Child & Youth Unintentional Injury

Atlantic Canada 10 Years in Review

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COLLABORATION ATLANTIQUE POUR LA PRÉVENTION DES BLESSURES

ATLANTIC COLLABORATIVE ON INJURY PREVENTION

Contents

Letter from the Atlantic Collaborative on Injury Prevention (ACIP)

Atlantic Canada's children and youth represent our future. As this report demonstrates, this population is particularly vulnerable to unintentional injuries – not just minor bumps and bruises, but also injuries that can have lifelong health and social impacts. Unfortunately, unintentional injury remains an invisible epidemic in Atlantic Canada, and parents, communities and governments have not yet fully recognized and responded to the magnitude of this problem.

As you read this report, you may reflect and draw upon examples from your own life about the lifelong impact that injuries can have on our families, friends, and communities. Injuries suffered by children and youth in Atlantic Canada exact an additional social and economic toll that directly affects all of us.

The good news is that almost all of these injuries can be prevented. We have made progress in reducing the number of injuries, and Atlantic Canada's rates of motor vehicle related deaths in children are now lower than the Canadian rates. There are many organizations and individuals in Atlantic Canada working tirelessly to address these issues. Atlantic Canada has already demonstrated leadership in injury prevention on a number of fronts – including bike helmet legislation, child vehicle restraint laws, and laws addressing all-terrain vehicle (ATV) use by children, to name a few – but we can always do more. It is crucial that we draw the attention of all Atlantic Canadians to this issue. Public awareness of the prevention strategies we can employ to protect our community's most valuable members, our children and youth, is crucial to be successful.

This report provides an overview of the leading causes of injuries to children and youth in our region as well as the current best practices recommended to help prevent injuries. It also explores the relationship of the social determinants of health and injury. There is a specific call to action that extends to the many sectors that have a role to play in reducing the burden of injuries among our children and youth.

The Atlantic Collaborative on Injury Prevention and Child Safety Link are pleased to have united with Safe Kids Canada and the Alberta Centre for Injury Control and Research on the development of this report. We encourage all who read this to take meaningful action to continue to reduce injuries. Please share this report far and wide, and help us as we work together toward a safer Atlantic community for children and youth to live and play in.

Sandra Newton *Julian Young*
Co-Chairs
Atlantic Collaborative
on Injury Prevention

Letter from Safe Kids Canada

Healthier Children. Fewer Injuries. A Safer Canada. Our vision for our children. The good news is that children are being injured less often. However, injuries remain the leading cause of death for children and youth in Canada.

So, our question is, what do we do next? We believe that partnership is the key to creating a culture of safety in Canada for our children. Safe Kids Canada has a history of collaborative relationships. While each region is different, facing unique geographic, cultural and language differences, we also believe that there are common strategies we can use to reach our shared goals. With this in mind, we are please to work with the Atlantic Collaborative on Injury Prevention to develop this report, which shows both the causes of injuries for children and youth in Atlantic Canada and what can be done to reduce those injuries.

This report builds on the success of our *National Child and Youth Unintentional Injury: 10 Years in Review* report. For this Atlantic report, we obtained unintentional child injury data from the Canadian Institute of Health Information and Statistics Canada, specific to Atlantic Canada. We provided research on the best practice strategies to reduce these injuries. We worked closely with the Atlantic Collaborative to identify Atlantic Canada's current initiatives and recommendations for future action.

We would like to say a special thank you to Alberta Centre for Injury Control and Research for their assistance with the data analysis. Their efforts to listen to the needs and issues of the Atlantic region provided an invaluable contribution.

We know that by sharing a vision for our children's future, we will come closer to reaching our common goal.

Pamela Fuselli
Executive Director
Safe Kids Canada

About this report

We commissioned data from Statistics Canada to capture changes in death trends for unintentional childhood injury over a 10-year period from 1995-2004. Data was also commissioned from the Canadian Institute for Health Information (CIHI) to capture changes in the hospitalization trends for unintentional childhood injury over a 10-year period from 1996 to 2005. These were the most recent years for which data were available both at the national and provincial levels. We set out to determine the pattern of unintentional injuries to children and youth in Atlantic Canada (Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and New Brunswick) and explore whether these injury patterns followed the national trends.

In each section of this report, we present what we learned from the data, outline what strategies work to prevent injuries and how that is reflected in Atlantic Canada, and describe what further changes are needed to keep children and youth safe.

The data in this report focuses on hospitalization of children from birth to age 14 inclusive, and is about unintentional injuries only. It does not include an analysis of intentional injuries (resulting from acts of violence or attempts at suicide). A detailed description of the methodology used in this report is on pages 34/35.

Hospitalization rates are age standardized and are calculated based on population. The rates are not adjusted for duration of play/participation.

The reporting of the Atlantic Provinces' death data is limited, partly due to the relatively small number of deaths and also to ensure confidentiality, consistent with standards and guidelines established by Statistics Canada.

This report does not reflect the changes in medical practice, advances in medical technologies, and the availability of medical services in each province.

Executive summary

Unintentional injury resulting in hospitalization or death among children aged 1-14 remains an invisible epidemic in Atlantic Canada. Society has not yet fully recognized and responded to the magnitude of this problem, which exacts a social and economic toll that directly affects us all.

In collaboration Safe Kids Canada, the Atlantic Collaborative on Injury Prevention and the Alberta Centre for Injury Control and Research have developed this report to provide an overview of the leading causes of unintentional injuries to children and youth in the Atlantic region. The report also reviews the current best practices recommended to help prevent unintentional injuries.

Data for this report was commissioned from the Canadian Institute for Health Information to capture hospitalization trends for childhood unintentional injury over a 10-year period (1996-2005) and from Statistics Canada to capture changes in death rates (1995-2004). These were the most recent years for which data were available at the national and provincial levels.

In the past, motor vehicle related injuries were the leading cause of unintentional injury death for children (and continues to be when teens aged 15-19 are included). The good news is that in Atlantic Canada, the number of deaths among younger children related to motor vehicles has dramatically decreased. Motor vehicle collisions are no longer among the top three causes of childhood death or injury. These results demonstrate that the combined emphasis that governments and injury prevention groups have placed on motor vehicle safety is showing positive results. Research by the World Health Organization has confirmed that multi-disciplinary approaches are effective in reducing both the risk and severity of injuries in higher-income countries.

However, the data in this report indicates that there is still a need to expand the prevention focus to include other injury related issues. Injury is responsible for more deaths of children in Atlantic Canada aged 1-14 than any other cause, and in 2004 presented an economic burden of $206 million. The cost of unintentional injuries alone was $191 million of that total. Yet most injuries are preventable. Children die as pedestrians being struck by motor vehicles, from threats to breathing (e.g., choking, suffocation), from injuries related to burns/fire, and from drowning. Although death and injury rates have decreased and are similar to national rates, more comprehensive attention needs to be directed at these issues.

Although hospitalization rates for childhood unintentional injuries are declining, there is one notable exception. Falls remain the leading cause of injury hospitalization for each age group in this report. Increased focus on injuries due to falls is required. Bicycle related injuries and poisoning incidents leading to hospitalization are less of a problem, but a strategy to help reduce the number of injuries is still necessary. Bicycling has garnered increased attention because of helmet legislation in all Atlantic provinces except Newfoundland and Labrador. In fact, Nova Scotia has the most comprehensive helmet legislation in North America. Poisoning continues to be a significant cause of hospitalizations, so increased attention on this issue is timely.

In recent years the IWK Health Centre in Nova Scotia had experienced a spike in emergency department visits from children with injuries related to use of all-terrain vehicles (ATVs) and off-road vehicles (ORVs). In the first year following new legislation in Nova Scotia restricting the use of off-highway vehicles by those under age 16, the National Ambulatory Care Reporting System (NACRS) reported that the number of emergency visits for related injuries dropped by 50 per cent. Similar legislation has been enacted in the other three Atlantic provinces.

Despite this progress, rates of unintentional injury related hospitalizations to children in Atlantic Canada are significantly higher than the national rates. In order to reduce the rate of unintentional injuries and injury related fatalities among Atlantic Canadian children, a comprehensive approach that addresses the social determinants of health must be employed. Research has shown that many social determinants of health, such as low socioeconomic status, correlate with higher injury rates. Future injury prevention strategies for unintentional childhood injury must also strive to address these social determinants. We must work together to eliminate this invisble epidemic.

Atlantic Canada profile

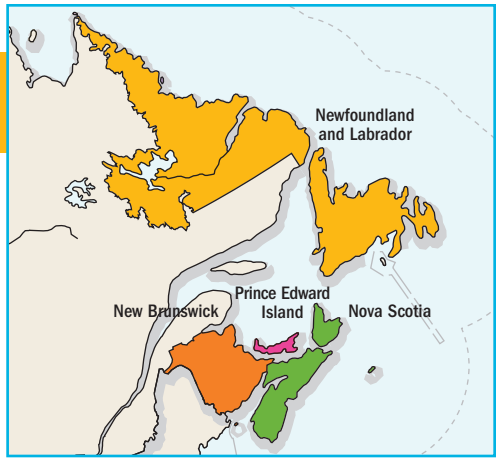
Atlantic Canada comprises the country's four most eastern provinces. New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador have a combined land mass of 540,371 square kilometres. Newfoundland and Labrador is the largest province at 405,720 square kilometres and P.E.I. is the smallest at 5,660 square kilometres. Nova Scotia has the largest population with 938,000, followed by New Brunswick (747,000), Newfoundland and Labrador (507,900), and Prince Edward Island (139,800).[1]

Injury prevention in Atlantic Canada

Injury prevention in each of the Atlantic Provinces has been a collaborative effort between the government, health care professionals, and non-government communities. All four provinces have addressed a variety of injury related issues through legislation, programming, and infrastructure, although the degree to which this has been done varies from province to province.

In addition to working within their own jurisdictions, the four provincial governments collectively fund the Atlantic Collaborative on Injury Prevention (ACIP). Formerly the Atlantic Network for Injury Prevention, ACIP is a collaboration of more than 200 individuals and organizations working for injury prevention and control. The goal of ACIP is to reduce the burden of injury in Atlantic Canada through interprovincial leadership, surveillance, research, policy development and capacity building. ACIP works with partners, coalitions and networks in each province on a variety of injury prevention issues, including those that affect children and youth.

Child Safety Link (CSL) is a Maritime-wide child and youth injury prevention program located at IWK Health Centre in Halifax, NS. CSL also has a satellite office in partnership with the Trauma Program at Saint John Regional Hospital in New Brunswick. CSL's mission is to reduce the incidence and severity of unintentional injury to children and youth. CSL uses a comprehensive health promotion approach, developing and implementing programs using awareness, knowledge/skill building, and policy development. CSL works on several priority areas, including child passenger safety, bicycle safety, home safety and poisoning prevention, and playground safety. The program has many educational resources, including a Keep Kids Safe Booklet series that is available in English and French. These materials and other injury prevention resources, including Virtual Safety Home and public service announcements, are available on **www.childsafetylink.ca.** CSL was established in 1997 as the Nova Scotia Child Safety and Injury Prevention Program; the name was changed to Child Safety Link in fall 2002 to reflect the new expanded focus on prevention across the three Maritime Provinces.



Population

The total population of the Atlantic Provinces is 2,333,300. As in many other provinces, Atlantic Canada has an aging population and declining birth rates. It is predicted that by 2015 the percentage of adults over the age of 65 will exceed the national average by 2%. Visible minorities make up approximately 2% of the population, and 3% identify as Aboriginal, most of whom live in Labrador.[2,3] Although there is a growing trend toward urbanization, Atlantic Canada's population is largely rural with 45-52% of the population living in a rural area.[4] The majority of Atlantic Canadians (84.5%) list English as their mother tongue, with French following at 12%.[5] New Brunswick is Canada's only officially bilingual province.

Over the 1996-2005 reporting period for hospitalizations, there was a 19% decline in the overall child and youth population of Atlantic Canada. The population of children less than one year of age declined 21%; the number of children aged 1-4 declined 23%; the number aged 5-9 declined 21%, and the number of youth aged 10-14 declined by 14%.

Economy

Atlantic Canada's economy is largely service-based. Other key industries include forestry, fishery, agriculture and tourism.[6] In the past, the workforce has been significantly affected by an out-migration of workers to western Canada, primarily Alberta, seeking employment in the oil industry. Because of the downturn in the economy that began in 2008, many of these workers have been returning and looking for work here.

The burden of injury in Atlantic Canada

Despite the promising drop in injury rates, injury remains responsible for more deaths to children in Atlantic Canada aged 1-14 than any other cause. (Children from birth to one year are excluded because prenatal conditions and congenital malformations are the leading causes of death in this age group.) The purpose of comparison is not to minimize the seriousness of other conditions, but to highlight that injury needs to receive an appropriate amount of public attention and funding.

Over the 10-year period of this report, on average each year 34 children aged 14 and under died and 3100 were hospitalized as a result of unintentional injury. In 2004 unintentional injuries to children and youth aged 14 and under in Atlantic Canada cost $191 million.[7]

When comparing the unintentional injury death rate of children in Atlantic Canada to the national rate, Atlantic Canada's crude death rate of 7.9 deaths/100,000 population was similar to the Canadian rate, 7.6 deaths/100,000 population. This report does not give specific death data for each injury type. Due to Atlantic Canada's small population size, releasing death data could potentially infringe upon privacy and breach confidentiality.

When comparing the crude death rates for leading causes of unintentional injury for children:

- Atlantic Canada's death rate due to **cycling** (0.39 deaths/100,000 population) was similar to the Canadian rate of 0.29/100,000 population.
- Atlantic Canada's death rate of **pedestrians** was 0.97/100,000 population, which was not significantly different than the Canadian rate of 0.81/100,000 population.
- Atlantic Canada's death rate for **fire/burns** was 0.86/100,000 population, which is similar to the Canadian rate of 0.57/100,000 population.
- Atlantic Canada's death rate for **threats to breathing** was 0.90/100,000 population. This was significantly different than the Canadian rate of 0.72/100,000 population.
- Atlantic Canada's death rate attributed to **snowmobiles/ATVs** was 0.23/100,000 population, which was similar to the Canadian rate of 0.18/100,000 population.
- The mechanism of injury in which Atlantic Canada was statistically lower was **motor vehicle deaths.** The Atlantic Canada rate was 0.5 deaths per 100,000 population, compared to the Canadian rate of 1.1 deaths per 100,000 population.

The overall unintentional injury hospitalization rate of children in Atlantic Canada was significantly higher than the overall national rate: 741.9 hospitalizations/100,000 population as compared to the Canadian rate of 608.7 hospitalizations/100,000 population.

Childhood injuries are a devastating problem around the world. The World Health Organization (WHO) reported that in 2004, more than 950,000 children under the age of 18 were killed by an injury.[8] This does not represent the full scope of the problem. Many children survive their injuries but live with permanent disabilities, both physical and emotional. For a child, this can mean a lifetime of living with the consequences of an injury. The stress on these children, their families, and the global health care system cannot be underestimated.

Deaths (1995-2004)

Data on deaths due to child injury for the years 1995-2004 came from Statistics Canada.

- Unintentional injuries are the leading cause of death of children in Atlantic Canada and account for 37% of all deaths. Over the 10-year reporting period an average of 34 children per year aged 14 and younger died as a result of an injury.
- The leading causes of injury related death are pedestrian (12%), threats to breathing (11%), drowning (11%), fire/burns (11%), and occupant of motor vehicle collisions (7%).
- Atlantic Canada's overall injury crude death rate (7.9 deaths/100,000 population) is similar to the Canadian rate (7.6 deaths/100,000 population).
- The death rates in Atlantic Canada were similar to the national rate with the exception of motor vehicle collisions. Atlantic Canada's motor vehicle death rate was significantly lower (0.5 deaths/100,000 population) than the Canadian rate (1.1 deaths/100,000 population).

Hospitalizations (1996-2005)

Children who live in Atlantic Canada –

Every year there are over 3,100 injury hospitalizations

Every month there are 260 injury hospitalizations

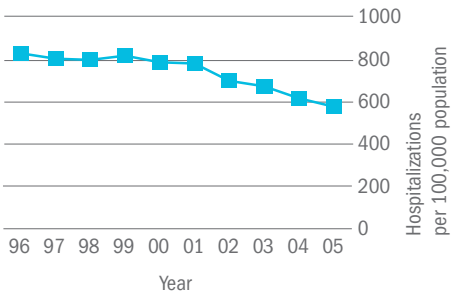
Every day there are 9 injury hospitalizations

Data on hospitalizations for the years 1996-2005 came from the Canadian Institute for Health Information (CIHI).

- In 1996 in Atlantic Canada there were 3,846 hospitalizations of children from birth to age 14 attributed to unintentional injuries. Ten years later there were 2,163 hospitalizations. This is a 44% decline in the number of unintentional injury hospitalizations between 1996 and 2005.
- On average, each year there were more than 150 hospitalizations of children age 14 and under for serious injuries, such as traumatic brain injuries and complex fractures. Of the serious injuries, traumatic brain injuries accounted for 18%.
- The leading cause of injury related hospitalization is falls, accounting for 44% of all injury admissions.
- There was a decline in the hospitalization rates for all leading causes of injury over the 10-year reporting period. The largest decrease in hospitalization rates (57%) was for threats to breathing. The decline of other injury rates follows: pedestrians (55%), burns/fire (54%), child passenger injuries (50%), drowning (49%), falls (2%), poisoning (34%), bike injuries (11%), and playground falls (3%).
- During the five-year reporting period (2001-2005), injury hospitalization related to ATV or ORV (off-road vehicle) use declined by 11%.
- When compared to the overall Canadian injury hospitalization rate of children (608.7 hospitalizations/100,000 population), the Atlantic rate was significantly higher (741.9 hospitalizations/100,000 population).

Rates of unintentional injury hospitalizations among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



There was a 31% decline in the overall unintentional injury hospitalization rate for children who live in Atlantic Canada. In 1996 the rate was 825.2 hospitalizations/100,000 population and in 2005 the rate was 573.0 hospitalizations/100,000 population.

A portion of the decrease may be attributed to changes in medical practices. In the last 10 years, there has been an increased effort to create efficiencies by appropriately treating some children's injuries in emergency departments instead of admitting children to hospital. Treatment advances have also contributed to this decline. For example, many children with fractures who would have been admitted to hospital overnight are now observed in the emergency department and/or seen in an outpatient clinic the next day.

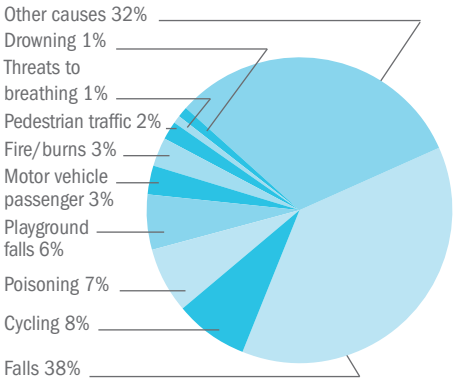
The decrease in hospitalizations also suggests that efforts in all areas of injury prevention – education, environmental changes, and enforcement – are reducing injuries. Examples of these will be showcased in each issue area in the report.

Hospitalizations: Causes of injury

The leading causes of injury hospitalization are falls, which account for 44%. Of all falls, 6% are playground falls. The next leading causes of injury are cycling (8%) and poisoning (7%).

Major causes of unintentional injury hospitalizations among children who live in Atlantic Canada aged 0-14, 1996-2005

Source: Canadian Institute for Health Information

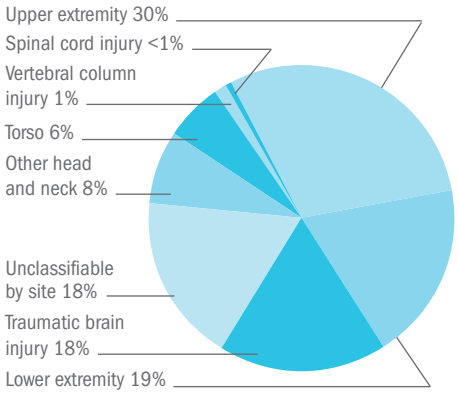


Note: "Other causes" refers to types of childhood injury hospitalizations that have not been covered in this report, such as injuries resulting from sports, firearms, or machinery. The data is gathered in such a way that it often captures whether a child was struck by and/or struck against something, rather than the activity that the child was involved in at the time of injury.

Types of injuries

Unintentional injury hospitalizations by body region among children who live in Atlantic Canada aged 0-14 years, 1996-2005

Source: Canadian Institute for Health Information



Age

The growth and developmental stage of a child can play a role in unintentional injury. For example, children aged 1-4 are at high risk for drowning because they are attracted to water but do not understand its dangers.

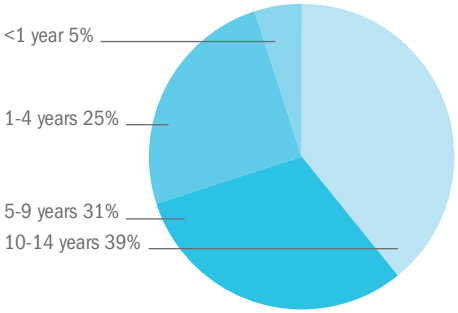
The leading causes of hospitalization are also influenced by age (only causes exceeding 10% are listed):

- Under age one: falls (42%)
- Ages 1-4: falls (35%) and poisoning (20%)
- Ages 5-9: falls (39%) and playground falls (12%), cycling (11%)
- Ages 10-4: falls (36%) and cycling (11%)

Children aged 5-9 and 10-14 are at greatest risk of injuries outside the home (e.g., playground falls and cycling).

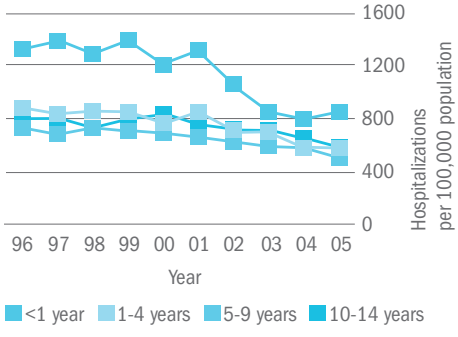
Proportion of unintentional injury hospitalizations among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information

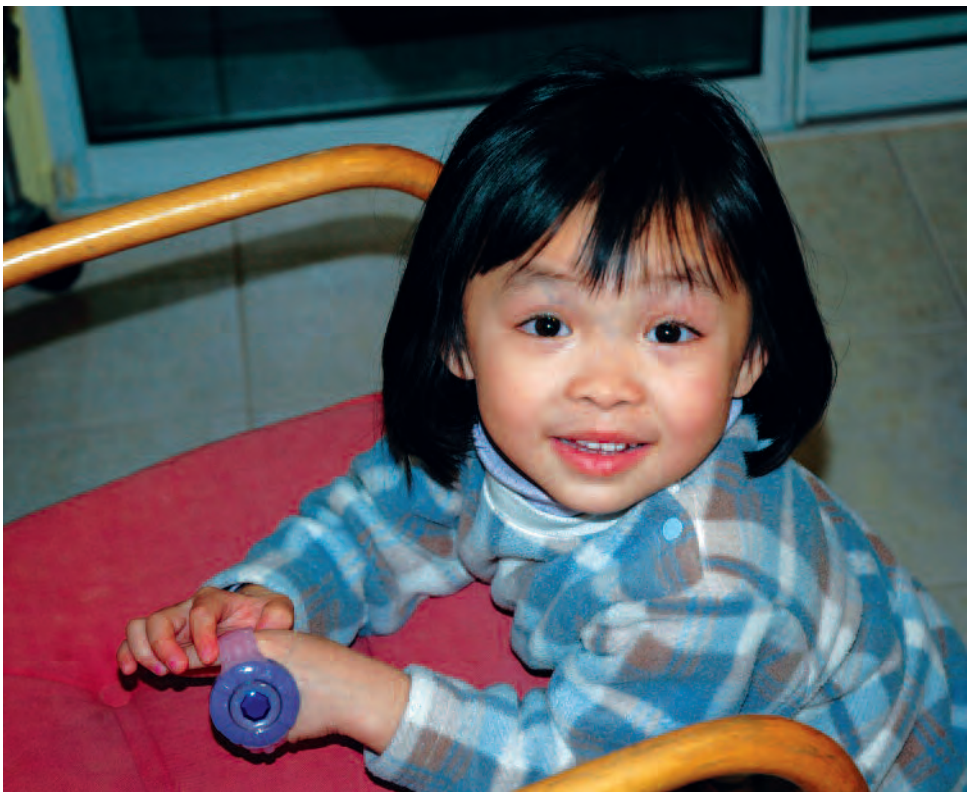


Rates of unintentional injury hospitalizations among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Unintentional injury hospitalization rates decreased among all age groups: children younger than one year (37% decline), children aged 1-4 years (34%), children aged 5-9 years (32%), and children aged 10-14 years (25%).

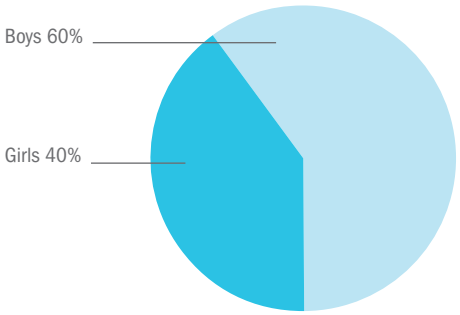


Gender

Some theories about sex differences in unintentional injury relate to potential predisposed differences, such as higher impulsivity and activity levels in boys. Other theories look at socialization. For example, research shows that parents tend to treat boys and girls differently when it comes to responding to risk-taking in play – boys get more encouragement to take risks, while girls get more words of caution.[9] Furthermore, children seem to internalize these different attitudes at a young age – by age 6, both boys and girls believe that girls are more likely to get hurt, even though boys actually get hurt more often.

Proportion of unintentional injury hospitalizations among children who live in Atlantic Canada aged 0-14 years by gender, 1996-2005

Source: Canadian Institute for Health Information

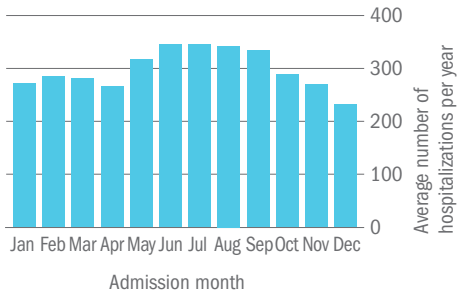


Time of year

Children are more likely to be injured during months with warmer weather, possibly due to increased outdoor activities and/or increased leisure time.

Unintentional injury hospitalizations among children who live in Atlantic Canada aged 0-14 years by month, 1996-2005

Source: Canadian Institute for Health Information

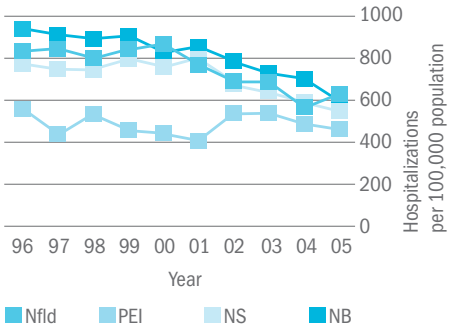


Region

The trend towards reduction of unintentional childhood injury is seen in all four Atlantic provinces. However, there are variations in the magnitude of this change. These can be influenced by various factors that include demographics, injury problems specific to an area, and particular prevention initiatives undertaken at the provincial level. Geography and remoteness, access to care, and varied risk exposures also vary across each Atlantic province. For instance, Prince Edward Island does not have a trauma centre, so all serious child trauma is seen at the IWK Health Centre in Nova Scotia or specialized centres in New Brunswick.

Trends in unintentional injury hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005 age standardized

Source: Canadian Institute for Health Information



Over the 10-year period each Atlantic province experienced a decline in the overall hospital admission rate for unintentional injury. New Brunswick, with the highest overall rate, experienced the largest decline (35%) over the 10-year period. It was followed by Newfoundland (24%), Nova Scotia (29%), and Prince Edward Island (17%).

Social determinants of health

Health and injury are influenced by a range of economic and social factors often referred to as social determinants of health. Income, education, employment, housing, food security, age, gender and social inclusion are included on most lists of social determinants of health. It is their combined effect that determines the health of individuals and communities. There is evidence to show that certain social determinants of health are correlated with injury rates.

In early 2009, the WHO released a policy briefing, *Addressing the Socioeconomic Safety Divide.*[10] The briefing concluded that people with low socioeconomic status and those who live in poor neighbourhoods are more likely to die as a result of injury and violence than people who live in wealthy neighbourhoods. This applies to many of the leading causes of injury globally, including motor vehicle crashes, poisoning and burns. The WHO briefing was based on a systematic review of the literature on injury and points to the importance of understanding and acting on the broad socioeconomic conditions in which injury occurs.

In addition, EuroSafe's literature review on *Inequality in Injury Risk* summarizes the various factors that link socioeconomic inequities to increased injury risk: "Most diseases and causes of death are more common lower down the social hierarchy. This is particularly true of the inequalities in injuries, and associations have been found with single parenthood, low maternal education, low maternal age at birth, poor housing, large family size and parental alcohol and drug use. The social gradient in injuries reflects material, social and cultural disadvantages. Disadvantages may take different forms: few family assets, poorer education, insecure employment, exposure to risks at work, poor housing and unsafe living environments, difficult circumstances for bringing up children, fewer social resources, inability to pay for safety equipment, and limited access to information and services, lack of knowledge and risk-taking behaviours. These effects may accumulate over time, resulting in a higher incidence of serious injuries."[11]

Injuries are no accident

Many people see injuries as "accidents" or as something that happens to others. It is a common belief that "accidents" are just part of growing up and cannot be avoided. However, the majority of injuries can be prevented, which is why people involved in injury prevention do not refer to them as accidents.

If more people were aware of the burden of injury and understood that injuries are preventable, society would not tolerate the impact of this invisible epidemic.

Parents' perception

There is a misconception on the part of many parents and caregivers that injuries are a normal part of childhood. They fail to distinguish between common growing-up bumps and bruises and more serious injuries that can have lifelong consequences.

Children need to take risks in order to develop in healthy ways, but the risks must be balanced with appropriate prevention strategies. It is important to understand how to assess and manage risk, and then as children become developmentally ready teach them how to assess and manage their own risk. "Bubble-wrapping" children is counterproductive. Recent work by Dr. Michael Ungar explores how parents need to be "vigilant when real risks exist, but ease up when our fear gets the better of us. Well-founded worry conveys to children they are loved; senseless ungrounded worry debilitates children in ways far worse than the few bumps and bruises they may experience without us."[12] In his practice, Dr. Ungar has seen the mental, behavioural and other health consequences exhibited by youth who have been deprived of risk.

The unintentional injuries reviewed here have resulted from a preventable incident and have led to a child being hospitalized.

Prevention works

Reducing childhood injuries requires a coordinated and comprehensive approach that is often referred to as the "Four Es": Education, Engineering, Enforcement, and Evaluation. Education includes skill acquisition, such as learning to fit a helmet or learning to swim. Also included in education are public awareness campaigns, like informing the public about changes in child restraint legislation to include booster seats. Engineering involves building safer environments, such as installing speed bumps. Enforcement comprises both improving public policy and enforcing laws or standards. Evaluation completes the picture by providing data on the most effective strategies. Research by WHO has confirmed that these kinds of multidisciplinary methods are effective in reducing both the risk and severity of injuries in higher-income countries.[13]

Atlantic Canadian initiatives over the last 10 years have resulted in a considerable increase in the use of proven safety measures. Bicycle and other helmet legislation, as well as booster seat legislation, are two examples of laws that have led to more uptake of products that can keep children safe from injury during a crash. These and other initiatives are highlighted throughout the report.

No single organization can lay claim to reducing injuries, but collectively we are making a difference. The overall reduction in injury rates can be attributed to the combined efforts of legislators and public policy-makers, health care professionals, safety organizations, community partners that run local programs, and corporate sponsors.

Although injury prevention efforts have been increasing in the past decade, it is time to change the pervasive belief that injuries are "acts of fate" and to encourage society to view injuries as practitioners do – as significant, predictable, and preventable.

Preventing future injuries – A call to action

In each issue area there are specific calls to action around evidence-based and best-practice research, legislation, programs or public awareness. This general call to action is the umbrella for the specific calls.

Research

- Create research opportunities in issue areas where the circumstances associated with childhood injuries remain unclear (e.g., who is getting injured, how, and where) in order to inform and support prevention efforts.
- Create research opportunities to evaluate strategies that seek to address the social determinants of health that influence injury.

Healthy Public Policy

- Advocate for legislation in each Atlantic province that will be the most comprehensive in Canada, and that takes into account the health and social disparities that many Atlantic Canadians experience.
- Advocate for the harmonization of legislation across Atlantic Canada so that there is a standardized approach to injury prevention.
- Create supportive environments and policies that keep children safe while still encouraging them to engage in positive risk-taking activities that are developmentally appropriate.

Programs

- Develop comprehensive, integrated approaches to address injury prevention as part of healthy and safe communities. Communities, institutions (e.g., schools, hospitals), all levels of government, families, and individuals have a role to play in injury prevention.
- Strategically coordinate injury prevention efforts across a variety of settings (e.g., home, school, recreation settings) to facilitate the creation of a culture of health and safety.
- Focus on reducing disparities in the entire population as well as in the sub-populations of families where the greatest disparities in injury are evident.
- Provide people with the means (e.g., safety equipment or training) and safe environments (e.g., roads, skate parks, etc.).

Preventing falls

Falls are the leading cause of injury hospitalizations of children and youth and accounted for 38% of injury hospitalizations between 1996-2005. Parents often believe that falls are a normal part of childhood. Some falls result in serious injuries that require hospitalization and can lead to lifelong disabilities. Falls injuries incurred by those aged 14 and under cost $84 million in Atlantic Canada in 2004 – accounting for 41% of the total burden of injury.[14]

Falls reported in this section include falls involving ice and snow; slipping/tripping/stumbling; falls associated with use of skates, skis, snowboards, and rollerblades; falls due to a collision with or pushing by another person; falls involving a baby walker, stroller or carriage; falls involving a bed, chair or other furniture, stairs and steps, ladder or scaffolding; and falls from a tree or cliff, from one level to another, or on the same level but not otherwise specified. This section does not include playground falls, which are reported separately in this report.

Although a variety of causes of children's falls are captured, those from chairs, beds, stairs, and steps are highlighted.

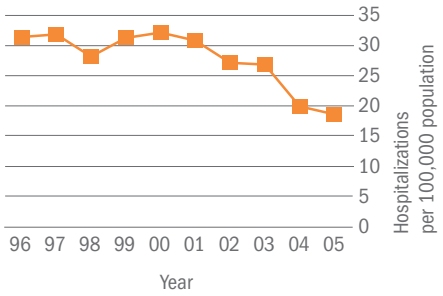
Hospitalization data

- Falls are the leading cause of injury hospitalization for all age groups under 15 years.
- Each year between 1996-2005, on average 722 children aged 14 and under were hospitalized due to an injury from a fall.
- Types and causes of falls vary by age group and stage of development.
- 17% of falls are associated with chairs, beds, stairs, and steps.
- The majority (65%) of children hospitalized due to falls from beds or chairs are under age 5; children aged 5-9 account for 28% of these hospitalizations and those aged 10-14 account for 8%.
- The hospitalization rate due to falls from beds, chairs, steps and stairs declined by 41%. Children aged less than one year experienced the largest decline in hospitalization (51%). The declines in older age groups included ages 1-4 (35%), ages 5-9 (43%) and ages 10-14 (48%).
- When comparing the hospitalization rates due to a fall, children in Atlantic Canada had a significantly higher rate (171.7 hospitalizations/100,000 population) than the Canadian rate (131.0 hospitalizations/100,000 population).

Trends

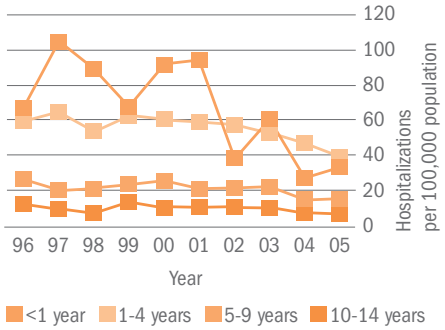
Trends in hospitalization rates due to falls from beds, chairs, stairs and steps among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



Trends in hospitalization rates due to falls from beds, chairs, stairs and steps among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- A child's developmental stage plays a key role in the risk of falls. For example, a baby whose diapers are changed on her parents' bed may roll over during a change, putting her at risk for a fall.
- Babies fall off beds or from cribs while playing, sleeping, or trying to get out of them. One study showed that an adult bed was involved in one-third of cases where a baby fell from a bed.[15]
- Research has shown that most falls from heights less than 1.5 metres do not usually cause multiple or serious injuries, except if a child is dropped by a caretaker.[16,1718]
- Falls from even short heights, such as from beds, chairs and stairs, can cause minor head injuries that may have long-term implications, including speech problems and learning difficulties.[19,20]
- In Canada, about 40% of the injuries associated with baby gates involve children younger than one year. Most injuries occurred in living and sleeping areas. The injuries resulted from improper use or installation of the gates in the living room areas (e.g., the gates were left open, not closed well by caregivers, or children pushed/leaned on the gates).[21]

What works to prevent injury

Do not use baby walkers with wheels. Because of serious injuries to infants, Health Canada has banned the sale and importation of baby walkers in Canada since 2004. In spite of the ban many people continue to use baby walkers, which are often passed down through families and friends. A Safe Kids Canada survey in 2003 showed that nearly one-third (32%) of Canadian parents were using or had recently used a baby walker.[22]

Children who have fallen down stairs in baby walkers are 3-5 times more likely to have a serious injury compared to other types of falls. A fall down stairs in a baby walker is twice as likely to cause a serious head injury.[23] Children can move quickly in a walker, more quickly than parents can respond to stop them. One study found that more than two-thirds of babies in walkers were being supervised at the time of the injury.[24]

Use education, window stops and guards, and legislation to prevent window falls for young children. Although falls from windows are rare, they can cause devastating injuries and death.[25] Children under age 5 are particularly vulnerable to these falls because they like to climb and explore, but do not have a sense of danger. There is a dangerous misconception that window screens are a safety barrier, while in fact they may not hold a child's weight. One prevention program that addresses all three strategies was able to reduce injuries by 50% and deaths by 35% within two years of implementation.[26]

Put infant seats and car seats on the floor. Children can fall from bouncy chairs or car seats when the seats are placed on an elevated surface, such as a kitchen counter.[27] When an infant car seat is used outside a vehicle, the centre of gravity of the car seat and baby is raised, making the seat top-heavy and unstable. Parents may not realize that a small amount of motion by the baby could rock the seat onto the floor. The seat can also be knocked down unintentionally.

Atlantic Canada initiatives

Programs. Falls prevention is addressed by public health practitioners in their work with new mothers and families through the Best Start or other early intervention programs for vulnerable families, and by family resource centres as part of their ongoing child safety messaging to parents. Some emergency departments also have information available for parents.

Falls prevention is included in Child Safety Link's Keep Kids Safe Home Safety Workshops, as well as in their Keep Kids Safe Home Safety Booklet.[28] They are currently developing a Home Safety Curriculum that will provide organizations with the tools to conduct this workshop in their own communities. Child Safety Link is also currently developing a children's falls prevention strategy that will address home and playground falls.

Public Awareness. Child Safety Link has produced two public service announcements (PSAs) about preventing falls in the home and providing adequate supervision to prevent falls at home and on the playground. The Virtual Home Safety Tour on **www.childsafetylink.ca** goes from room to room and includes information on falls.

Call to action

Research. Investigate the long-term consequences of falls injuries. Is there a link between fractures and falls injuries in children and osteoarthritis or other chronic conditions later in life? What is the relationship between concussions in childhood and speech problems and learning disabilities?

Legislation. Advocate for changes in municipal bylaws to ensure that windows on the second storey and higher have a proven mechanism to prevent falls.

Programs. Continue to educate parents/ caregivers on the following:

- Dangers of baby walkers
- The correct installation and use of baby gates
- Falls risks for children and the strategies to prevent them (particularly the relationship between a child's stage of development and falls risks)
- The risks of children falling out of windows

Bicycle safety

Most serious injuries and deaths associated with child cyclists involve collisions with a motor vehicle. The most severe injuries are those involving the head and brain; even seemingly minor head injuries may cause permanent brain damage. Other serious injuries include broken bones, facial injuries and serious skin abrasions that require grafts. Bicycle related injuries cost $15.3 million for those aged 14 and under in Atlantic Canada in 2004.[29]

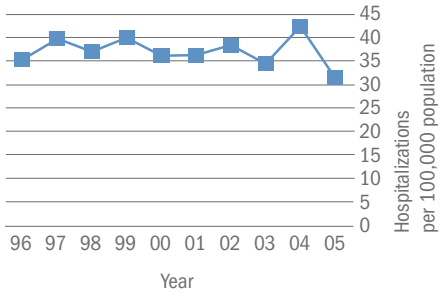
Hospitalization data

- Each year between 1996-2005, on average 157 children aged 14 and under were hospitalized for bicycle related injuries.
- Bicycle related injuries are the second leading cause of injury hospitalization for children aged 10-14.
- Head injuries are the leading cause of severe injury to children on bicycles. Traumatic brain injuries account for 21% of all bicycle related hospital admissions.
- Hospitalization rates fluctuated over the 10-year period, with an overall decline by 11% from 1996 and 2005. This downward trend may be due in part to changes in helmet use and the introduction of helmet laws.
- Among children aged 5-9 years, there was a decline of 24% in bicycle related hospital admissions over the 10-year period. However, the other age groups showed an increase: 63% increase among children aged 1-4, and a slight increase (3%) among children aged 10-14.
- When comparing the hospitalization rates of bicycle related injuries, children in Atlantic Canada had a significantly higher rate (37.1 hospitalizations/100,000 population) than the Canadian rate (25.7 hospitalizations/100,000 population).

Trends

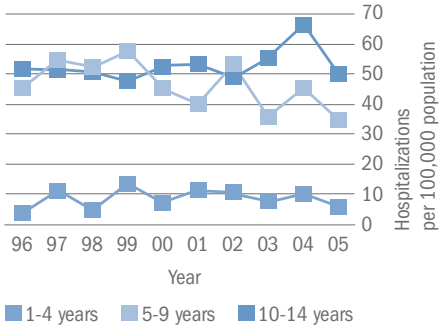
Trends in bicycle related hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



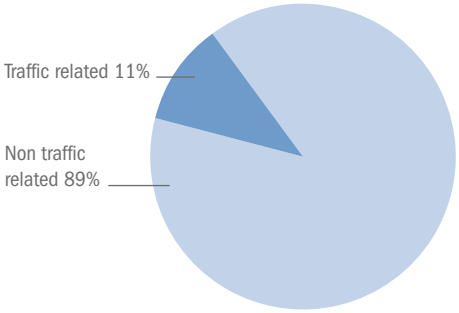
Trends in bicycle related hospitalizations among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Proportion of bicycle related hospitalizations among children who live in Atlantic Canada aged 0-14 years, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- The human skull is approximately one cm thick and can be shattered by an impact of only 7-10 km/hr.[30] Young cyclists ride at speeds averaging 11-16 km/hr.[31]
- Children's developmental stage tends to put them at risk for injury. Young children under age five generally ride tricycles and are not normally on the road. Some children aged 5-9 begin to ride on the road, but they do not have the judgment skills to do so safely without adult supervision. Children aged 10-14 begin to use bicycles as a form of transportation to school or other activities, and as a result may be more exposed to traffic.
- Bicycle helmet legislation has been shown in some cases to increase not only helmet usage, but also ridership. Ridership among children and adolescents actually increased one year following the implementation of helmet legislation in East York, Ontario.[32]

What works to prevent injury

Wear a bike helmet. A properly fitted helmet helps protect the head by absorbing the force from a crash or a fall, decreasing the risk of serious head injury by as much as 85% and brain injury by 88%.[33] This means that four of five head injuries could be prevented if every cyclist wore a helmet. There is a public perception that helmets may not provide protection in crashes that involve motor vehicles, but they have been proven effective in preventing head injury from all types of falls and crashes.[34]

Keep children under age 10 off the road. Riding a bike near motor vehicles requires a complex set of skills that children develop slowly between ages 10 and 14. They must be able to balance the bike, signal, and pay attention to vehicles at the same time. A child's brain cannot manage this combination of physical and cognitive skills before age 10 at the earliest. The ability to juggle these tasks around traffic may be a particular challenge for children in a high-risk situation.

Reduce traffic speeds. Slowing down motor vehicle traffic can increase safety for cyclists sharing the same roads.[35] An international review of traffic-calming measures (such as reduced speeds or speed bumps) found that road crashes of all kinds, including those with child and adult cyclists, declined by 15% overall and 25% on residential streets in particular.[36] When 20 cities in the United Kingdom established traffic-calming zones at 40 km/hr, child cyclist injuries declined by 48%.[37]

Atlantic Canada initiatives

Research. A study by Dr. John LeBlanc and his collegues (2002) showed that after legislation was proclaimed in Nova Scotia in 1997, helmet use rates rose dramatically, from below 40% in 1995 and 1996, to 75% in 1997, to above 83% in 1998 and 1999.[38]

Legislation. Three of the four Atlantic provinces have bicycle helmet legislation for all ages. New Brunswick was one of the first provinces in Canada to enact a helmet law. Nova Scotia has one of the toughest helmet laws in North America, with helmets required for bicycles, skateboards, scooters and in-line skates in all locations. Newfoundland and Labrador has yet to enact provincial helmet legislation.[39]

Programs. Operation Headway has been conducted in a number of communities in Nova Scotia and parts of New Brunswick by local police and RCMP. Those ticketed are given the option of attending a helmet education session (Noggin Knowledge) to have the ticket fee waived. Those wearing a helmet are given an incentive. In the 2006 public awareness campaign in Halifax Regional Municipality, 75 of the 152 individuals ticketed attended Noggin Knowledge. The two-hour session teaches individuals the risks associated with not wearing a helmet, and encourages them to comply with helmet safety laws and other rules of the road. The 2006 ($n = 45$) and 2004 ($n = 264$) Noggin Knowledge program evaluations indicated that 78% of participants learned something new, and 73% would wear a helmet now.[40]

ThinkFirst has been active in both New Brunswick and P.E.I. Hard Heads is a helmet education program for kindergarten age children in P.E.I.[41] Based on the ThinkFirst for Kids kindergarten curriculum, the program teaches children the importance of helmets, and how to correctly fit a bicycle helmet. A package of material is sent home to parents. Evaluation of this program indicates that children retain the information at least one month post-intervention.

Call to action

Legislation. Advocate for bicycle helmet legislation for all ages in Newfoundland and Labrador. With the exception of Newfoundland and Labrador, all Atlantic Provinces have bicycle helmet legislation for all ages in accordance with best practices. Given the evidence to support the use of bicycle helmets for the prevention of injury, it is recommended that Newfoundland and Labrador enact all-ages bicycle helmet legislation.

Recommend that New Brunswick, P.E.I., and Newfoundland and Labrador enact all wheels legislation. This woud provide a consistent and evidence-based approach to childhood injury prevention in all four Atlantic Provinces.

Advocate for the enforcement of current helmet legislation. Bicycle helmet legislation has been proven to increase not only helmet usage but also ridership.

Create safer environments for cyclists. This most commonly means reducing traffic speed in communities through lower speed limits and traffic calming, but it could also include the development of areas for recreational cycling. Improving road safety requires a comprehensive approach that takes into account the road design in a community as well as the way vehicles, pedestrians, and cyclists use the streets. Expand the Pace Car program and other "safe routes to school" programs across Atlantic Canada.

Ensure availability of helmets to children living in low-income families.

Education. Continue to educate the public about the importance of bicycle helmets through increased education and enforcement. Parents need to be educated about the protective value of helmets, proper fitting of helmets, and when they should be replaced. They should also be informed as to whether legislation exists in their province. The 2002 Safe Kids Canada survey found that the majority of parents did not know whether their province or territory had bicycle helmet legislation.[42] Expanding enforcement programs like Operation Headway help emphasize that laws do exist.

Scooter, skateboard, in-line skate safety

The Canadian Institute for Health Information does not code the hospitalization data based on scooters, skateboards and in-line skates. Data on these wheeled activities is available from the Canadian Hospital Injury Reporting and Prevention Program (CHIRPP). The data in this section is provided by the IWK CHIRPP centre. This information is limited to information collected through the IWK Emergency Department from the Halifax area. This data provides a picture of injuries from wheeled activities incurred by children, from birth to age 14 in the reporting period 1997-2007.

Emergency Room Visits data

In the 10-year period 1997-2007 for children from birth to age 14 who were captured in the IWK Health Centre's CHIRPP database:

- Males were injured more frequently than females. Skateboarding had the highest percentage of males. Male children accounted for 90% of the injuries from skateboarding.
- Forearms and wrists were the parts of the body most frequently injured.
- Minor head injuries accounted for about 2% of injuries.
- Helmets were worn by 47% of in-line skaters, 34% of the skateboarders, and 40% of the children injured on scooters.
- Fractures accounted for about one-half of all the injuries from each wheeled activity. There were also a higher number of injuries to lower legs and ankles associated with skateboarding.
- The 10-14 year-olds were the most frequently injured age group.

Key facts

- Children suffer injuries during these wheeled activities because of a combination of factors that most commonly includes: inexperience, loss of control, lack of traffic safety skills, high speed, and the tendency to attempt stunts and difficult manœuvres.[43,44,45]

What works to prevent injury

Wear a helmet and protective gear approved for the activity. A bicycle helmet is suitable for riding a scooter and inline skating, but skateboarders need a skateboarding helmet that protects the back of the head. Wrist guards should be used to prevent fractures.

Call to action

Research. Advocate for increased research into the effectiveness of the use and design of alternative environments for recreation, including skate parks. There is a perception that skate parks are safer than other locations; however, one study showed that a large number of injuries still occurred at the skate park even though skateboarders were wearing safety equipment.[46,47] This may be due to an increased sense of competition and participation in riskier manoeuvres in a skate park environment.

Legislation. Recommend that New Brunswick, P.E.I., and Newfoundland and Labrador enact all wheels legislation. This woud provide a consistent and evidence-based approach to childhood injury prevention in all four Atlantic Provinces. Nova Scotia is currently the only Atlantic province with helmet legislation for all wheeled activities in all places, including bicycles, skateboards, scooters, and in-line skates. New Brunswick and Prince Edward Island have legislation for bicycles only, while Newfoundland and Labrador has no helmet legislation for any of the above activities. To create consistency and reduce the risk of brain injury to those participating in wheeled activities, it is recommended that New Brunswick, P.E.I., and Newfoundland and Labrador enact all wheels helmet legislation.

School bus safety

Although we could not provide region-specific data on school bus injuries because of the low numbers, injuries to children from school buses are a concern in Atlantic Canada. Injuries that occur in or around school buses are serious. The greatest risk of death related to school buses is when children are outside, not inside, the bus.*

Canadian death and hospitalization data

- The greatest risk of death related to school buses is when children are outside, not inside, the bus. Each year approximately three Canadian children are killed after being struck by a school bus.[48] Although the number of incidents varies considerably from year to year, an average of one child dies as a school bus passenger every 2-3 years.[49]
- For hospitalizations, the greatest number of injuries occur when children are on the bus. Every year in Canada, an average of 250 children age 14 or under are hospitalized because of an incident related to riding in a school bus[50] Another approximately 31 Canadian children are injured as pedestrians hit by a school bus.[51]
- Data indicates that 1% of all road collisions involve buses, including school buses.[52]

Key facts

- School buses are designed to protect passengers with a system called compartmentalization. Children will be confined within a padded compartment in the bus in the event of a crash. The compartment includes several key safety features: the seats are positioned close together to form the confined area; the seats have high backs that are designed to bend and absorb energy during a crash; and the seats are anchored strongly into the vehicle.
- School bus design is governed by more than 40 federal regulations as well as a set of standards developed by the Canadian Standards Association. Requirements include interior and exterior body design, colour, mirrors, pedestrian crossing arms, and seat design.[53]
- Provinces and territories, school bus operators, and school boards also set laws and policies for operating school buses, such as licensing for drivers and requirements for routes and stops.
- Newer school buses are being equipped with harness systems in several seats in the bus for children who weigh less than 18 kg (40 pounds).

What works to prevent injury

Use the recommended restraint system in school buses for children under 18 kg (40 pounds). Research has shown that younger children – i.e., those under 18 kg – are not protected as well as older children on school buses.[54] As a result, the Canadian Standards Association now recommends that school buses be equipped with integrated car seats and seatbelts for use with children under 18 kg, whose age will be around 4½ years.[55]

Teach school bus safety to children. In particular, parents should remind children to stay away from the three danger zones outside the bus – the front, back, and sides of the bus – by at least 3 m (10 ft.). Once on the bus, children should remain in their seats.[56]

Atlantic Canada initiatives

Programs. In some Atlantic Provinces, kindergarten children and their parents take part in a school bus orientation before the start of the school year to ensure children understand what to do to ensure the minimum risk for injury or death. In Newfoundland and Labrador, Safety Services NL has delivered a school bus monitor training program. The NL Department of Education plans to take over this function in the 2009-2010 school year.

Call to action

Research the best practices around school bus passenger and monitor training to inform practice in Atlantic Canada.

Advocate for the evaluation of additional measures to protect child pedestrians near school buses as well as child bus occupants. More research is needed to evaluate the benefit of equipping all school buses with additional pedestrian safety devices (e.g., video cameras or sensors) and other passive measures that could increase occupant protection. Consideration should also be given to loading and backing-up alarms, as well as an external loudspeaker system that enables the driver to communicate with children outside the bus.

Ensure parents, children and the public are educated about school bus safety.

Increase public awareness about the higher risk zones, which are outside of the bus. Many people are not aware that most school bus related injuries involving children occur outside the bus. Education campaigns should highlight why children are more often injured as pedestrians than occupants and how to prevent these injuries from happening.

Ensure students, parents and monitors have effective education around safe procedures when using a school bus for transportation.

Advocate for the ban of 15-passenger vans for transporting children. The U.S. National Highway Traffic Safety Administration (NHTSA) and other transportation experts have issued warnings about the safety of these vehicles, which are more susceptible to roll-overs. Safe Kids Canada supports investigative research by NHTSA and Transport Canada into the safety of these vehicles for transporting passengers.

Ensure school boards have relevant information to aid in their decision regarding use or discontinuing use of 15-passenger vans.

*Canadian data is from Transport Canada.

Child passenger safety

Atlantic Canada has a significantly lower death rate for children in motor vehicle crashes (0.5 deaths/100,000 population) than the overall national rate (1.1 deaths/100,000 population).

Motor vehicle related injuries to those aged 14 and under in Atlantic Canada cost $34.7 million in 2004, second only to falls.[57] This is primarily due to the severity of these injuries and their impact over the person's lifetime. Motor vehicle collisions can cause multiple serious injuries, including those to the brain, spine and internal organs.

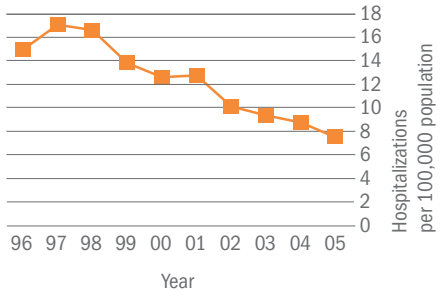
Hospitalization data

- Each year between 1996-2005, an average of 53 children aged 14 and under who lived in Atlantic Canada were hospitalized due to motor vehicle crashes.
- The peak in child passenger injuries in July and August needs further research. It suggests increased exposure (e.g., perhaps children are travelling in cars more often).
- Hospitalization rates associated with motor vehicle crashes declined by 50% from 1996 to 2005.
- The hospitalization rate associated with motor vehicle crashes declined in all age groups. There were several years in which no infant less than one year of age was admitted to hospital. Over the 10-year period there was an overall decrease of 31% in hospitalizations among children aged 1-4, suggesting that car seat legislation introduced in most provinces in the 1980s is having an impact. The largest decline (83%) in hospitalization rates was seen in the 5-9 age group. Children aged 10-14 remain at highest risk for passenger injuries.
- When hospitalization rates are compared, the Atlantic Canada and Canadian rates were similar. Atlantic Canada reported 12.5 hospitalizations/100,000 population with the Canadian rate being 12.9 hospitalizations per 100,000 population.

Trends

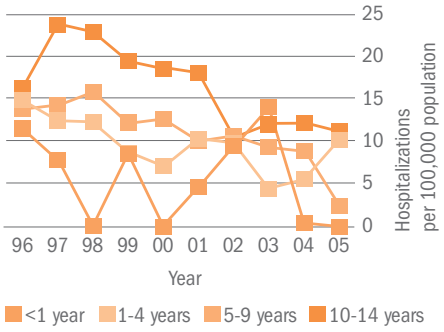
Trends in motor vehicle occupant hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



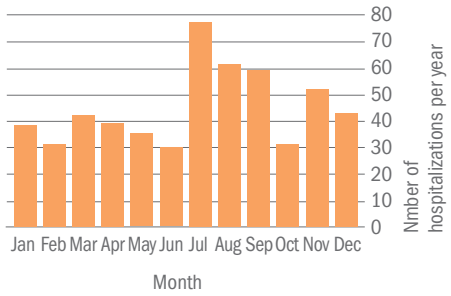
Trends in motor-vehicle occupant hospitalization rates among children who live in the Atlantic region by age group, 1996-2005

Source: Canadian Institute for Health Information



Motor vehicle occupant hospitalizations among children who live in Atlantic Canada aged 0-14 years by month, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- In Atlantic Canada, children aged 10-14 are at highest risk for injury associated with motor vehicle crashes. This illustrates the need to ensure that children in this age group are correctly restrained, ride in the back seat, and are away from airbags. Some smaller children may be better protected by remaining in a booster seat.

What works to prevent injury

Child occupant restraints. Use car seats, booster seats, and seat belts correctly. When used correctly, car seats reduce the risk of death by 71% for infants under age one and 54% for children aged 1-4.[58] Car seats also reduce the risk of hospitalization by 67% for children aged four and under.[59] Booster seats provide 59% more protection than seat belts alone.[60] Child restraints are effective because the car seat harness or vehicle seat belt is positioned over the parts of a child's body that are best able to absorb the forces of a crash.[61] It is estimated that between 44% and 81% of car and booster seats are not used correctly, putting children at risk.[62,63,64] In addition, nearly three-quarters of Canadian children aged 4-9 are not protected by booster seats.[65] According to a recent analysis of severe injuries of child passengers, 92% of injured infants, 74% of injured toddlers, and 96% of injured school-aged children were not using the appropriate restraint at the time of the crash.[66]

Children should be in a rear-facing car seat until at least age one and at least 10 kg (22 pounds), then use a forward-facing car seat until at least 18 kg (40 pounds), which is normally reached at age 4-5. A booster seat should then be used until the child is at least 36 kg (80 pounds) and 145 cm (57 in.) tall, measures which are not usually reached until at least age nine. Children can move to a seat belt once it fits correctly.

Legislation, education and enforcement used together can increase the correct use of child restraints. Research has shown that a combination of strategies can reduce child passenger injuries.[67]

Keep children in the back seat. Research has shown that children aged 12 and under who were restrained in the back seat had the lowest risk of dying in fatal crashes[68] and had a lower risk of serious injury compared to children in other seating positions.[69,70] Alarmingly, front airbags have been shown to increase the risk of non-fatal injury to children by 84% compared to children in similar crashes who were not exposed to airbags in the front seat.[71]

Atlantic Canada initiatives

Research. In Nova Scotia in 2004, Dr. Natalie Yanchar of the IWK Health Centre helped provide evidence to bring the child restraint legislation up to date with current knowledge, including the institution of a booster seat law – the third in Canada.[72] Dr. Yanchar is now partnering with Nova Scotia's Department of Health Promotion and Protection to study the impact of the new legislation.

Legislation. All four Atlantic Provinces have expanded their legisltion/regulations on car restraint use to include booster seat legislation (for children under 10 in P.E.I., up to age nine in Nova Scotia, age nine in New Brunswick, and age eight or under in Newfoundland and Labrador) and/or reaching specific heights or weights. This legislation was enacted in 2007 in Nova Scotia and in 2008 in the other three provinces.[73]

Programs. All four provinces have training for car restraint technicians. These technicians often are staff from the department of transportation, family resource centres, public health departments, police services, and/or injury prevention organizations, varying by province.

In October 2005, Child Safety Link received funding from the N.S. Department of Health Promotion and Protection for the development and implementation of the provincial Child Safety Seat Strategy. New Nova Scotia regulations were enacted in January 2007 that require children to be in a booster seat until they reach the age of nine years and the height of 145 cm (4 ft. 9 in.). Leading up to this legislation, Child Safety Link partnered with the N.S. Department of Transportation and Infrastructure Renewal to conduct a social marketing campaign promoting the new booster seat regulations. For more information about Child Safety Link's car seat initiatives, see **www.childsafetylink.ca.**

Call to action

Research. Continue to invest in research in Atlantic Canada into booster seat usage rates and changes in rates since the enactment of legislation for child restraints and booster seats, and the factors that influence their use.

Legislation. Advocate for continued and increased enforcement of car restraint legislation. Legislation makes a difference. In the 1970s and 1980s, the number of motor vehicle deaths and serious injuries convinced legislators to implement seat belt laws. Car seat laws soon followed. As a result, approximately 90% of Canadians now use seat belts, and at least 75% use car seats. Prior to the implementation of booster seat legislation and the accompanying education in the Atlantic Provinces, a national study found that usage rates are low in Canada. The study reported booster seats were used by only 28% of Canadian families.[74] Booster seat legislation must be combined with targeted education and enforcement.

Programs. Increase government investment in child passenger safety. While many communities in Atlantic Canada have trained child restraint systems technicians, New Brunswick, P.E.I., and Newfoundland and Labrador would benefit from increased government funding to expand current initiatives.

Encourage parents to keep their children rear-facing for as long as possible and encourage parents to keep their children in a harness system up to 29.5 kg (65 pounds), according to the seat's instructions.

Ensure health care professionals are educated and have appropriate equipment to provide advice on child restraint use as part of patient visits. Research shows parents look for advice on childhood injury prevention from their primary care physician or pediatrician.

Preventing poisoning

Medication is the leading cause of poisoning in children. Even small amounts of some adult medication can be fatal to a child. In Atlantic Canada unintentional poisoning injuries for those aged 14 and under cost $6.7 million in 2004.[75]

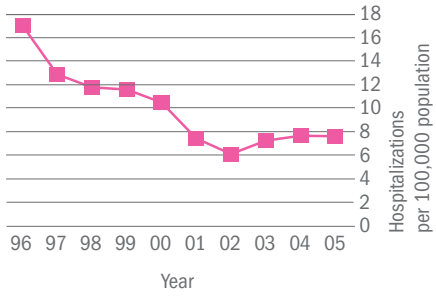
Hospitalization data

- Each year between 1996-2005, on average 131 children age 14 and under were hospitalized in Atlantic Canada due to poisoning.
- Poisonings are the second leading cause of injury hospitalization for children aged 1-4.
- Children under age five account for 79% of hospitalizations for unintentional poisonings.
- Medication is involved in 63% of all unintentional poisoning of children aged 14 and under. Other causes include a wide range of products, such as household cleaners, alcohol, plants, fertilizers, pesticides, paint thinner, and antifreeze.
- Poisoning hospitalizations dropped by 34% over the 10-year review period.
- Children aged 1-4 represented the age group with the largest decline in hospitalization rates (42%). Declines were also reported among children aged 5-9 (33%) and those under age one (11%). There was a slight increase (4%) among children aged 10-14.
- When comparing the hospitalization rates for poisonings, children in Atlantic Canada had a significantly higher rate (31.5 hospitalizations/100,000 population) than the Canadian rate (24.5 hospitalizations per 100,000 population).

Trends

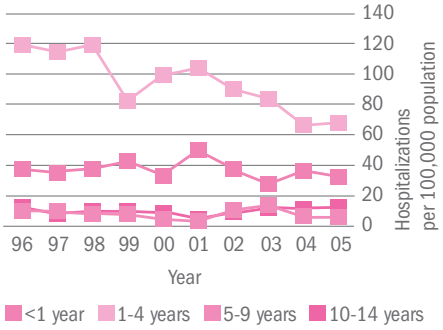
Trends in poisoning hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



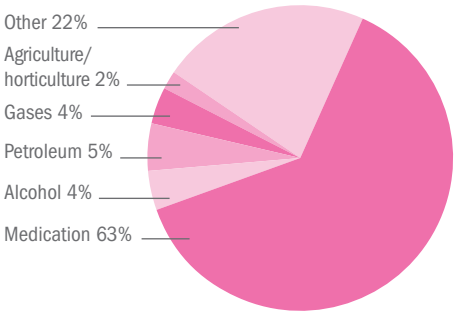
Trends in hospitalization rates among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



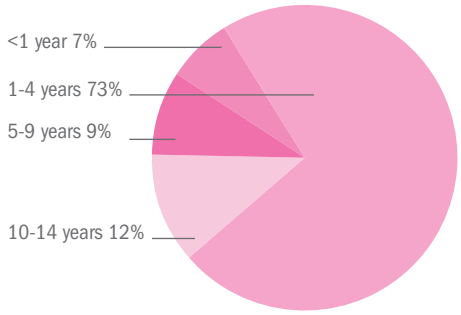
Proportion of poisoning hospitalizations by age group among children who live in Atlantic Canada, 1996-2005

Source: Canadian Institute for Health Information



Poisoning hospitalizations among children who live in Atlantic Canada aged 0-14 years by cause, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- Young children are at particular risk for poisoning because they explore their environment by putting objects in their mouths. Also, their motor skills are changing quickly at this age. They start climbing. This changes what children can reach and how quickly they can reach for objects.
- Young children are also more vulnerable to poisoning because of their light weight. An adult dose of a medication can be fatal to a small child.
- Among medications, iron pills are a leading cause of death for children. Iron supplements are commonly taken by women of childbearing age.[76]
- Children may be more at risk of poisoning in homes they visit.[77]

What works to prevent injury

Child-resistant packaging has shown to significantly reduce death and injury. Research has shown that child-resistant packaging significantly reduces the chance of poisoning.[78] Child-resistant packaging is required by law for certain medications.

Keep all potential poisons in their original containers, out of reach and locked up. All prescription and non-prescription medication, such as iron pills, should be kept locked up and out of reach. This includes medication in child-resistant packaging; research has shown that a small percentage of children can open a container with a child resistant top.[79] Purses and other bags, including those of visitors, may contain poisonous substances including medication; therefore it is important to keep these out of reach of a child as well.
All cleaning products and other poisons should be kept in their original containers and out of reach.

Use a poison information centre for reliable information. Phone-in centres are effective in helping parents determine whether a child is at risk from a potential poisoning and what actions the parent or caregiver should take. The phone number for the local poison information centre should be kept by the phone.

Atlantic Canada initiatives

Programs. Poisoning prevention is addressed by public health practitioners in their work with new mothers and families through Best Start, Healthy Beginnings, or similar early intervention programs for vulnerable families, and by family resource centres as part of their ongoing child safety messaging to parents. Some emergency departments also have information available for parents.

Since 2006 the IWK Regional Poison Centre[80] has had an electronic charting system that accurately documents all calls to the Poison Centre. Statistical information is now available for all Nova Scotia and P.E.I. cases reported to the Poison Centre.

Public Awareness. Child Safety Link has produced two PSAs on poisoning (e.g., "Children Act Fast – So Do Poisons").

They also participate in Poison Awareness Week every year in Nova Scotia. Other CSL resources include Keep Kids Safe Poison Prevention Booklet, Poison Plant Guide, Keep Kids Safe Home Safety Booklet, and Keep Kids Safe Home Safety Workshops.[81]

Child Safety Link is currently developing a Home Safety Curriculum that will provide organizations with the tools to conduct this workshop in their own communities. The Child Safety Link website **www.childsafetylink.ca** has information on poisoning prevention.

A Poison Centre phone sticker is widely distributed to caregivers across Nova Scotia. Poisoning prevention information is available through the IWK Regional Poison Centre (serving Nova Scotia and P.E.I.), the Janeway Hospital in St. John's, NL, and through Telehealth in New Brunswick.

Call to action

Research. Investigate the profiles of poisonings for age groups 1-4 years and 10-14 years to inform prevention interventions.

Legislation. Increase cautionary labelling on high-risk medications and warn patients of their potential harm to children. Small amounts of certain medications (e.g., iron pills, blood pressure and heart medicine) can be fatal to children. Patients who are using these medications should be counselled about the importance of keeping them away from children. Packaging should also have more prominent warning labels.

Expand the IWK Regional Poison Centre to an Atlantic Regional Poison Centre. Expansion of the IWK Regional Poison Centre to an Atlantic Regional Poison Centre would allow for accurate monitoring of poisonings in the region. This information could then be used to develop poison prevention strategies for all age groups.

Education. Increase poison prevention education. Investigate best/promising practices for adults and children, implement programs and evaluate results.

Playground safety

Parents and caregivers often assume that injuries are a natural and unavoidable consequence of play. Yet playground injuries can be serious, ranging from fractured bones to brain and spinal injuries that result largely from falls. Deaths are rare and almost always caused by strangulation. Playground falls accounted for $9.8 million of the total cost of falls for those aged 14 and under in Atlantic Canada in 2004.[82]

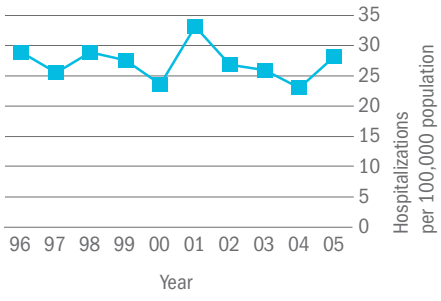
Hospitalization data

- Each year between 1996-2005, on average 115 children aged 14 and under were hospitalized because of a playground fall.
- Playground injuries are the second leading cause of injury hospitalizations for children aged 5-9.
- Approximately 12% of children are hospitalized for serious head injuries.
- 98% of the injuries to the upper and lower extremities were fractures or dislocations.
- Boys are more likely than girls to suffer injuries of any type and this holds true for playground injuries.
- Playground injuries most often occur in summer (43%), followed by fall (29%), spring (20%), and winter (8%).
- There was a slight decline (3%) in hospitalization rates over the 10-year period. The rate among children aged 5-9 declined by 11%, and among children aged 10-14 by 8%. The rate for children aged 1-4 fluctuated over the 10-year period, but in 2005 the rate was more than twice the rate in 1996.
- When hospitalization rates due to playground falls are compared, children who live in Atlantic Canada had a significantly lower rate (27.1 hospitalizations/100,000 population) than the Canadian rate (31.5 hospitalizations/100,000 population).

Trends

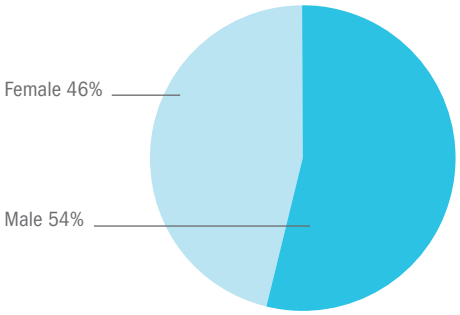
Trends in rates of hospitalization due to playground falls among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



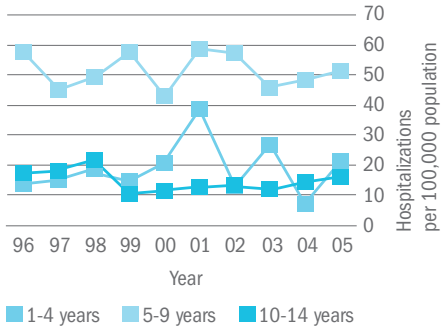
Proportion of playground fall related hospitalization rates among children who live in Atlantic Canada aged 0-14 years by gender, 1996-2005

Source: Canadian Institute for Health Information



Trends in rates of hospitalization due to playground falls among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- Playgrounds often have equipment that is designed for different age groups. Children under age 5 should be kept off equipment higher than 1.5 m (5 ft.) and should be actively supervised when they are climbing equipment. Falls from heights greater than 1.5 m (5 ft.) double the risk of severe injury for children of all ages.[83]
- Child development plays a role in playground injuries. Young children under age 5 are often injured because they are still developing their balancing and climbing skills, putting them at increased risk for falls. Children aged 5-9 like to test their limits, such as jumping off the top of slides or using equipment in ways for which it was not designed.

What works to prevent injury

Improve playgrounds to meet current standards of the Canadian Standards Association and ensure regular inspection. The Canadian Standards Association (CSA) developed the nationally recognized standard for children's play spaces and equipment. This standard specifies numerous design and maintenance criteria to reduce the risk and severity of injury, such as handrails and barriers, age-appropriate fall heights, and a deep, soft surface under equipment. Appropriate surfacing can reduce the severity of the injury compared to a fall on a harder surface.[84,85]

Remove strangulation hazards at the playground. Although deaths at playgrounds are rare, children die from strangulation that can be caused by drawstrings, scarves, or skipping ropes becoming entangled in playground equipment, usually at the top of slides. A child's head can also become entrapped in an opening in playground equipment; in some instances this happened when a child was wearing a bicycle helmet. The risk of strangulation can be reduced by using neck warmers instead of scarves, teaching children to keep skipping ropes and other cords away from equipment, ensuring that jackets and sweatshirts do not have drawstrings, and ensuring that children remove helmets before they play on the equipment.

Closely supervise children under 5 years old. Recent research showed that children under 5 years old were less likely to take harmful risks when a parent was in close proximity at the playground. The fewer harmful risks children take, the less likely they are to be injured.[86]

Improve the safety of home playgrounds. Research has shown that backyard play equipment accounts for about 20% of all playground injuries. Children aged 1-4 are more likely to get hurt at home than older children. Climbers, swings and slides are involved in the majority of all home playground injuries.[87] Ensuring that there is a deep, soft surface underneath home playground equipment may help to prevent injuries.[88]

Atlantic Canada initiatives

Programs. Playground inspectors are certified nationally through the Canadian Playground Safety Institute (CPSI).[89] Often municipalities and departments of education/school boards have staff who are certified through CPSI to conduct inspections of playgrounds in their jurisdictions. Playground owners are encouraged to have regular inspections as well as replacement and maintenance schedules to ensure playgrounds meet current CSA standards. In Prince Edward Island, Recreation PEI offers free playground inspections to smaller communities and daycares, providing a report on issues as well as recommendations for corrective measures.[90] Often groups ask Recreation PEI to make presentations on the CSA standards and give initial guidance in the development of new playgrounds.

Public Awareness. Child Safety Link has developed three PSAs on playground safety. There is also a Keep Kids Safe Playground Safety Booklet[91] for parents and a new children's playground safety storybook, entitled "Simon and Catapult Man's Perilous Playground Adventure", that targets children aged 4-8 years. The book is available in English and French. The Insurance Bureau of Canada in the Atlantic region is donating this book to all elementary schools in Atlantic Canada. Child Safety Link's website **www.childsafetylink.ca** has information on playground safety as well as the playground safety book.

Call to action

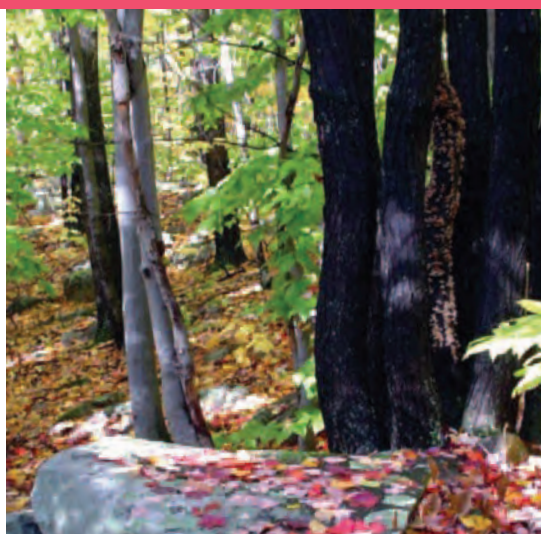
Research. Conduct Atlantic research to ascertain the circumstances around playground injury hospitalizations (e.g., whether injuries happened on playgrounds meeting current CSA standards, whether surfacing was compacted, whether children were on equipment designed for a different age group) to better focus prevention efforts.

Increase practical research on playground safety. Research should include investigating safer equipment design, improving surfacing materials, standardizing measurement techniques for inspection, developing backyard play equipment standards, developing strategies to enhance compliance with standards, evaluating the impact of supervision, and reviewing the effectiveness of safety signage at the playground.

Policy. Continue to advocate that new playgrounds be built and maintained according to the CSA standard. It is essential that playground designers and operators comply with the most current CSA standard when designing, installing, and maintaining playgrounds at schools, daycares, and community parks. This requires ongoing education about the standards.
Continue to advocate that existing playgrounds be upgraded by addressing serious hazards first. Playground operators and funders – municipalities, schools and daycares – should continue to upgrade playgrounds to meet the CSA standard and ensure that they are regularly inspected and maintained. In cases where budgets are limited, Safe Kids Canada recommends addressing the most serious hazards first, such as upgrading surfacing to meet impact criteria, improving handrails and barriers to prevent falls, and eliminating entrapment (strangulation) hazards. Research has shown that these measures can be effective in reducing injuries.

Programs. Continue to educate parents on playground safety issues, particularly related to the appropriate equipment for various ages and stages of development.

All-terrain vehicle, off-road vehicle and snowmobile safety



All-terrain vehicles (ATVs), off-road vehicles (ORVs), and snowmobiles are motorized vehicles that require adult skills and judgment to operate safely.

Although these vehicles pose risks to all riders, children and youth are at special risk for ATV/ORV related injuries and death because they lack the knowledge, physical development, and cognitive and motor skills to safely operate these vehicles, regardless of the size of the machine.

In Atlantic Canada, injuries to those aged 14 and under related to the use of ATVs, ORVs, and snowmobiles cost $4.8 million in 2004.[92]

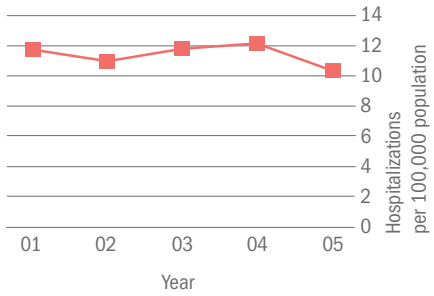
Hospitalization data

- Prior to 2001 there were no specific codes for ATVs/ORVs. The data in this section is only availabe for five years.
- Each year between 2001-2005, an average of 46 children aged 14 and under who lived in Atlantic Canada were hospitalized due to an ATV/ORV related incident.
- Each year between 2001-2005, an average of 11 children aged 14 and under who lived in Atlantic Canada were hospitalized due to a snowmobile related incident.
- When hospitalization rates due to ATV/ORV injuries are compared, children in Atlantic Canada had a significantly higher rate (5.4 hospitalizations/100,000 population) than the Canadian rate (3.5 hospitalizations/100,000 population).

Trends

Trends in rates of hospitalization due to ATV/ORV related injuries among children who live in Atlantic Canada aged 0-14 years, 2001-2005, age standardized*

Source: Canadian Institute for Health Information



* These rates are not adjusted for kilometres or duration driven.

Key facts

- An "all-terrain vehicle" can be broadly defined as a vehicle with two or more oversized, low-pressure tires designed to be ridden off-road. ATVs can include dirt bikes, motocross bikes, quads, snowmobiles and other similar vehicles. In contrast, "off-road vehicle" refers to all ATVs excluding snowmobiles.[93]
- The majority of patients admitted to hospital for an ATV related injury have multiple injuries because of the size of the machines and the speed at which they are typically used. The most common injuries include fractures to the lower and upper limbs; head injuries; internal injuries to the chest, abdomen or pelvis; and injuries to the nerves and spinal cord.[94,95,96,97,98] Overall, ATV/ORV related injuries more closely resemble injuries sustained from motor vehicle collisions.[99]
- Because of the vehicle's size, children have lost control of an ATV and had it flip or roll over onto them, causing severe spine and trunk injuries.[100]
- Compared to injuries related to other forms of recreational transportation, ATV injuries among children and youth are significantly more severe and are more likely to require hospitalization and utilize a proportionately higher amount of hospital resources.[101]
- Head injuries and internal injuries account for the greatest proportion of ATV/ORV and snowmobile related hospitalizations.[102]

What works to prevent injury

Keep children under age 16 off ATVs/ORVs and snowmobiles. These are motorized vehicles that require adult skills and judgment. Children and youth are at a special risk for ATV/ORV related injuries and death because they lack the knowledge, physical development, and cognitive and motor skills to safely operate these vehicles.[103]

There is no good evidence that riding smaller machines reduces the risk of injury, and what evidence is available suggests that there is no reduction in risk.[104] The Consumer Product Safety Commission estimates that the risk of injury per driving hour for a driver under age 16 is reduced by only 18% when driving a machine with an engine smaller than 90cc compared to operating a vehicle with an engine greater than 200cc. However, the risk on a smaller vehicle is still almost twice that of an older driver on a larger machine. In fact, the risk of injury to a driver under age 16, operating a smaller machine, is *five times* higher than the risk to an older driver on the same size machine. Age alone plays a large role in the risk of injury.[105] There is no evidence that training alone will reduce the risk of injury.[106]

Atlantic Canada initiatives

Research. Dr. Natalie Yanchar of the IWK Health Centre in Halifax and her colleagues reviewed hospital admissions for child and youth ATV trauma in Nova Scotia. They found that the number of admissions had more than doubled from the 1990s to the early 2000s, with significant numbers of children sustaining head injuries and many requiring treatment in the intensive care unit.[107]

Legislation. All four Atlantic Provinces now have legislation that prohibits children up to a certain age from operating an ATV or snowmobile,[108,109,110,111] although the age varies among provinces. Supervision for those under age 16 is mandatory. Some provinces have a mandatory training requirement. Enforcement is challenging and varies across the region.

It is interesting to note that since April 2006, when Nova Scotia revised its Off-highway Vehicles Act and awareness increased, the IWK Health Centre has reported that ATV related emergency department visits for children under age 14 declined by nearly 50%.[112] Ongoing monitoring of ATV related emergency department visits is essential to determining effective strategies for preventing injuries.

Programs. The Departments of Natural Resources and Health Promotion and Protection in Nova Scotia have published an Off-highway Vehicle Riders Handbook.[113] The handbook educates users of off-highway vehicles to operate these machines safely and within the guidelines set forth by the provincial legislation.

Call to action

Research. Monitor ATV injuries in children and youth across the Atlantic Provinces. Monitor the effectiveness of existing strategies, programs and legislation. Make changes as needed.

Legislation. Continue to advocate for the national ban of child-size motorized ATVs. Continue to advocate for enforcement of current legislation. Advocate that all four provinces bring their legislation in line with each other to ensure the strongest legislation possible to protect children.

Programs. Advocate for and ensure delivery of appropriate training programs for teenagers to learn to operate ATVs and snowmobiles in a safe manner. Advocate for and develop alternative healthy, active but safe ways for youth to recreate outdoors.

Continue awareness programs so that members of the public are aware of the ATV legislation in their province.

Pedestrian safety

Pedestrian injuries are the leading cause of death among children aged 14 and under who live in the Atlantic region.

Injuries to child pedestrians are often severe. Because of the small stature of a child, a car is most likely to hit the child in the abdomen, causing severe internal injuries or dragging him/her under the vehicle. Although the majority of children survive being hit by a car, they are often left with long-term disabilities such as permanent damage related to brain, organ, and bone injuries. Pedestrian injuries have high economic and societal costs. In Atlantic Canada, pedestrian injuries to those aged 14 and under cost $4.1 million.[114]

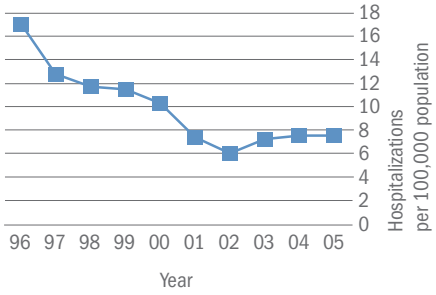
Hospitalization data

- Each year between 1996-2005, an average of 43 Atlantic child pedestrians age 14 and under were hospitalized.
- A child pedestrian is most likely to suffer injuries to the lower extremities (41%), a traumatic brain injury (24%), and injuries to the upper extremities (13%).
- While all age groups remain at risk for pedestrian injuries, children aged 10-14 have the highest number of incidences.
- The incidence of child pedestrian injuries begins and increases in April and peaks in July, when children are beginning to play outside more frequently. Another small peak occurs in September, which may be related to increased exposure in the back-to-school season.
- Injury rates for all child pedestrians aged 14 and under have dropped by 55%.
- The highest rate of decline (77%) was reported among children aged 1-4. The rate of injury for children aged 5-9 declined by 63% and for children aged 10-14 by 30%.
- When hospitalization rates due to pedestrian injuries are compared, children in Atlantic Canada had a similar rate (10.2 hospitalizations/100,000 population) to the Canadian rate (10.1 hospitalizations/100,000 population).

Trends

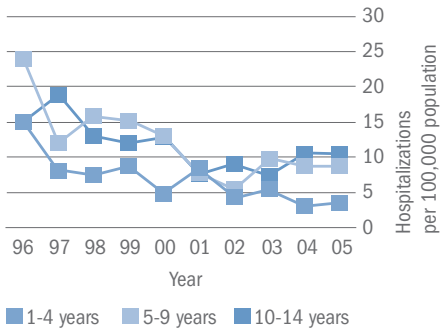
Trends in pedestrian hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



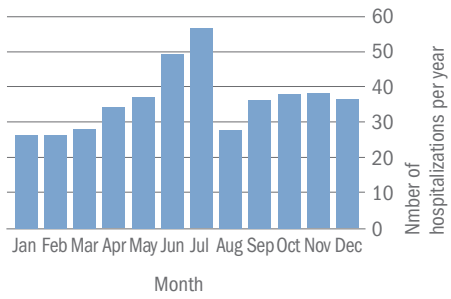
Trends in pedestrian hospitalization rates among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Pedestrian hospitalizations among children who live in Atlantic Canada aged 0-14 years by month, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- Child development influences a child's ability to manage safely in traffic. Young children often have tunnel vision and their short stature and lower eye level further limit their view. In addition, young children are substantially less able to detect the direction of traffic and find a safe gap in traffic. Both pre-school and school-aged children are egocentric. They find it hard to believe that a driver would not be aware of them. As a result, a five-year-old child will take twice as long as an adult to make a crossing decision.[115]

What works to prevent injury

Reduce traffic speeds. At speeds greater than 30-40 km/hr, both drivers and pedestrians may be more likely to make mistakes in judging the time required to stop or cross the street safely.[116] In addition, drivers are known to underestimate their speed.[117] Reducing vehicle speed has proven to be effective in preventing crashes and reducing the severity of injuries. [118]

Even small reductions in vehicle speed can yield significant reductions in injury risk. It is estimated that a pedestrian struck by a car travelling at 50 km/hr is eight times more likely to be killed than someone hit at 30 km/hr.[119]

Teaching pedestrian safety. Encourage parents to teach and demonstrate pedestrian safety to their children. Adults should begin talking to children about pedestrian safety as soon as they begin walking with their children, and they should continue doing so until the early teenage years. It is crucial that adults talk to children about what is going on around them while they are walking – especially since the simple presence of parents or caregivers may help reduce the risk of injury.[120]

Discussions about and demonstrations of safe crossing behaviours, in a variety of situations, will enable children to make more independent decisions about road crossings and safe pedestrian travel.[121]

Child pedestrian education needs to be based on children's development, which changes dramatically from age seven to age 14. Education needs to alter in order to reflect these changes.

