CHIRPP INJURY BRIEF

Canadian Hospitals Injury Reporting and Prevention Program

INJURIES ASSOCIATED WITH POWERED SCOOTERS

CHIRPP, 1998-2005, Ages 7 years and older

SOURCE OF THE STATISTICS

Injury data were obtained from the database of the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP). 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 14 hospitals in the CHIRPP network. Since most 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 November 2006 search of the CHIRPP database (all ages; 1,662,255 records total) for injuries associated with motorized scooters was conducted. Specifically, the following records were first identified: *i)* any of the six factor code fields containing the CHIRPP code for powered or non - powered scooters (2014) or *ii)* context variable was coded for powered or non-powered small-wheeled transport (code 29) or *iii)* the narrative contained either of the following text strings: 'SCOOTER' , 'TROTTINETTE'. The narratives of these selected records were then further searched to identify the subset of cases involving powered or motorized scooters. The following text strings were used: 'MOTOR','POWER', 'ELECTRIC' and 'BATTERY'. This final dataset was then reviewed manually to confirm the cases. The following case types were excluded: Pedestrians and bicyclists, motorized scooters for disabled persons (3- or 4-wheel), incidental cases (e.g. 'TRIPPED OVER POWERED SCOOTER IN THE GARAGE') and mopeds or motor scooters (see below).

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 Powered Scooters*: Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database, 1998-2005, Ages 7 years and older, 40 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 and exclusion of motor scooters

Overall, 56 cases were identified. However, the narrative searches picked up a number of cases containing the description "motor scooter". It was suspected that some of these cases were actually small motorcycles or mopeds. Based on the full narrative, 16 of these cases were tagged as probable motorcycles. The distribution of these 16 cases on three key variables was significantly different compared to the other 40 to warrant their exclusion. These records contained a higher proportion of individuals 15 years and older (56.3% vs 37.5%) and a higher number of admitted patients (31.3% vs. 15%). The 16 records also had a relatively even distribution of cases spanning 1991-2004 while the other 40 records had no incidents earlier than 1998 with 80% occurring since 2002, reflecting a newer product. The remainder of this report excludes these 16 cases.

Temporal pattern

Table 1 shows the temporal pattern. There was a significant increase in the proportion of cases in 2003-2005 compared to 1998-2002 ($p<0.05$).

Table 1. Number and proportion of cases by year, Injuries associated with powered scooters, CHIRPP, 1998-2005, Ages 7 years and older

Year [1]	# cases	# cases/100,000 [2]
1998	1	1.5
1999	1	1.5
2000	4	5.6
2001	2	2.8
2002	7	9.4
2003	9	12.3
2004	6	8.5
2005 [1]	10	18.3
Total	**40**	**7.3**

[1] 2005 is incomplete

[2] The number of cases per 100,000 CHIRPP cases of all types for the given year

Age and sex distribution

Table 2 provides details of the age and sex distribution. Although 10-14 year-olds accounted for just over half of the cases, when adjusted for the age distribution in CHIRPP, 15-19 year-olds were most frequent at 10.5 cases per 100,000 CHIRPP records of all types. Overall, the median age was 14.4 years and the interquartile range was 12.0 to 16.5 years. There was a preponderance of males (77.5%).

Table 2. Injuries associated with powered scooters, Age and sex distribution, CHIRPP database, 1998-2005, Ages 7 years and older

Age group (years)	# cases (%)	#/100,000 CHIRPP [1]	% male (% male all CHIRPP) [2]
7-9	4 (10.0)	3.7	75.0 (57.8)
10-14	21 (52.5)	9.2	85.7 (62.1)
15-19	10 (25.0)	10.5	80.0 (63.2)
20 and older	5 (12.5)	4.2	40.0 (62.7)
Total	**40 (100.0)**	**7.3**	**77.5 (61.6)**

[1] Because CHIRRP 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 cases per 100,000 within an age group (instead of percentage by age group) adjusts for this uneven distribution
[2] The percentage of males in all CHIRPP cases, for the given age group

Circumstances

Table 3 shows the distribution of specific circumstances of the injury event. About one-third of the patients lost control and fell (no further information provided) and 15 % were motor vehicle traffic-related.

Table 3. Circumstances of powered scooter-related injuries, CHIRPP, 1998-2005, Ages 7 years and older

Circumstance	# cases (%)
Lost control and fell, NFS	13 (32.5)
Collision with motor vehicle in traffic	6 (15.0)
Collision with parked vehicle	4 (10.0)
Impact with curb, bump or pothole	4 (10.0)
Foot hit or caught [1]	4 (10.0)
Scooter malfunction resulting in a fall [2]	3 (7.5)
Fell while turning sharply or braking	2 (5.0)
Collision with other scooter	1 (2.5)
Impacted handlebars of scooter	1 (2.5)
Slippery Surface, fell	1 (2.5)
Performing stunt (no hands)	1 (2.5)
Total	**40 (100.0)**

[1] On part of the scooter: wheel (2), motor (1), deck (1)
[2] Includes power loss, brake failure, handlebar broke (1 each)

Helmet use

Of the 40 cases, the helmeted status was known in 21. Of those, 76% reported wearing a helmet.

Injuries

Table 4 depicts the main injuries sustained (first reported injury). Fractures accounted for 42.5% of all injuries and concussions, 10%.

Table 4. Powered scooter-related injuries, CHIRPP, 1998-2005, Ages 7 years and older

Body Region **Nature of Injury**	**# cases (%)**
Upper extremity fractures *forearm* *wrist* *clavicle* *elbow* bruise, abrasion, laceration sprain, strain; dislocation (wrist, shoulder)	**23 (57.5)** 14 *7* *3* *2* *2* 7 2
Head and face closed head injury *concussion* *minor closed head injury* skull fracture facial fracture scalp bruise, abrasion	**8 (20.0)** 5 *4* *1* 1 1 1
Lower extremity foot laceration fracture (femur) other	**8 (20.0)** 3 1 4
Abdomen bruise, abrasion	**1 (2.5)** 1
Total	**40 (100.0)**

Treatment in Emergency

Table 5 shows the treatment received in the emergency department along with a comparison to all CHIRPP cases. Fifteen percent of the patients were admitted to hospital, which is over twice the proportion in CHIRPP overall.

Table 5. Powered scooter-related injuries, Treatment in emergency, CHIRPP, 1998-2005, Ages 7 years and older

Disposition	# cases (%)	% cases CHIRPP [1]
Left without being seen	0 (0.0)	1.3
Advice only	6 (15.0)	14.8
Treated, medical follow-up if necessary	8 (20.0)	40.0
Treated, medical follow-up required	17 (42.5)	35.4
Short stay, observed in ED	3 (7.5)	1.8
Admitted to hospital	6 (15.0)	6.6
Fatal	0 (0.0)	<0.1
Unknown	0 (0.0)	<0.1
Total	**40 (100.0)**	**100.0**

[1] Proportion of all CHIRPP cases (same age range and time frame) with the given disposition

Hospital Admissions

Six patients were admitted to hospital; the age range was 7 years to 17.8 years and 4 were male. Two cases were collisions with motor vehicles in traffic, 2 involved impacts with curb/pothole and the other was loss of control leading to a fall. Five of the 6 patients admitted to hospital had fractures (3 upper extremity, 1 lower extremity, one skull) and the other suffered a concussion. Four of the six patients had multiple injuries.