injuries, however many injuries still occur. Hockey players are not invincible. Be aware of the injury risks and set a good example of safety on and off the ice. For example, coaches should wear helmets and face shields while on the ice during team practices.
- ❖ Warm up before all practices and games. Ensure that you are in good physical condition. Include strength, flexibility, and endurance training as part of your program. Know your limits. Fatigue or pushing too hard can lead to injury.
- ❖ Learn and reinforce proper hockey skills, concepts, techniques, rules, and regulations. For example, make sure players are aware that body checking from behind is strictly prohibited.
- ❖ Ensure that coaches and officials have proper certification and qualifications.

For Further Information

Hockey Canada
www.hockeycanada.ca
Canadian Academy of Sport Medicine
www.casm-acms.org
ThinkFirst Foundation of Canada
www.thinkfirst.ca
SMARTRISK Catalogue of Best Practices
www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207
Published Studies
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Methods

Hospitalization data included acute care hospitalizations for hockey-related injuries in Ontario from the 2002/03 fiscal year. Data were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information (CIHI). Hockey injuries were classified according to the International Classification of Diseases, 10th revision (ICD-10) using codes W21.02, W21.03, W22.02, and W51.02. There were no in-hospital deaths reported. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes.