

Baseball Injuries

June, July, and August are the most common months for baseball injuries, with an average of about 350 emergency department visits and 14 hospitalizations each month during this time period.

Results

In Ontario, during the 2004/05 fiscal year, there were a total of 1,652 visits to an emergency department and 58 hospitalizations due to contact with an object or person while playing baseball. More than two-thirds of the emergency department visits and more than half of the hospitalizations were due to a collision with an object and the remaining cases were due to a collision with another person.

Males accounted for about 70% of emergency department visits and 78% of hospitalizations. For emergency department visits, a peak in the number of injuries was observed among males 8-26 years and females 9-19 years of age (Figure 1). Note that data for hospitalizations were not presented in some figures and tables due to small numbers.

For emergency department visits, upper limb injuries were most common, followed by injuries to the lower limb and head (Figure 2). In particular, fractures of the hand, ankle sprains, and cuts to the face were most frequent. In contrast, for hospitalizations, lower limb injuries were most frequent, followed by injuries to the upper limb. More specifically, fractures of the lower leg were most frequent.

More than 95% of persons who visited an emergency department with a baseball injury were discharged to their place of residence and 2% were triaged and left the emergency department before being seen. For hospitalized cases, about 97% were discharged home. No deaths were reported after arrival in an emergency department or admission to hospital. The 58 hospitalized cases accounted for more than 100 days in acute care hospitals with an average length of stay of 2.2 days.

Among emergency department visits, the highest number of baseball injuries was seen in June, followed by August and July. Similarly, June and August had the highest number of hospitalizations, followed closely by July.

FIGURE 1. Emergency department visits for baseball injuries by age and sex (Ontario, 2004/2005)

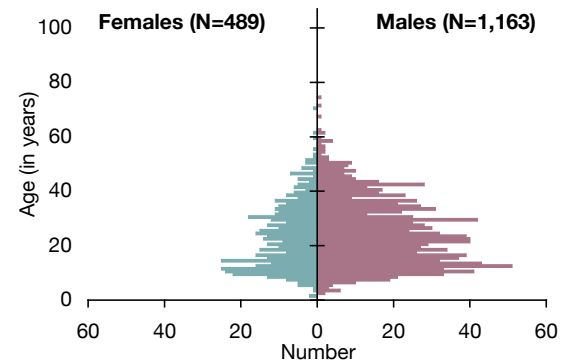
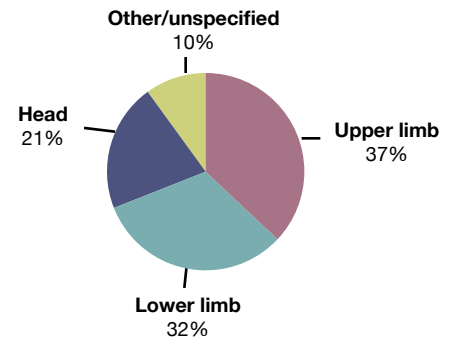


FIGURE 2. Site of baseball injury (Most responsible diagnosis, Ontario, 2004/05)

Emergency Department Visits



Hospitalizations

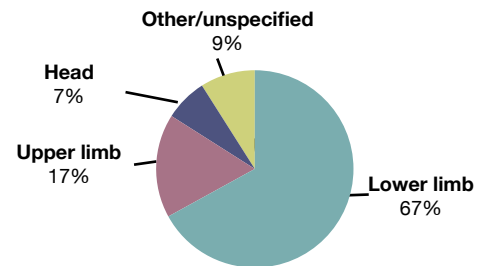


TABLE 1. Regional comparison of baseball injuries (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits								
Number	225	146	350	297	163	281	176	1,652
Rate per 100,000 ^a	16.1	13.6	15.4	14.9	6.8	18.4	24.0	14.3
Average age (in years)	25	26	27	28	24	27	26	26
% male	72	62	75	68	78	69	64	70
Hospitalizations								
Number	13	9	12	6	11	<5	5	58

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

Note: Region of residence unknown/outside of Ontario for 14 emergency department visits. Detailed patterns of injury for hospitalizations are not presented due to small cell sizes (unstable estimates).



Ontario Injury Compass

is produced by
SMARTRISK

with funding and
in collaboration with
**The Ontario Public
Health Association**
and

The Government of Ontario

Edited by

Philip Groff, PhD

Director,
Research and Evaluation
SMARTRISK
(416) 596-2718
pgroff@smartrisk.ca

Principal Analyst

Kelly Cimek, MSc

Research Associate
SMARTRISK
(416) 596-2720
kcimek@smartrisk.ca

To subscribe to
Ontario Injury Compass
please email your request to:
compass@smartrisk.ca

SMARTRISK

790 Bay St.
Suite 401
Toronto, Ontario
M5G 1N8
(416) 977-7350
info@smartrisk.ca
www.smartrisk.ca

TABLE 2. Regional comparison of baseball injuries for select age groups (Ontario, 2004/05)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits - Rate per 100,000 population^a (Number)								
10-14 years	28.6 (31)	26.0 (21)	32.8 (55)	30.6 (49)	24.9 (37)	39.2 (43)	50.8 (30)	32.5 (271)
15-19 years	38.9 (43)	39.0 (32)	31.0 (50)	25.4 (40)	16.3 (24)	35.7 (39)	42.1 (26)	31.2 (259)
20-24 years	29.7 (33)	18.6 (15)	23.2 (38)	22.4 (32)	14.4 (26)	48.8 (54)	43.6 (25)	26.6 (225)
25-29 years	24.2 (24)	19.4 (14)	33.3 (54)	37.9 (47)	9.9 (22)	30.2 (32)	62.1 (28)	26.6 (221)
30-34 years	37.5 (38)	27.7 (21)	19.5 (35)	24.2 (35)	8.1 (19)	19.5 (22)	34.8 (18)	21.0 (189)
35-39 years	21.4 (24)	14.8 (13)	19.4 (39)	18.7 (33)	6.4 (14)	19.2 (24)	28.5 (17)	16.7 (164)

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

Note: Region of residence unknown/outside of Ontario for 13 emergency department visits among those 10-39 years of age.

The provincial age-standardized rate for emergency department visits was 14.3 per 100,000 population. By region, the lowest rate of emergency department visits was observed in the Toronto region and the highest rate was seen in the North region (Table 1).

In Ontario, the highest age-specific injury rate for emergency department visits was observed among the 10-14 year age group (Table 2). Regional variations were seen in the numbers and rates of injury by age group.

Discussion

This Compass highlights patterns of emergency department visits and hospitalizations for baseball injuries in Ontario. In this analysis, injuries associated with baseball may be slightly underestimated. Only cases specifically classified as baseball were included. Injuries resulting from being struck by a bat were not included as other sport activities use a bat (e.g., cricket). There were 749 emergency department visits and 10 hospitalizations associated with being struck by a bat, a portion of which are likely baseball-related.

In this analysis, it was not possible to determine player characteristics (e.g., experience, level of play, position) or specific circumstances surrounding the injury (e.g., did the injury occur while batting, base running, or fielding the ball). Several published research articles have examined baseball and softball injuries, outlining risk factors, common injury patterns, and opportunities for prevention.¹⁻⁸ Factors leading to increased risks for injury were identified in previous studies, including improper technique, lack of experience or training, poor maintenance and design of the playing surface or equipment, lack of physical conditioning, overtraining or fatigue, poor judgment, and alcohol consumption.¹⁻⁸

References

1. Flyger N, Button C, Rishiraj N. The science of softball: implications for performance and injury prevention. *Sports Med* 2006;36:797-816.
2. Olsen SJ 2nd, Fleisig GS, Dun S, Loftice J, Andrews JR. Risk factors for shoulder and elbow injuries in adolescent baseball pitchers. *Am J Sports Med* 2006;34:905-12.
3. Lyman S, Fleisig GS. Baseball injuries. *Med Sport Sci* 2005;49:9-30.
4. Pollack KM, Canham-Chervak M, Gazal-Carvalho C, Jones BH, Baker SP. Interventions to prevent softball related injuries: a review of the literature. *Inj Prev* 2005;11:277-81.
5. Nicholls RL, Elliott BC, Miller K. Impact injuries in baseball: prevalence, aetiology and the role of equipment performance. *Sports Med* 2004;34:17-25.
6. Janda DH. The prevention of baseball and softball injuries. *Clin Orthop Relat Res* 2003;409:20-8.
7. Meyers MC, Brown BR, Bloom JA. Fast pitch softball injuries. *Sports Med* 2001;31:61-73.
8. Yen KL, Metzl JD. Sports-specific concerns in the young athlete: baseball. *Pediatr Emerg Care* 2000;16:215-20.

Managing the risk

Baseball injuries are broadly broken down into four types: collisions, falls, sliding-related, and overuse injuries. Here are some tips to help reduce the risks for injury:

- ❖ Ensure you have a good base level of physical conditioning. Know your limits and avoid playing through pain. Be aware of potential overuse injuries. For example, limit the number of pitches thrown by an individual player and refrain from pitching when arm pain or fatigue is present.
- ❖ Wear the appropriate gear and ensure it fits properly. For example, wear a double eared batting helmet and face shield when waiting to bat, at the plate, and when running the bases.
- ❖ Learn the rules of the game and follow them. Encourage fair and appropriate play.
- ❖ Modify the rules for children. Encourage children to play tee ball as a way of developing technique.
- ❖ Learn proper technique and practise it. For example, players should be instructed to slide in the correct manner (feet first, rather than head first).
- ❖ Modify the playing environment. For example, to prevent sliding injuries, use breakaway/quick release bases instead of standard stationary bases.
- ❖ Ensure playing fields and facilities are well maintained. Inspect the area for holes, glass, and other debris.

For Further Information

Safe Kids Canada
www.safekidscanada.ca
SMARTRISK
www.smartrisk.ca
Softball Ontario
www.softballontario.ca
Baseball Ontario
www.baseballontario.com

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. Injuries resulting from striking against or being struck by an object or person while playing baseball were classified according to the International Classification of Diseases, 10th revision (ICD-10) using codes W22.05 and W51.05. 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. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes.