

## PLAYGROUND INJURIES IN CHILDREN

### Introduction

Unintentional injuries are a leading cause of death and hospitalization among children ages 1 to 14 in BC.<sup>1,2</sup> The most common causes of injury hospitalizations are falls, being struck by or against objects, resulting mainly from sport and recreational injury, motor vehicle crashes and cycling-related injuries. Much emphasis and effort is being placed on increasing physical activity among children as it promotes good health and prevents obesity. Play is also important in the development of social behavior, enabling children to interact with their peers. However, with this increase in physical activity and play, there is also an increase in the risk of injury. It is therefore necessary to ensure that safety measures are taken to prevent these injuries. In BC, playground injuries among children ages 0-14 years resulted in hospitalizations at an annual rate of 58 per 100,000<sup>2</sup> and costs approximately \$38 million.<sup>3</sup>

This report focuses on the trends, patterns and prevention of injuries related to playground activity. This report does not focus on the risk factors or the management of these risks that may lead to playground injuries among children.

### WHAT WE KNOW FROM RESEARCH ...

Effective prevention measures for playgrounds include:

- Using impact-absorbing surfacing such as loose fill (coarse sand or pea gravel), wood chips and synthetic surfaces<sup>4,5,6,7,8,9,10</sup>
- Following current standards and guidelines of the Canadian Standards Association to reduce impact force and head injury criterion<sup>9,11</sup>
- Ensuring height restrictions for playground equipment (fall height of maximum 1.5m(5 ft) for pre-school-aged children and 2.3m (7ft) for school-aged children)<sup>6,7,8,9,10,11</sup>
- When using innovative designs for new equipments, adhere to lower heights and age-appropriate equipment<sup>8</sup>
- Installing protective barriers and guard rails that are vertical (to discourage climbing) and that have peaked or curved surfaces (to discourage use as a play surface)<sup>8,11</sup>
- Maintaining close supervision at all times<sup>8,12</sup>



### KEY OPPORTUNITIES FOR PREVENTION ...

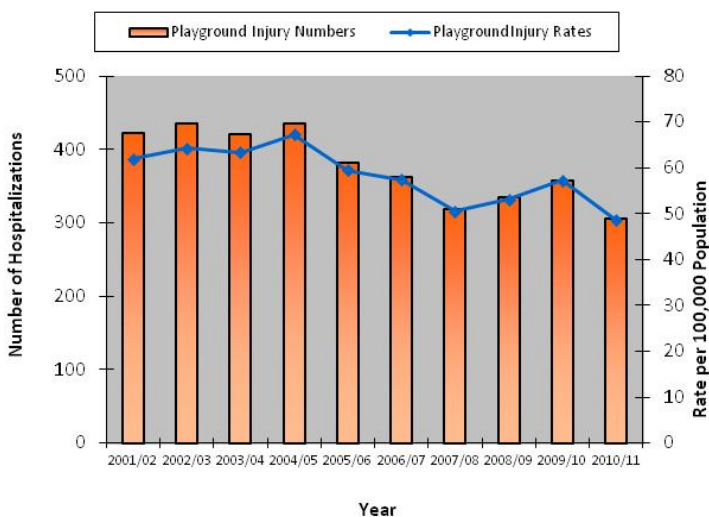
- Partner with BC Recreation and Parks Association and BC School Districts to update playgrounds to meet the current voluntary Canadian Safety Standards for equipment and surfacing.<sup>13,14</sup>
- This includes inspection by certified experts; modification or correction of hazards; maintenance of playground equipment and surfacing; injury reporting by communities and follow-up to correct hazards; and planning of future play areas to comply with the standards.<sup>8,13</sup>

# INJURY

## Hospitalizations due to Playground Injuries

- Between 2001/02 and 2010/11, hospitalization rates for playground injuries among children ages 1-14 years decreased by 21 percent (Figure 1)
- All of these injuries were due to falls

Figure 1: Number and Rate of Hospitalizations\*, Playground Injuries, Ages 1-14 Years, by Year, BC, 2001/02 - 2010/11



\*Age standardized rates using 1991 Canadian population

- Hospitalizations from playground injuries peak in May and June, with a secondary peak in September (Figure 3)

Figure 3: Percent of Hospitalizations, Playground Injuries, Ages 1-14 Years, by Month of the Year, BC, 2001/02 - 2010/11

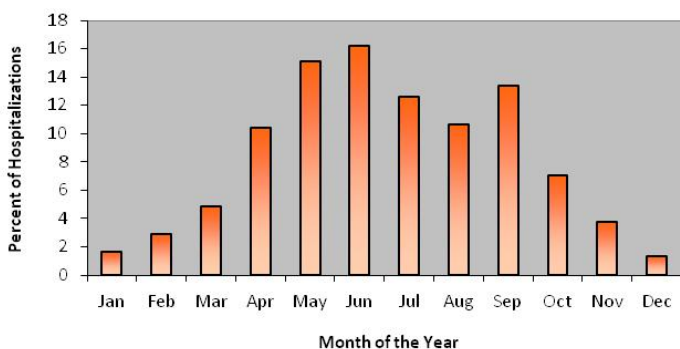
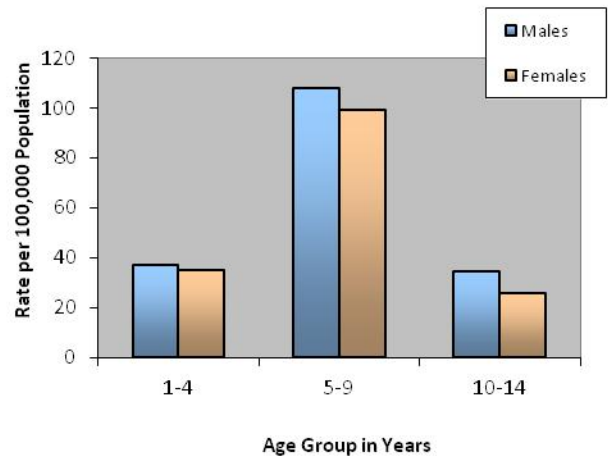
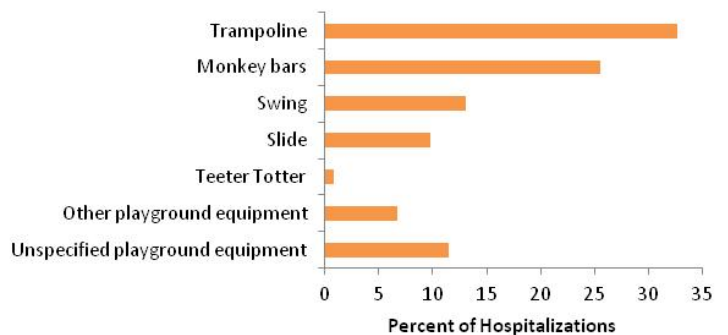


Figure 2: Rate of Hospitalizations, Playground Injuries, Ages 1-14 Years, by Age Group and Sex, BC, 2001/02 - 2010/11



- Hospitalization rates for playground injuries are higher for males in all age groups, peaking among children ages 5 - 9 years (Figure 2)
- 33 percent of playground injury hospitalizations resulted from falls from trampolines and 26 percent falls from monkey bars (Figure 4)

Figure 4: Percent of Hospitalizations, Playground Injuries, Ages 1-14 Years, by Type of Playground Equipment, BC, 2001/02 - 2010/11



- Average length of stay from playground injuries ranged from 1 to 1.4 days, providing some indication of the severity of the injuries
- The leading type of injuries for all three age groups were: fractures (92%) and intracranial injuries, including concussions (3%)
- Common body parts injured were the shoulder and upper arm (ages 1-4) (42%) and the elbow and forearm (ages 5-14) (53%)

## Emergency Department (ED) Visits to BC Children’s Hospital due to Playground Injuries

- Emergency department visits to BC Children’s Hospital for playground injuries are higher for males than females in all age groups (Figure 5)
- Injuries are more common among children ages 5-9 years (58%)

Figure 5: Percentage of Emergency Department Visits to BC Children’s Hospital, Playground Injuries, Ages 1-14 Years, by Age Group and Sex, 2007-2008

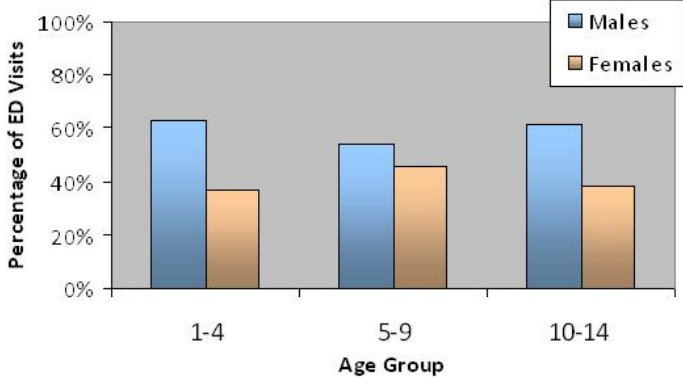
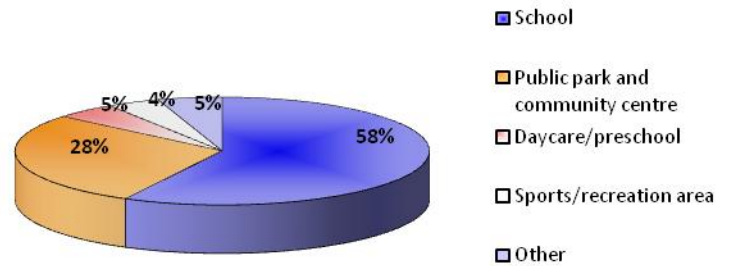


Figure 6 : Percentage of Playground Injuries, Emergency Department Visits to BC Children’s Hospital, Ages 1-14 Years, by Location, 2007-2008

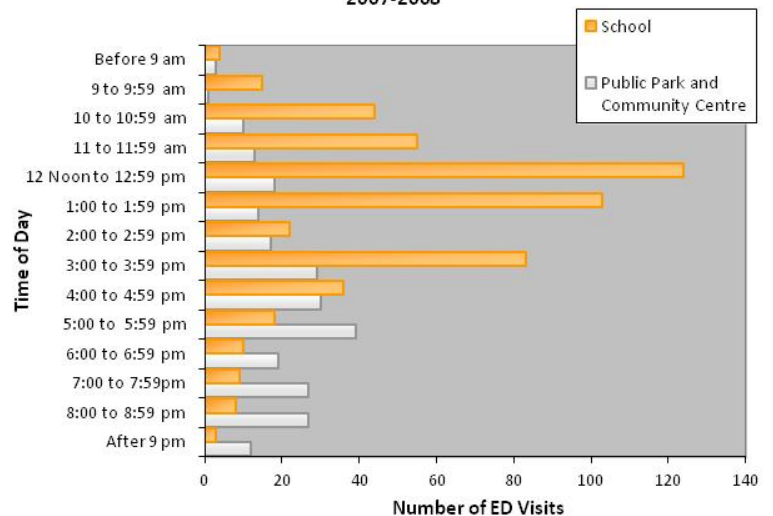


- Playground injuries seen in the emergency department occurred mainly in schools (58%), followed by public parks and community centres (28%) (Figure 5)

- Most of the playground injuries in the schools occurred between 12:00 to 12:59 pm; 1:00 to 2:59 pm; and 3:00 to 3:59 pm (Figure 7)



Figure 7 : Emergency Department Visits to BC Children’s Hospital, Playground Injuries, Ages 1-14 Years, by Location and Time of Day, 2007-2008



## Methods

- Data were obtained through the Discharge Abstract Database (DAD) from the BC Ministry of Health and the Emergency Department data from the BC Children's Hospital (BCCH), through the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP).
- Data for playground injuries for ages 1 to 14 years from 2001/02 to 2010/11 were extracted from DAD whereas data from 2007-2008 were extracted from CHIRPP. Hospitalization information on injuries in the DAD is recorded using the International Classification of Disease, version 10 codes (ICD-10). The code W09 were extracted from DAD for playground injuries. The admission date was used to identify the month and year of injury. Other information obtained from DAD included demographics such as age and sex of the patient hospitalized as well as the type of injury incurred, and the length of stay in hospital.
- In the CHIRPP database, the injury group code for falls and area code for playground (encompassing all playgrounds such as schools, home and parks) was extracted to obtain the total cases for the period.

## Analyses

- Hospitalizations from playground injuries were investigated by year, month, age group, type of playground equipment, type of injury and average length of stay. Rates were calculated by age group.
- Emergency visits to BC Children's Hospital due to playground injuries for ages 1-14 years were investigated by time of occurrence, month, age group, type of injury and body part injured.

## References

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