

# CHIRPP INJURY BRIEF

*Canadian Hospitals Injury Reporting and Prevention Program*



***Injuries associated with ... SLEDDING***, Winter seasons 1997-2002,  
Patients one year and older, held for prolonged observation or admitted to hospital

## SOURCE OF THE STATISTICS

Injury data were obtained from the database of the Canadian Hospitals Injury Reporting and Prevention Program. CHIRPP is an injury surveillance system operating in the emergency departments of 10 pediatric and 4 general hospitals in Canada. Data collection began in April 1990 at the pediatric hospitals and between 1991 and 1995 in the general hospitals. CHIRPP is a program of the Injury and Child Maltreatment Section of the Health Surveillance and Epidemiology Division, Center for Health Promotion, Public Health Agency of Canada.

Briefs and reports are updated when there is reason to believe the injuries or circumstances surrounding the injuries have changed. For example, the report of injuries associated with a specific product would be updated if the manufacturing regulations for the product are changed to include a new safety element. There is no need to update reports on a regular basis because the data collection sites are not a representative sample of all Canadian hospitals. Frequent updates would simply increase the number of records included in the report but not necessarily result in any change in the patterns and distributions found.

## LIMITATIONS

It is important to note that the injuries described do not represent all injuries in Canada, but only those seen at the emergency departments of the 15 hospitals in the CHIRPP network. Since the bulk of the data comes from the pediatric hospitals, which are in major cities, injuries suffered by the following people are under-represented in the CHIRPP database: older teenagers and adults, who are seen at general hospitals; native people; and people who live in rural areas. Fatal injuries are also under-represented in the CHIRPP database because the emergency department data do not capture people who died before they could be taken to hospital or those who died after being admitted.

## INCLUSION AND EXCLUSION CRITERIA

A search of the CHIRPP database for injuries occurring between November 1 and April 30 for the winter seasons 1997-98 to 2001-02 was conducted (ages 1 year and older, patients held for observation or admitted to hospital; 20,783 records). Records were selected if *i)* any of the six factor code fields contained the code for sledding, tobogganing, snow disking and snow tubing (code 1171), or *ii)* if the Injury Event Description contained any of the following strings: "GT RACER", "GTRACER", "G.T. RACER", "G.T.RACER", "GT SNOW", "GTSNOW", "G.T. SNOW", "G.T.SNOW", "TRAINEAU", "TRAINE SAUVAGE", "TRAIN SAUVAGE", "GLISS", "TOBOG", "SLED", "SNOW DISK", "SNOWDISK", "CRAZY CARPET", "MAGIC CARPET", "FLYING CARPET" or "SLEIGH". Records were reviewed individually and irrelevant records were deleted.

## RECOMMENDED CITATION

Injury briefs and reports and data from them may be copied and circulated freely provided that the source is acknowledged. The following citation is recommended:

Health Surveillance and Epidemiology Division,  
Public Health Agency of Canada. Injuries  
associated with Sledding: Canadian Hospitals  
Injury Reporting and Prevention Program  
(CHIRPP) database, Winter Seasons 1997-98  
through 2001-02, ages 1 year and older, Patients  
Admitted to Hospital, October 2003, 491 Records.

## FOR MORE INFORMATION

Please contact the Injury and Child Maltreatment  
Section, Health Surveillance and Epidemiology  
Division, by PHONE at (613) 957-4689, by FAX at  
(613) 941-9927 or visit our website at  
<http://www.phac-aspc.gc.ca/inj-bles/>

## Overall pattern

In total 491 cases were identified, which represents 2.4% of all CHIRPP cases (admitted, held for observation, ages 1 year and older).

## Age and sex

Table 1 shows the age and sex distribution of cases. As a proportion of all same-aged cases in CHIRPP (admitted patients), 5-9 year olds were most frequent at 513.6 cases per 10,000 CHIRPP cases.

**Table 1.** Age and sex distribution of sledding-related injuries, CHIRPP, winter seasons 1997-98 to 2001-02, patients held for prolonged observation or admitted to hospital

| Age group (years) | # cases (%)        | Number/10,000 CHIRPP cases <sup>1</sup> | % male      | % male CHIRPP <sup>2</sup> |
|-------------------|--------------------|-----------------------------------------|-------------|----------------------------|
| 1                 | 2 (0.4)            | 20.3                                    | 50          | 56.3                       |
| 37655             | 60 (12.2)          | 255.1                                   | 61.7        | 57                         |
| 37749             | 172 (35.0)         | 513.6                                   | 60.5        | 60                         |
| 37907             | 193 (39.3)         | 397.2                                   | 63.2        | 65.9                       |
| 15-19             | 21 (4.3)           | 76.8                                    | 57.1        | 60.6                       |
| 20+               | 43 (8.8)           | 66.1                                    | 46.5        | 55.7                       |
| <b>Total</b>      | <b>491 (100.0)</b> | <b>236.3</b>                            | <b>60.3</b> | <b>59.6</b>                |

<sup>1</sup> The number of injuries per 10,000 CHIRPP injuries of all types (admitted) within the age group indicated, over the same time period. Because CHIRPP collects information from ten children's hospitals and only five of the general hospitals, there is a high number of young children in the database. Using number per 10,000 within an age group (instead of overall percent by age group) adjusts for different age group distributions.

<sup>2</sup> Proportion of admitted males in the CHIRPP database for that age group, over the same time period.

## Circumstances

Table 2 details the circumstances surrounding the injury event. One-third of the cases involved collisions with fixed structures.

## Type of Sled

Table 3 shows the types of sled used. The specific type was known in 180 cases and of those, about one-third involved a 3-ski type.

**Table 2.** Circumstances<sup>1</sup> of sledding-related injuries, CHIRPP, winter seasons 1997-98 to 2001-02, patients aged 1 year and older, held for prolonged observation or admitted to hospital

| Circumstances <sup>1</sup>                                                                   | # (%) of cases     |
|----------------------------------------------------------------------------------------------|--------------------|
| Collision with fixed structure (e.g. tree, wall, stationary vehicle)                         | 165 (33.6)         |
| Fell to the ground while sledding, NFS <sup>2</sup>                                          | 124 (25.3)         |
| Jumps (snowbanks, ramps) and other stunts                                                    | 59 (12.0)          |
| Surface problems (icy patches, bumps, small stones/gravel)                                   | 43 (8.8)           |
| Collision with other person (with or without sled)                                           | 40 (8.2)           |
| Injured while on sled (e.g. body part caught under, leg hit tree, object came up and struck) | 26 (5.3)           |
| Slid into danger/proximity to danger (moving vehicle, Snowmobile, ATV, into body of water)   | 9 (1.8)            |
| While carrying or pulling the sled                                                           | 6 (1.2)            |
| Attempting to brake                                                                          | 3 (0.6)            |
| Other specified                                                                              | 10 (2.0)           |
| Unspecified                                                                                  | 6 (1.2)            |
| <b>Total</b>                                                                                 | <b>491 (100.0)</b> |

<sup>1</sup> Each record was assigned to one category based on information in the Injury Event Description

<sup>2</sup> NFS: Not Further Specified

**Table 3.** Type of sled used for sledding-related injuries, CHIRPP, winter seasons 1997-98 to 2001-02, patients aged 1 year and older held for prolonged observation or admitted to hospital

| Type of Sled                                | # (%) of cases     | % of known cases <sup>1</sup> |
|---------------------------------------------|--------------------|-------------------------------|
| 3-Ski type (e.g. GT-Racer, Snow-Racer)      | 65 (13.2)          | 36.1                          |
| Toboggan                                    | 38 (7.7)           | 21.1                          |
| Inflatable                                  | 35 (7.1)           | 19.4                          |
| Roll up "carpet" (e.g. Crazy Carpet)        | 25 (5.1)           | 13.9                          |
| Luge                                        | 8 (1.6)            | 4.4                           |
| Saucer/Disk                                 | 6 (1.2)            | 3.3                           |
| Wood-type                                   | 2 (<1.0)           | 1.1                           |
| Proxy (car windshield)                      | 1 (<1.0)           | <1.0                          |
| Tobogganing <sup>2</sup> , NFS <sup>3</sup> | 164 (33.4)         | NA                            |
| Unspecified                                 | 147 (29.9)         | NA                            |
| <b>Total</b>                                | <b>491 (100.0)</b> | <b>-</b>                      |

<sup>1</sup> Based on the 180 cases where the type of sled was specified in the Injury event Description

<sup>2</sup> Tobogganing is often used as a generic term for sledding

<sup>3</sup> NFS: Not Further Specified

## Injuries

Table 4 shows the distribution of injuries incurred by the patients. Lower extremity fractures accounted for 43% of all injuries and just over one-quarter (27%) of all injuries were closed head injuries or skull/facial fractures.

## Nature of injury and sled type

Table 5 details the nature of injury by sled type for the most common natures of injury and sled types. For 3-ski type sleds, fractures accounted for over three-quarters of all injuries compared to 56% for roll-up carpet types. Although the numbers are small and continued surveillance is necessary, internal injuries accounted for 20% of all roll-up carpet type sleds compared to about 3% for the other sled types.

**Table 4.** Body region and nature of injury of sledding-related injuries, CHIRPP, winter seasons 1997-98 to 2001-02, patients 1 year and older held for prolonged observation or admitted to hospital

| <b>Body Region <sup>1</sup></b><br>Nature of Injury                                                                                                                   | <b># (%) of cases</b>                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>Lower extremities</b><br>fractures<br>other                                                                                                                        | <b>217 (44.2)</b><br>210<br>7                              |
| <b>Head, Face, and Neck</b><br>minor head injury<br>concussion<br>skull fracture<br>facial fracture<br>intracranial<br>dental Injury<br>other head, face, neck injury | <b>146 (29.7)</b><br>45<br>42<br>21<br>13<br>10<br>3<br>12 |
| <b>Upper extremities</b><br>fracture<br>cut / Laceration                                                                                                              | <b>68 (13.9)</b><br>67<br>1                                |
| <b>Trunk (including Spine)</b><br>spinal fracture<br>injury to internal organ (abdomen)<br>other trunk injury                                                         | <b>50 (10.2)</b><br>25<br>16<br>9                          |
| <b>Multiple injuries to multiple body parts</b>                                                                                                                       | <b>6 (1.2)</b>                                             |
| <b>Systemic</b>                                                                                                                                                       | <b>4 (0.8)</b>                                             |
| <b>Total</b>                                                                                                                                                          | <b>491 (100.0)</b>                                         |

<sup>1</sup> Up to three injuries can be recorded, the data in this table represents the first, most serious, recorded injury; 15.5% of patients suffered more than one injury.

**Table 5.** Nature of injury by sled type (most common injuries and sleds), CHIRPP, winter seasons 1997-98 to 2001-02, patients 1 year and older held for prolonged observation or admitted to hospital, # (%) of cases

| <b>Nature of Injury</b> | <b>3-Ski<br/>(n=65)</b> | <b>Toboggan<br/>(n=38)</b> | <b>Inflatable<br/>(n=35)</b> | <b>Roll-up<br/>"carpet"<br/>(n=25)</b> |
|-------------------------|-------------------------|----------------------------|------------------------------|----------------------------------------|
| Fractures               | 51 (78.5)               | 29 (76.3)                  | 22 (62.9)                    | 14 (56.0)                              |
| Minor head injury       | 3 (4.6)                 | 2 (5.3)                    | 6 (17.1)                     | 2 (8.0)                                |
| Concussion              | 5 (7.7)                 | 3 (7.9)                    | 0 (0.0)                      | 1 (4.0)                                |
| Intracranial            | 1 (1.5)                 | 0 (0.0)                    | 1 (2.9)                      | 1 (4.0)                                |
| Internal                | 2 (3.1)                 | 1 (2.6)                    | 1 (2.9)                      | 5 (20.0)                               |
| <b>Total</b>            | <b>62 (95.4)</b>        | <b>35 (92.1)</b>           | <b>30 (85.7)</b>             | <b>23 (92.0)</b>                       |