Make communities more walkable. Recent research in the United States and Europe shows a link between communities that are conducive to walking and fewer pedestrian injuries.[122] These communities have environments that promote walking by making routes attractive (e.g., trees and trails) and safe (e.g., sidewalks and crosswalks).

Atlantic Canada initiatives

The Pace Car program[123] is a creative concept that challenges people to take back their streets and slow traffic in their communities. The program has been adapted and refined mainly within Halifax Regional Municipality (HRM) and a few communities outside HRM through a partnership of the Ecology Action Centre and the Insurance Bureau of Canada.

The program challenges residents to sign the Pace Car Pledge and display the official Pace Car emblems (called clings) on their cars. When driving, a resident agrees to drive within the speed limit. The pledge also challenges drivers to be more courteous to other road users, especially pedestrians and cyclists. This counters driver distraction and creates more-aware drivers. The program works better as more people become Pace Car drivers. Results of preliminary surveys conducted with Pace Car drivers in the first Pace Car community show excellent results: 100% said the speed they normally drive decreased; 90% said their calmness as a driver increased; and 95% said their courtesy as a driver (toward other road users) noticeably increased.

Call to action

Research. Create studies to ascertain where children are being injured and the circumstances of the incidents to determine best approaches to prevention. We need research on whether more children are being injured or killed in rural or urban locations, around playgrounds or schools. Since children aged 10-14 appear to be most at risk, we need to better understand the circumstances of these injuries and deaths to determine where to put our emphasis.

Legislation/Environment changes. Create safer environments for pedestrians by reducing speed in residential communities to 30-40 km/hr where children are present (including schools and play areas). Improving road safety requires a comprehensive approach of thorough planning, implementation, enforcement, and evaluation. Road safety strategies must take into account the road design in a community as well as the way vehicles, pedestrians and cyclists use the streets. According to the World Health Organization, five interventions can help reduce speed in a community: (1) set speed limits that are enforced; (2) design roads according to function; (3) install speed cameras or stationary enforcement; (4) implement education and public information strategies; and (5) use traffic calming measures, such as traffic circles and speed bumps. However, traffic calming requires careful planning and evaluation to ensure that fixing a problem on one street does not cause problems on another when some traffic seeks a new route.[124]

Create walkable communities. Create communities where children can walk away from traffic – on trails, sidewalks, etc. – to school. Create communities where walking is encouraged. Walking and staying active in general has many benefits for children, including reducing rates of obesity and preventing numerous health problems.

Programs. Continue to develop, implement and evaluate educational programs for parents and children on pedestrian safety, such as the Pace Car program.

Preventing drowning

Drowning is the second leading cause of death among children who live in the Atlantic region, along with threats to breathing and fire/burns. Drowning can happen quickly and silently; children who survive a drowning (submersion injury) frequently have long-term effects from brain injury caused by loss of oxygen to the brain.

In Atlantic Canada, drowning incidents involving children aged 14 and under cost almost $345,000 in 2004.[125]

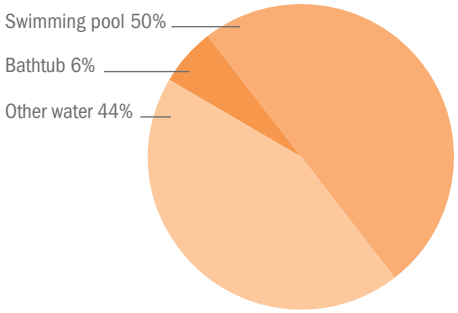
Hospitalization data

- Each year between 1996-2005, on average there were seven hospitalizations for near-drowning.
- Children aged 1-4 remain at highest risk for drowning.
- In Atlantic Canada, among children under age 14, hospitalizations from drowning occurs most commonly in swimming pools (50%), open bodies of water such as lakes or streams (44%), and bathtubs (a small percentage).
- The most common age groups to be hospitalized from drowning in swimming pools were ages 10-14 and birth to age four.
- While the majority (74%) of drowning incidents occur in summer, 14% happen in spring, 8% in fall, and 6% in winter. Some of the winter and spring incidents may occur when a child falls through thin or melting ice.
- The overall drowning rates have declined by 49% in the 10-year review period. Among those aged 1-4, the decline was 35% over the 10-year period. (There were eight years over the 10-year period during which no children under age one were admitted due to drowning.)
- When hospitalization rates due to drowning are compared, children in Atlantic Canada had a rate (1.7 hospitalizations/100,000 population) that is similar to the Canadian rate (1.9 hospitalizations/100,000 population).

Trends

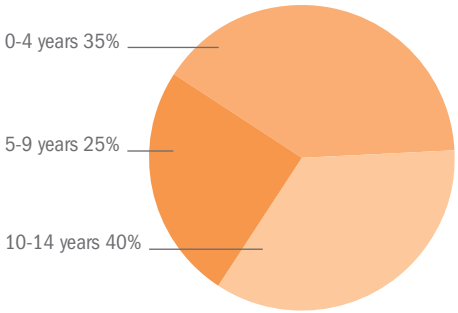
Proportion of drowning hospitalizations among children who live in Atlantic Canada aged 0-14 years by location, 1996-2005

Source: Canadian Institute for Health Information



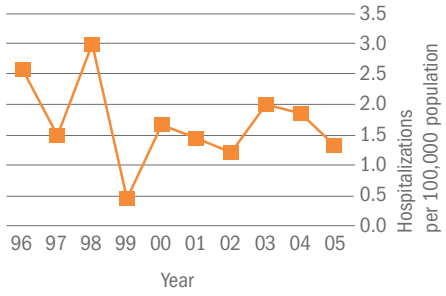
Proportion of swimming pool related drowning hospitalization among children who live in the Atlantic region by age group (age-adjusted rates), 1996-2005

Source: Canadian Institute for Health Information



Trends in drowning hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



Key facts

- Drowning risks are closely tied to child development. Children under age five are attracted to water, but lack a sense of danger. They are top-heavy and vulnerable to falling into the water. Young children's lungs are smaller than adults' and fill quickly with water; a child can drown quickly in as little as 5 cm (2.5 in.) of water.[126,127] From age five to age 14, children are at risk because they may overestimate their own skills, underestimate the depth of the water or strength of the current, or respond to a dare from a friend.
- The World Health Organization states that a lapse in adult supervision is the largest contributor to child drowning.[128]

What works to prevent injury

Install 4-sided 1.2 m (4 ft.) fencing around home swimming pools with an automatic, self-closing, self-latching gate. Researchers estimate that proper fencing could prevent seven of 10 drowning incidents in private swimming pools that involve children under age five.[129,130] In many homes, the back yard is surrounded by a fence, but the pool can still be reached directly from the house. This is not adequate fencing. In Atlantic Canada, half (50%) of all drowning incidents among children under age 14 occur in swimming pools.

Wear lifejackets on boats. Approximately 90% of recreational boaters who have drowned in Canada were not wearing lifejackets.[131] Boaters should choose lifejackets that fit according to weight, and buckle the straps. Atlantic region's cold waters make it hard for even a strong adult swimmer to survive until rescue without a lifejacket.

Do not use baby bath seats. Babies have drowned in bath seats.[132,133] Although warning labels recommend that parents or caregivers stay close by, baby bath products can mistakenly be seen as a safe substitute for supervision. This gives adults the misconception that they can do other activities while the child is in the tub.[134] Surveys in Canada and the United States indicate that almost half of parents use infant bath seats and rings.[135,136]

Teaching children how to swim must be combined with other effective protection strategies. There is limited research on the effectiveness of swimming lessons in preventing drowning incidents among children. It is recommended that children receive swimming training, but adults should not assume it will prevent drowning.[137,138]

Supervise closely. Adults should stay within sight and reach of any child under age five – or any older child who does not swim well – when he or she is in the water or playing near water. Studies show that lack of supervision is a major factor in many drowning incidents.[139]

Atlantic Canada initiatives

Research. The Canadian Red Cross compiles drowning statistics from across Atlantic Canada for its annual Drowning Report. This research allows the Red Cross to revise programs and literature to reflect changing trends.[140]

Programs. Each year 53,400 Atlantic Canadian children are trained to swim through the Red Cross Swim program. This includes Swim at School programs, as well as those taught outside school and in the summer. Another Atlantic Canada initiative offered through the Red Cross is the PFD Loan Service, a service that provides personal flotation devices (PFDs) at no charge for a period of less than two weeks.[141]

The Lifesaving Society works to prevent drowning by providing public education as well as lifesaving, lifeguarding, and leadership education.[142]

On Deck for Safety is a partnership of organizations with a common value in all water activity safety. The partnership leverages the public profile, human resources, and educational opportunities by all involved towards this common objective.

Public Awareness. Atlantic Canada participates in National Water Safety Week each June. The focus is on children and the message is active supervision on, in, or near water at all times. Atlantic Canada also participates in National Lifejacket Day each May.

Call to action

Research. Continue to support and use the Drowning Report produced by Red Cross.

Legislation. Promote the enactment of municipal legislation requiring 1.2 m (4 ft.) high, 4-sided pool fencing with self-closing, self-latching gates. Many municipalities that have bylaws governing pool enclosures require only 3-sided fencing, which means that fencing the backyard and not the pool itself is permitted. Three-sided fencing does not protect children from accessing the pool directly from the house. Municipal legislation should include in-ground and above-ground pools, inflatable pools and spas. Spas should have locked covers when not in use.

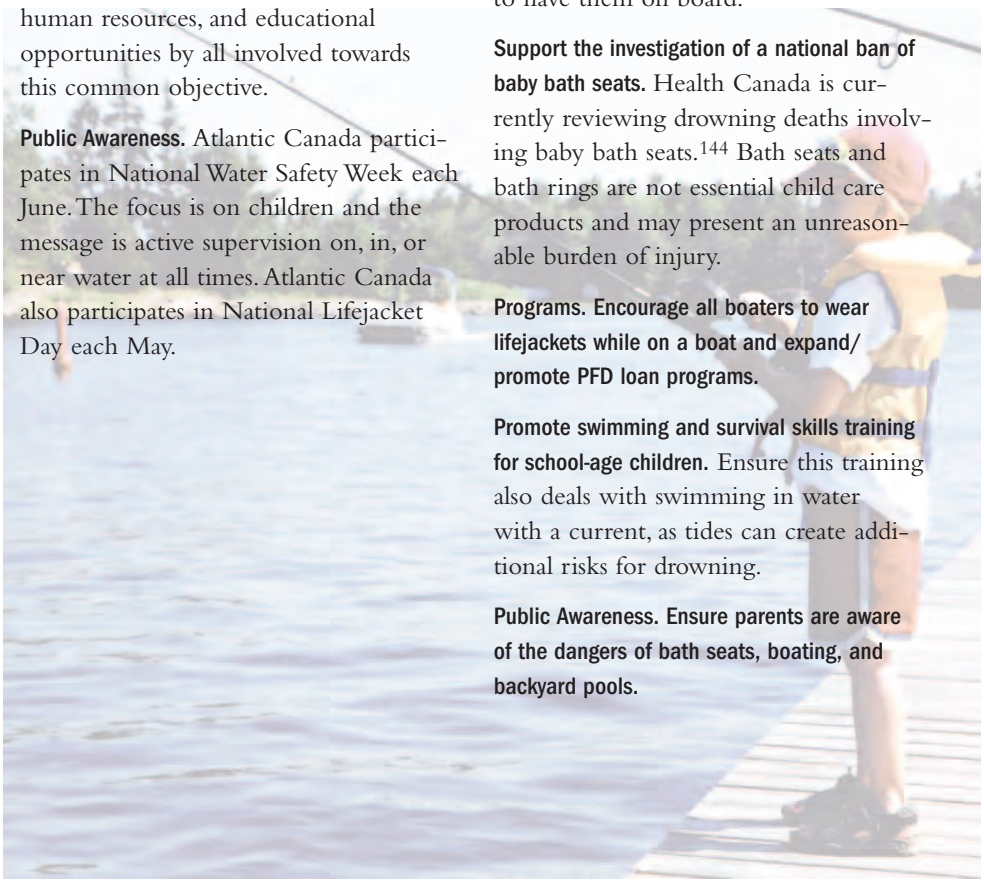
Advocate for the amendment of the federal law on lifejackets to require all boaters – children and adults – to wear a lifejacket at all times when on board. Canadians drown every year because they are not wearing lifejackets.[143] The law does not currently require boaters to wear lifejackets, only to have them on board.

Support the investigation of a national ban of baby bath seats. Health Canada is currently reviewing drowning deaths involving baby bath seats.[144] Bath seats and bath rings are not essential child care products and may present an unreasonable burden of injury.

Programs. Encourage all boaters to wear lifejackets while on a boat and expand/promote PFD loan programs.

Promote swimming and survival skills training for school-age children. Ensure this training also deals with swimming in water with a current, as tides can create additional risks for drowning.

Public Awareness. Ensure parents are aware of the dangers of bath seats, boating, and backyard pools.



Preventing threats to breathing

Threats to breathing – suffocation, strangulation, choking, and entrapment – are the second leading cause of death to children who live in the Atlantic region, along with drowning and fire/burns. For children who survive, the injuries often result in brain damage because they have been deprived of oxygen for a period of time.

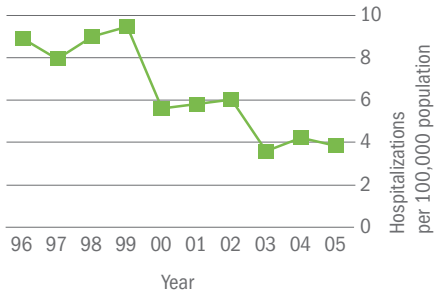
Hospitalization data

- Each year between 1996-2005, on average 27 children aged 14 and under were hospitalized because of threats to breathing.
- 78% of children who are treated for threats to breathing are under age five.
- Children under age one are most vulnerable. Threats to breathing are the second leading cause of injury hospitalization in children aged less than one year.
- Nearly all (95%) of hospitalizations due to threats to breathing are from choking on food or other objects, while the remaining 5% are related to a mechanical cause (e.g., strangulation by blind cords).
- The overall threats to breathing hospitalization rate declined 57% in the reporting period.
- The data shows an encouraging decline in the rates for these age groups: children under age one (45%) and age 1-4 (79%).
- When hospitalization rates due to threats to breathing were compared, children in Atlantic Canada had a rate (6.6 hospitalizations/100,000 population) that is significantly higher than the Canadian rate (5.7 hospitalizations/100,000 population).

Trends

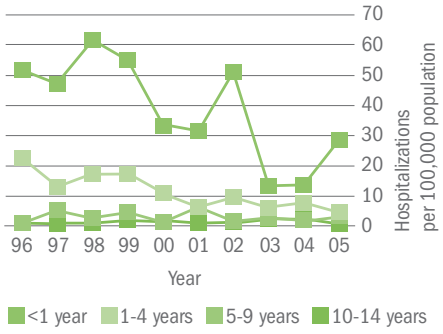
Trends in threat to breathing related hospitalization rates among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



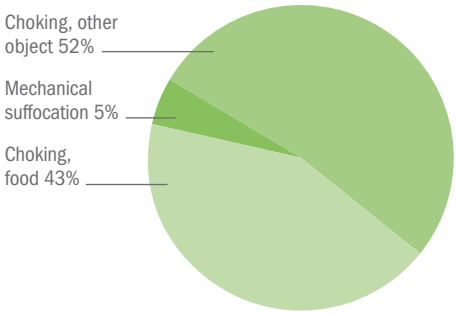
Trends in threat to breathing related hospitalization rates among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Proportion of threat to breathing related hospitalizations among children who live in Atlantic Canada aged 0-14 years, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- Developmental tasks of young children put them at risk for threats to breathing. Babies and toddlers are constantly exploring their world by putting things in their mouths. They do not understand the difference between things that taste good or have an interesting texture and what is harmful. Also, they do not have the teeth required to grind food down to a small, safe size. Young children are also more likely to choke on food if they are running, laughing, talking, or crying while they have food in their mouths.
- The most common foods that caused choking are nuts, raw carrots, and popcorn kernels.[145]
- Between 1989-2008 in Canada, 27 children died and 23 children were injured by becoming entangled in window blind cords.[146]
- An American study found that latex balloons were the third most common cause of choking deaths among young children. A piece of balloon is particularly difficult to dislodge from a child's airway. Researchers found that latex balloons were a risk to all age groups.[147]

What works to prevent injury

Keep choking hazards away from children under age three. Do not feed children under age three nuts, raw carrots or popcorn. Keep small objects away from young children. If an object fits through a cardboard toilet paper roll, it can cause a young child to choke. Also, keep young children away from latex balloons.

Eliminate or modify items in the home that could cause strangulation. Common strangulation hazards include blind or curtain cords. These cords should be cut short and tied out of reach.

Ensure children have safe sleeping environments. Young children should sleep in cribs or cradles that were built after 1986. Sleeping environments should be free of soft bedding that could suffocate a child, such as comforters, pillows, crib bumpers, and stuffed animals.[148]

Create and enforce legislation. This is a highly effective measure to reduce injuries and deaths. For example, regulations for cribs and cradles were last updated in 1986 to ensure that the mattress support was secured to prevent entrapment deaths. From 1972-1986, there were 43 deaths that involved cribs. In the two decades since the legislation was updated, there have been 37 deaths – 36 of which involved cribs built before 1986.[149]

Atlantic Canada initiatives

Programs. Threats to breathing are addressed by public health practitioners in their work with new mothers and families, in Best Start or other early intervention programs for vulnerable families, and by family resource centres as part of their ongoing child safety messaging to parents. Some emergency departments also have information available for parents.

Child Safety Link[150] offers Keep Kids Safe: Home Safety Workshops for parents and caregivers and those working with small children. Child Safety Link is currently developing a Home Safety Curriculum that will provide organizations with the tools to conduct this workshop in their own communities. A Keep Kids Safe: Home Safety Booklet is also widely distributed across the Maritimes through departments of public health, family resource centres, and other partners. Child Safety Link's Virtual Safety Home interactive learning resource is located online at **www.childsafetylink.ca.**

Organizations like St. John Ambulance and the Canadian Red Cross include choking prevention and first-response treatment in their First Aid courses. Red Cross also offers a specific Emergency Child Care First Aid course and CPR training.

Public Awareness. Child Safety Link has developed a number of PSAs that air on CTV networks in the Maritimes. Playground Safety addresses the issue of helmets that can cause strangulation and/or entrapment, and Child Safety: Crib deals with crib suffocation due to bumper pads, blankets, and toys in the crib.

Call to action

Legislation. Advocate for the enhancement of consumer product safety in Canada. While the public may reasonably assume that if a children's product is for sale, it has been tested or inspected and is considered safe – this is not currently the case. Children continue to suffer serious product related injuries. Safe Kids Canada calls for enhancements to product related injury surveillance, reporting, enforcement and consumer education along with a renewal of product safety laws. Safe Kids Canada recommends the renewal of federal product legislation to include a "precautionary principle" and "general safety requirement" for all products. This would bring the product legislation framework in line with consumer expectations for safe products on the market.

Support Safe Kids Canada in advocating for the pre-market evaluation of products through a child safety lens. Products and standards should be designed using a precautionary approach that keeps child safety in mind. Producers, distributors, retailers and standards developers should have an onus to build safety into the design of products before they reach the market – and to take immediate corrective action when risks are identified with items already for sale.

Programs. Continue to educate parents and families on choking hazards and how to avoid them. Ensure parents and healthcare professionals are aware of and have access to the programs and products of Child Safety Link and Safe Kids Canada in this issue area.

Alert Atlantic Canadian parents that not all products for children are safe, and that they should report any hazards they encounter to Health Canada Product Safety. Widely circulate the product recall notices that Health Canada distributes.

Preventing burns

Burns are the second leading cause of death to children in the Atlantic region along with threats to breathing and drowning. House fires are the main cause of fire and burn related deaths. Children are more likely to be hospitalized for burns related to contact with steam or hot liquids (scalds), including tap water. Serious burn injuries have long-term consequences for a child. Many children are left with disfigurement, permanent physical disability, and emotional difficulties.

In Atlantic Canada, burn injuries to children aged 14 and under cost $5.5 million in 2004.[151]

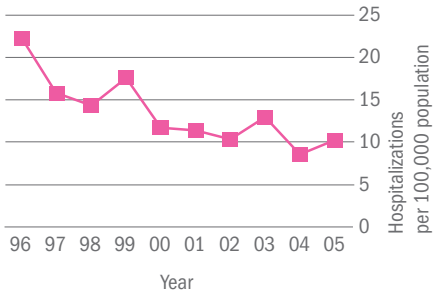
Hospitalization data

- Each year between 1996-2005, on average 58 children age 14 and under were hospitalized because of fires and other burns.
- Children aged 1-4 are at highest risk, accounting for 53% of the hospitalizations of children and youth in this category.
- The majority of admissions (60%) are due to scalds from hot tap water, hot drinks, food, fats, cooking oils, hot fluids and vapors.
- Hot tap water causes 10% of scald burns requiring hospitalization.
- Other causes of hospitalization include fire and flame (19%) and contact burns from appliances (10%).
- Overall hospitalization rates due to fire or burn related injuries have declined by 54% over the 10-year review period.
- The overall rate of hospitalizations due to scalds declined by 42% over the 10-year period. This includes a 42% decline in scald rates among children aged 1-4; a 9% decline among children under age one; and a 15% decline among those aged 5-9. The scald rates among children aged 10-14 years also declined, and in 2006 there were no scald related admissions.
- When hospitalization rates due to fire/burns were compared, children in Atlantic Canada had a rate significantly higher (13.9 hospitalizations/100,000 population) than the Canadian rate (11.4 hospitalizations/100,000 population).

Trends

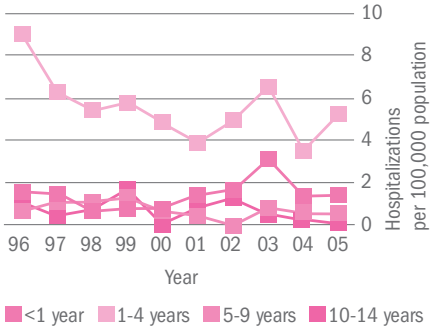
Trends in hospitalization rates due to fire/burns among children who live in Atlantic Canada aged 0-14 years, 1996-2005, age standardized

Source: Canadian Institute for Health Information



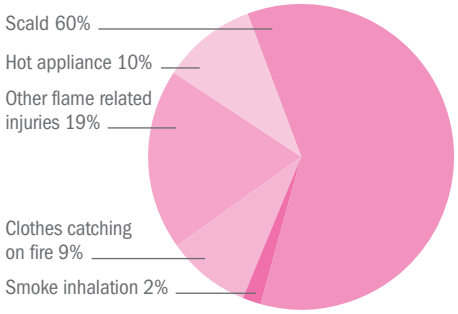
Trends in hospitalization rates due to scalds among children who live in Atlantic Canada by age group, 1996-2005

Source: Canadian Institute for Health Information



Cause of fire/burn related hospitalizations among children who live in Atlantic Canada aged 0-4 years, 1996-2005

Source: Canadian Institute for Health Information



Key facts

- Young children cannot understand the dangers of burn hazards, and have slower reaction times than older children.
- Children are particularly vulnerable to burns because their skin is thinner than that of an adult. A child's skin burns four times more quickly and deeply than an adult's at the same temperature.[152] Due to their rapid physical growth, children are particularly susceptible to scarring and contracting of the skin and underlying tissue as they heal.
- Tap water temperature in Canadian homes is typically 60°C (140°F), which can cause a third-degree burn on a child's sensitive skin in as little as 1-5 seconds.[153] These burns can happen when a child is in the bath or washing hands at the sink. Many severe tap water scalds occur when children are being supervised.[154] Tap water burns tend to be deep and cover a large portion of the body.[155]

What works to prevent injury

Reduce water temperature at the tap to 49°C (120°F). The risk of tap water burns can be significantly reduced by turning down gas or oil hot-water heaters to 49°C (120°F).[156] Electric water heaters have a higher risk of water quality issues and should be kept at 60°C (140°F), but temperature control devices can be installed in the plumbing to make sure that water coming out of the tap is at 49°C (120°F).

Prevent access to hot liquids and hot appliances. Children have been scalded by pulling kettles of hot water or pots of hot liquids or food onto themselves. Barriers should be placed around the glass doors on gas fireplaces. Fireplace doors can reach temperatures of 245°C (473°F) in about six minutes, and take approximately 45 minutes to cool down after the fireplace has been shut off.[157]

Regulate products that increase the risk of fires and burns. Since flame resistant fabric has been used in children sleep ware, there have been no deaths or injuries from sleep ware.[158] Since child-resistant lighters were introduced, there has been a 58% reduction in fires started by lighters.[159]

Install smoke alarms on every level of the home and in each sleeping area. Smoke alarms save lives; there is a threefold increased risk of fire related death in homes without smoke alarms.[160] Most children who died in residential fires were in homes without smoke alarms or without working smoke alarms. Alarms should be tested every month and batteries changed annually.

Atlantic Canada initiatives

Legislation. All new homes and retrofitting of older dwellings require at least one hard-wired smoke detector.

Programs. Fire departments across Atlantic Canada are involved in Fire Prevention Week and presentations at schools. Key messages include installing smoke alarms on every level of the home and checking batteries twice a year when clocks are changed to and from daylight savings time. Other messages include having and practising a home fire escape plan.

The topic is addressed in the Child Safety Link Keep Kids Safe Home Safety Workshops. Child Safety Link is currently developing a Home Safety Curriculum that will provide organizations with the tools to conduct this workshop in their own communities.

Public Awareness. Child Safety Link has one PSA on this issue: Burns (Scalds and burns prevention). The topic is also addressed in the Keep Kids Safe Home Safety Booklet and Virtual Safety Home at **www.childsafetylink.ca**

Call to action

Legislation. Advocate for the amendment of building and plumbing codes for residential building and product standards so that tap water does not exceed 49°C (120°F) at every tap. Educate parents on how to adjust their oil or propane water heater. Create partnerships to provide free or ready access for hot-water tap adjusters for electric hot-water heaters.

Strengthen product standards to reduce the risk of fires and burns. Household products and their standards should be designed with the special risks to children in mind. The International Standards Organization (ISO) guides address safety and provide guidelines for their inclusion in standards. ISO Guides 50 and 51 are particularly relevant examples. Improved safety standards should be complemented by education and enforcement. It is vital that existing regulations be enforced and strengthened over time, based on future research and injury data.

Programs. Increase public education about the risks of burns in the home. A 2001 Safe Kids Canada survey showed that 70% of parents were unaware that burns from hot liquids were a major risk to their children.[161] Ensure all health, safety, and social service professionals working with young families and parents have the knowledge and tools to address this issue. Create partnerships for smoke alarm and battery give-aways and home checks.

Educate parents/students to design and practise home fire escape plans and have appropriate (photoelectric/ionization) and working smoke alarms in all levels of their homes.

Report methodology

Report purpose

The purpose of this report is to review trends related to unintentional injuries suffered by children who live in Atlantic Canada (New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador). In the report, children are defined as being age 14 or under. Unintentional injury is defined as the unforeseen or chance result of being hurt or damaged from a voluntary act resulting in acute exposure to energy that exceeds human tolerance.

Data sources

Data for this analysis were provided from two sources; 10 years of hospitalization data were provided by the Canadian Institute for Health Information (CIHI) while death data as well as all corresponding annually population estimates were accessed from Statistics Canada.

Injury hospitalization data from CIHI were provided from the following databases:

- Discharge Abstract Database (DAD), ICD9, 1994-2003. *All of Canada excluding Quebec and Manitoba (outside Winnipeg).*
- Discharge Abstract Database (DAD), ICD10, 2001-2005. *All of Canada excluding Quebec and Manitoba (outside Winnipeg).*

Death data were accessed from Statistics Canada:

- Causes of Death Database, 1995-2004. *All of Canada and Atlantic Canada.*

Population Estimates were accessed from Statistics Canada:

- Census data, Statistics Canada. Table 051-0001 - Estimates of population, by age group and sex for July 1, *Canada, provinces and territories,* annual (persons unless otherwise noted) (table), CANSIM (database), using E-STAT (distributor).

To allow for a comparison across provinces, age-standardized rates were calculated using the direct method. This method controls for potential sources of bias resulting from variations in age distribution of populations across provinces.

External cause codes: International Classification of Disease

Where injury trends are observed for overall hospitalization, analysis was based on data for all unintentional injuries. Where injury trends were analyzed for external cause, Safe Kids Canada selected the top causes of injury based on burden. As well, some causes were included due to their importance to Canadian child injury prevention efforts between 1996 and 2005.

Injuries are classified according to categories developed by the World Health Organization's (WHO) International Classification of Diseases (ICD) coding system. The Atlantic Provinces were coded according to ICD-9 classifications. Since 2001, the Atlantic hospitals began coding with ICD-10CA.

Data extrapolation

This report does not suggest causation in relation to these injury trends. Data were analyzed for the 1995-2004 time period for death data and 1996-2005 for hospitalization data, as these were the most current years of data available.

Summary of Extrapolated Data

I. Deaths data. Reporting is limited due to the small numbers and to ensure confidentiality.

II. Injury hospitalization data, 1996-2005. Data were available for calendar years January 1996 to December 2005 based on discharge year and month. Injury hospitalization counts for these available years were plotted using Microsoft Excel for each of the various breakdowns (all unintentional injury, age groups, gender, main causes).

Patients who died in hospital, transferred to another acute care facility, readmitted, or had an adverse medical/surgical event were excluded from the dataset.

Records that were missing or had invalid most-responsible diagnosis codes or external cause of injury codes (0.9%) were excluded from the dataset.

Methodology references

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Unintentional external injury codes

External cause	ICD-9	ICD-10
Cycling	E810-E819(.6), E800-E807(.3); E820-E825(.6); E826.1,.9; E827-E829(.1)	V10-V18, V19(.0-.6,.8,.9)
Cycling – traffic	E810-E819(.6)	V12-V14(.3-.9), V19(.4-.6)
Cycling – other	E800-E807(.3); E820-E825(.6); E826.1,.9; E827-E829(.1)	V10-V11, V12-V14(.0-.2), V15-V18, V19(.0-.3,.8,.9)
Pedestrian	E810-E819(.7), E800-E807(.2), E820-E825(.7), E826-E829(.0)	V1, V2-V4(.0,.1,.9), V5, V6, V9(.0-.3,.9)
Pedestrian – traffic	E810-E819(.7)	V2-V4(.1,.9), V09.2
Pedestrian – other	E800-E807(.2), E820-E825(.7), E826-E829(.0)	V1, V2-V4(.0), V5, V6, V9(.0,.1,.3,.9)
Motor Vehicle Occupant	E810-E819(.0,.1)	V30-V79(.4-.9), V83(.0-.3)
Drowning/submersion	E830.0-.9, E832.0-.9, E910.0-.9	W65-W74
Bathtub	E910.4	W65, W66
Swimming pool	E910.8	W67, W68
Poisoning	E850.0-E869.9	X40-X49
Medications	E850.0-E858.9	X40-X44
Alcohol	E860	X45
Household products	E861	-
Petroleum products	E862	X46
Agricultural and horticultural products	E863	X48
Corrosive and caustic substances	E864	-
Poisonous foodstuffs and plants	E865	-
Other unspecified solids and liquids	E866	X49
Poisonous gases	E867-869	X47
Fire/burn	E890.0-E899, E924(.0-.9)	X00-X19
Scalding	E924.0	X11-X13
Hot tap water	-	X10, X111
Fumes	E890-892(.1,.2)	-
Hot appliances	E924.8	X15, X16
Clothing ignition	E893, E894	-
Bed clothes ignition	E898.0	-
Falls	E880.0-E886.9, E888	W00-W19
Bed or chair	E884.2	W06, W07
Playground equipment	E884.0	W09
Stairs and steps	E880.9	W10
Suffocation	E911-E913.9	W75-W84
Inhalation of food	E911	W79, W78
Inhalation of other object	E912	W80
Accidental mechanical suffocation	E913	W75, W76, W77, W81, W83, W84
ATV/Snowmobile	E820-E821	V86(.00-.68), V87

Source: International Collaborative Effort (ICE) on Injury Statistics. External Cause of Injury Mortality Matrix.

Report methodology

Injury diagnosis codes: Body region of injury

Body region	ICD-9	ICD-10
Traumatic brain injury	800-801(.9), 803-804(.9), 850-854 995(.55), 950(.1-.3)	S02(.0-.1,.3,.7-.9), S04.0, S06, S07, S09.2, S09.7, S09.9 T90(.4,.8), T90.5, T90.9
Other head and neck	802, 807(.5-.6), 830, 848(.0-.2) 870-874, 900, 910, 918, 920, 921 925.1, 925.2, 940, 941(.0-.99), 947(.0) 950(.0,.9), 951, 953.0, 954.0, 957.0 959(.01,.09)	S00, S02(.2,.4-.6),S03(.0-.5), S04(.1-.9), S05(.0-.9, S08(.0-.9) S09.1, S09.2, S10, S11, S12(.8-.9), S13(.2-.3, .5-.6), S14(.3-.6) S15(.0,.2-.9), S16, S17, S18, S19.7, S19.8, S19.9, T00.0, T01.0 T02.0, T03.0, T04.0, T15-T16, T17(.0-.4), T18.0, T20, T27.0, T27.4 T28.0, T28.5, T33.1, T34.1, T35.2, T90.0, T90.3, T95.0
Spinal cord	806(.0-.9), 952(.0-.9)	S14(.0-.1), S24(.0-.1), S34(.0-.1,.3), T09.3, T91.3
Vertebral column injury	805(.0-.9), 839(.0-.59), 847(.0-.4)	S12(.0-.7), S13(.0-.1), S13.4, S14.2, S15.1, S22(.0-.1) S23(.0-.1), S23.3, S24.2, S32(.0-.2), S33(.0-.2), S33(.5-.7) S34(.2-.4), T08, T09.4, T91.1
Torso	807(.0-.4), 808, 809 839(.61-.79), 846, 847.9, 848(.3-.4) 860-867, 875-879(.7) 901-902(.5), 902(.81-.82) 911, 922(.0-.9), 926(.0-.9), 942(.0-.99) 953(.1-.3), 953(.5), 954(.1) 954(.8-.9), 959.1	S20, S21, S22(.2-.9), S23.2, S23(.4-.5), S24(.3,.6), S25, S26.0 S26.8, S26.9, S27(.0-.9), S28.0, S28.1, S29(.0,.8), S29.7, S29.9 S30(.0-.2,.7-.9), S31(.0,.1-.5,.7,.8), S32(.3-.8), S33(.3-.4), S34(.5,.6,.8) S35(.0-.5,.7-.9), S36, S37, S38(.0-.3), S39(.0,.6-.9), T00.1, T01.1 T02.1, T03.1, T04.1, T04.7, T06.5, T09(.0-.9), T17.5, T17(.8-.9) T18(.-1- .2, .5,.8-.9), T19, T21, T27(.2-.3,.6-.7), T28(.1-.3,.6-.8), T33.2 T33.3, T34.2,T3.4.3, T35.3, T91.2, T91.4, T91.5, T95.1
Upper extremity	810-818, 831-834, 840-842 880-884, 885-887(.7) 903, 912-915, 923(.0-.9) 927(.0-.9), 943(.0-.99), 944 953(.4), 955, 959(.2-.5)	S40, S41, S42, S43(.0-.7), S44, S45, S46, S47, S48, S49(.7-.9) S50, S51, S52, S53(.0-.4), S54, S55, S56, S57, S58, S59(.7-.9) S60, S61, S62, S63(0.-.7), S64, S65, S66, S67, S68, S69(.7-.9) T00.2, T01.2, T02(.2,.4), T03.2, T04.2, T05(.0-02), T10, T11(.0-.9) T33(.4-.5), T22-T23, T34(.4-.5), T35.4, T92(.0-.9), T95.2
Lower extremity	820-827, 835-838 843-845(.1), 890-894 895-897(.7), 904(.0-.8) 916, 917, 924(.0-.25) 928(.0-.9), 945(.0-.99) 959(.6-.7)	S70(.0.9), S71(.0-.8), S72(.0-.9), S73(.0-.1), S74, S75, S76(.0-.7) S77(.0-.2), S78(.0-.9), S79(.7-.9), S80, S81, S82, S83(.0-.7) S84, S85, S86, S88, S87, S89(.7-.9), S90, S91, S92(.0-.1,.3) S93(.2,.4-.6), S94, S95, S96, S97, S98, S99(.7-.9), T00.3 T01.3, T02(.3,.5), T03.3, T04.3, T05(.3-.5), T12, T13(.0-.9) T24, T25, T33(.6-.8), T35.5, T93(.0-.9), T95.3
Unclassifiable by site/Multiple site	819, 828, 829, 839(.8-.9), 848(.8-.9) 869, 879(.8-.9), 905-909, 919, 924(.8-.9) 929, 930-939, 946, 947(.1-.2,.8-.9) 948, 949, 953(.8-.9), 956, 957(,1,.8,.9) 958, 959(.8-.9), 960-989, 990-994 995(.50-.54,.59,.80-.85)	T00(.6,.8-.9), T01(.6,.8, .9), T02(.6-.9), T03(.4,.8-.9), T04(.4,.8-.9) T05(.6-.9), T06(.1-.4,.8), T07, T14(.0-.9), T27(.1,.5), T28(.4,.9) T29(.0-.7), T30-T32, T33.9, T34.9, T35(.0-.1,.6,.7), T36-T50, T51-T65 T66-T75, T79(.0-.9), T91(.0,.8,.9), T94(.0,.1), T95(.4,.8-.9), T96, T97, T98(.0-.2)
Adverse events	-	T78, T80-T88, T98

Source: The Barrell Injury Diagnosis Matrix

Data tables

Death data

Atlantic provinces

Causes	Number of deaths	Rate per 100,000 population: Crude rate	Upper limit	Lower limit
Chapter XX (All injuries)	341	7.90	8.74	7.07
Cycling	17	0.39	0.58	0.21
Pedestrian	42	0.97	1.27	0.68
Motor vehicle occupant (Traffic)	22	0.51	0.72	0.30
Drowning/Submersion	38	0.88	1.16	0.60
Fire/Burn	37	0.86	1.13	0.58
Threats to breathing	39	0.90	1.19	0.62
Snowmobile/ATV (Non-traffic)	10	0.23	0.38	0.09
Other injury causes	136	3.15	3.68	2.62

Canada

Causes	Number of deaths	Rate per 100,000 population: Crude rate	Upper limit	Lower limit
Chapter XX (All injuries)	4,464	7.58	7.80	7.36
Cycling	168	0.29	0.33	0.24
Pedestrian	478	0.81	0.88	0.74
Motor vehicle occupant (Traffic)	622	1.06	1.14	0.97
Drowning/Submersion	536	0.91	0.99	0.83
Fire/Burn	338	0.57	0.64	0.51
Threats to breathing	423	0.72	0.79	0.65
Snowmobile/ATV (Non-traffic)	105	0.18	0.21	0.14
Other injury causes	1,794	3.05	3.19	2.91

When comparing the crude injury death rates of the listed causes, the children of Atlantic Canada had death rates similar to the Canadian rates for all causes except motor vehicle occupant (traffic). For the crude death rate for motor vehicle occupants, Atlantic Canada had a rate significantly lower than the Canadian rate. The Atlantic Canada death rate was 0.51 deaths/100,000 population and the Canadian rate was 1.06 deaths/100,000 population.

Source: Statistics Canada. Table 051-0001 – Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted) (table), CANSIM (database), Using E-STAT (distributor). Retrieved February 23, 2009 from <www40.statcan.ca/l01/cst01/demo31a-eng.htm>

Hospital admissions

Hospital admission rates are age standardized and are calculated based on population; they are not adjusted for duration of play/participation or seasonal differences.

All unintentional injuries (excluding transfers, deaths, readmissions and adverse events)

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	757.7	775.3	740.0
Prince Edward Island	486.5	512.8	460.2
Nova Scotia	712.8	725.5	700.1
New Brunswick	817.8	833.1	802.5
Ontario	515.7	518.7	512.8
Saskatchewan	859.1	871.1	847.1
Alberta	716.7	723.3	710.1
British Columbia	651.1	656.9	645.2
CANADA	608.7	611.0	606.4
Atlantic Canada	741.9	750.1	733.7

When comparing the overall hospitalization rates of unintentional injuries, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 741.9 hospitalizations/100,000 population and the Canadian rate was 608.7 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 817.8 hospitalizations/100,000 population. Prince Edward Island had the lowest rate with 486.5 hospitalizations/100,000 population.

Falls (excluding playground)

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	168.1	176.4	159.8
Prince Edward Island	115.2	128.1	102.4
Nova Scotia	144.9	150.6	139.1
New Brunswick	219.2	227.1	211.3
Ontario	110.8	112.2	109.4
Saskatchewan	210.3	216.3	204.3
Alberta	126.3	129.1	123.5
British Columbia	150.3	153.1	147.5
CANADA	131.0	132.1	129.9
Atlantic Canada	171.7	175.6	167.7

When comparing fall related hospitalization rates, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 171.7 hospitalizations/100,000 population and the Canadian rate was 131.0 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 219.2 hospitalizations/100,000 population. Prince Edward Island had the lowest rate with 115.2 hospitalizations/100,000 population.

Bicycle safety

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	49.2	53.7	44.7
Prince Edward Island	24.3	30.2	18.4
Nova Scotia	26.2	28.7	23.8
New Brunswick	44.9	48.5	41.3
Ontario	21.0	21.6	20.4
Saskatchewan	35.7	38.1	33.2
Alberta	24.7	25.9	23.5
British Columbia	31.3	32.6	30.1
CANADA	25.7	26.2	25.2
Atlantic Canada	37.1	38.9	35.3

When comparing bicycle related hospitalization rates, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 37.1 hospitalizations/100,000 population and the Canadian rate was 25.7 hospitalizations/100,000 population.

Of the Atlantic Provinces, Newfoundland and Labrador had the highest rate with 49.2 hospitalizations/100,000 population. This is almost double the Canadian rate. Prince Edward Island had the lowest rate with 24.3 hospitalizations/100,000 population.

Poisonings

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	34.6	38.4	30.9
Prince Edward Island	29.0	35.4	22.5
Nova Scotia	19.4	21.5	17.3
New Brunswick	45.0	48.6	41.4
Ontario	20.0	20.6	19.5
Saskatchewan	57.0	60.1	53.9
Alberta	28.4	29.7	27.0
British Columbia	20.4	21.4	19.3
CANADA	24.5	25.0	24.0
Atlantic Canada	31.5	33.2	29.8

When comparing poisoning related hospitalization rates, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 31.5 hospitalizations/100,000 population and the Canadian rate was 24.5 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 45.0 hospitalizations/100,000 population. This is almost double the Canadian rate. Nova Scotia had the lowest rate with 19.0 hospitalizations/100,000 population.

Data tables

Playground falls

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	18.3	21.1	15.6
Prince Edward Island	27.1	33.3	20.9
Nova Scotia	26.4	28.8	23.9
New Brunswick	34.1	37.3	31.0
Ontario	24.2	24.8	23.6
Saskatchewan	64.0	67.3	60.7
Alberta	36.3	37.7	34.8
British Columbia	43.0	44.5	41.5
CANADA	31.5	32.0	30.9
Atlantic Canada	27.1	28.7	25.6

When comparing playground fall related hospitalization rates, the children of Atlantic Canada had a hospitalization rate significantly lower than the Canadian rate. The rate in Atlantic Canada was 27.1 hospitalizations/100,000 population and the Canadian rate was 31.5 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 34.1 hospitalizations/100,000 population. Newfoundland and Labrador had the lowest rate with 18.3 hospitalizations/100,000 population.

Child passenger safety

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	13.7	16.0	11.3
Prince Edward Island	11.8	15.9	7.7
Nova Scotia	9.4	10.8	7.9
New Brunswick	15.8	17.9	13.6
Ontario	10.4	10.8	10.0
Saskatchewan	23.1	25.1	21.1
Alberta	17.7	18.7	16.6
British Columbia	13.9	14.7	13.0
CANADA	12.9	13.3	12.6
Atlantic Canada	12.5	13.6	11.4

When comparing motor vehicle occupant injury hospitalization rates, the children of Atlantic Canada had a hospitalization rate similar to that of Canada. The rate in Atlantic Canada was 12.5 hospitalizations/100,000 population and the Canadian rate was 12.9 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 15.8 hospitalizations/100,000 population. Nova Scotia had the lowest rate with 9.4 hospitalizations/100,000 population.

All-terrain vehicle/off-road vehicle (ATV/ORV) and snowmobile

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	5.1	6.5	3.6
Prince Edward Island	4.8	7.4	2.2
Nova Scotia	5.0	6.1	4.0
New Brunswick	6.3	7.7	5.0
Ontario	2.1	2.3	1.9
Saskatchewan	5.6	6.6	4.7
Alberta	7.8	8.5	7.1
British Columbia	2.0	2.3	1.7
CANADA	3.5	3.6	3.3
Atlantic Canada	5.4	6.1	4.7

When comparing the hospitalization rates due to ATV/ORV injuries, the children of Atlantic Canada has a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 5.4 hospitalizations/100,000 population and the Canadian rate was 3.5 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 6.3 hospitalizations/100,000 population. Prince Edward Island had the lowest rate with 4.8 hospitalizations/100,000 population.

Pedestrians

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	15.5	18.0	13.0
Prince Edward Island	10.0	13.8	6.2
Nova Scotia	9.0	10.5	7.6
New Brunswick	8.2	9.7	6.7
Ontario	9.7	10.1	9.3
Saskatchewan	15.4	17.0	13.8
Alberta	8.6	9.3	7.9
British Columbia	11.2	12.0	10.5
CANADA	10.1	10.4	9.8
Atlantic Canada	10.2	11.2	9.3

When comparing the hospitalization rates due to pedestrian injuries, the children of Atlantic Canada had a hospitalization rate similar to the Canadian rate. The rate in Atlantic Canada was 10.2 hospitalizations/100,000 population and the Canadian rate was 10.1 hospitalizations/100,000 population.

Of the Atlantic Provinces, Newfoundland and Labrador had the highest rate with 15.5 hospitalizations/100,000 population. New Brunswick had the lowest rate with 8.2 hospitalizations/100,000 population.

Drowning

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	1.4	2.1	0.6
Prince Edward Island	1.5	2.9	0.0
Nova Scotia	1.7	2.4	1.1
New Brunswick	2.0	2.7	1.2
Ontario	1.8	2.0	1.6
Saskatchewan	2.6	3.3	1.9
Alberta	2.0	2.3	1.6
British Columbia	2.3	2.6	1.9
CANADA	1.9	2.1	1.8
Atlantic Canada	1.7	2.1	1.3

When comparing the hospitalization rates due to drowning, the children of Atlantic Canada had a hospitalization rate similar to the Canadian rate. The rate in Atlantic Canada was 1.7 hospitalizations/100,000 population and the Canadian rate was 1.9 hospitalizations/100,000 population.

Of the Atlantic Provinces, New Brunswick had the highest rate with 2.0 hospitalizations/100,000 population. Newfoundland and Labrador had the lowest rate with 1.4 hospitalizations/100,000 population.

Threats to breathing

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	7.0	8.7	5.3
Prince Edward Island	4.7	7.2	2.1
Nova Scotia	7.7	9.0	6.4
New Brunswick	5.3	6.6	4.1
Ontario	4.7	5.0	4.4
Saskatchewan	8.2	9.4	7.0
Alberta	8.1	8.8	7.4
British Columbia	5.3	5.9	4.8
CANADA	5.7	5.9	5.5
Atlantic Canada	6.6	7.4	5.8

When comparing the hospitalization rates due to threats to breathing, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 6.6 hospitalizations/100,000 population and the Canadian rate was 5.7 hospitalizations/100,000 population.

Of the Atlantic Provinces, Nova Scotia had the highest rate with 7.7 hospitalizations/100,000 population. Prince Edward Island had the lowest rate with 4.7 hospitalizations/100,000 population.

Fire/Burns

Province	Age-standard rate per 100,000 population	Upper conf level	Lower conf level
Newfoundland and Labrador	20.4	23.3	17.5
Prince Edward Island	12.2	16.3	8.0
Nova Scotia	9.9	11.4	8.4
New Brunswick	14.8	16.9	12.8
Ontario	9.9	10.3	9.5
Saskatchewan	15.5	17.1	13.9
Alberta	13.9	14.9	13.0
British Columbia	11.1	11.9	10.3
CANADA	11.4	11.7	11.1
Atlantic Canada	13.9	15.0	12.8

When comparing the hospitalization rates due to fire/burns, the children of Atlantic Canada had a hospitalization rate significantly higher than the Canadian rate. The rate in Atlantic Canada was 13.9 hospitalizations/100,000 population and the Canadian rate was 11.4 hospitalizations/100,000 population.

Of the Atlantic Provinces, Newfoundland and Labrador had the highest rate with 20.4 hospitalizations/100,000 population. This was almost double the Canadian rate. Nova Scotia had the lowest rate with 9.9 hospitalizations/100,000 population.

Injury risk

Mechanism of injury	Number of admissions	1 injury admission in population
Falls	7,222	583
Bicycle	1,572	2,678
Poisoning	1,312	3,209
Playground	1,153	3,651
Burns	578	7,283
Passenger	527	7,988
ATV	230	8,615
Pedestrian	432	9,744
Drowning	288	14,617
Suffocation/Choking	270	15,591

The cause of injury that has the highest risk for admission to hospital, compared to other causes listed, is falls. There is a 1 in 583 chance that a child or youth will be admitted due to a fall. The second highest (1 in 2,678) is admissions due to bicycle related injuries.

Percentage of injury costs compared with percentage of population

Percentage	Newfoundland and Labrador	New Brunswick	Nova Scotia	Prince Edward Island
Cost of unintentional injuries	20.9	34.9	38.2	6.0
Cost of total injuries	20.5	35.9	37.6	6.0
Population (child/youth)	22.1	31.7	39.9	6.4

When comparing the percentage of injuries to children and youth who live in Atlantic Canada with the percent of population they represent, New Brunswick had only 31.7% of the population yet accounted for 34.9% of the costs for unintentional injuries and 35.9% of the costs of all injuries.

Population of Atlantic Canada, 1996-2005

Year/Age group	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
<1	27,008	25,346	24,452	23,683	23,755	22,194	21,536	21,663	21,698	21,243	**232,578**
1-4	114,801	111,247	106,959	103,585	100,348	97,359	94,499	92,015	90,205	88,040	**999,058**
5-9	157,876	155,330	152,259	148,851	143,701	139,042	135,068	131,279	127,763	124,832	**1,416,001**
10-14	166,733	164,538	161,403	158,978	157,397	155,438	153,613	151,551	148,596	143,799	**1,562,046**
Total	**466,418**	**456,461**	**445,073**	**435,097**	**425,201**	**414,033**	**404,716**	**396,508**	**388,262**	**377,914**	**4,209,683**

Source: Table 051-0001 – Estimates of population, by age group and sex, for July 1, Canada, provinces and territories, annual (persons)(1,2,6)

Endnotes

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Safe Kids Canada's mission is to lead and inspire a culture of safety across the country in order to reduce unintentional injuries, the leading cause of death among children and youth in Canada. As a national leader, Safe Kids Canada uses a collaborative and innovative approach to develop partnerships, conduct research, educate and advocate in order to prevent serious injuries among children, youth and their families. Our vision is *Healthier Children. Fewer Injuries. A Safer Canada.* Safe Kids Canada is the national injury prevention program of The Hospital for Sick Children. To learn more about Safe Kids Canada and child safety, visit www.safekidscanada.ca or call 1-888-SAFE-TIP.

Votre accès à la sécurité des enfants

Child Safety Link (CSL) is a child and youth injury prevention program at the IWK Health Centre in Halifax, NS. CSL began serving Nova Scotians in 1997 and in 2002 expanded its focus to include the provinces of New Brunswick and Prince Edward Island. CSL has a satellite office at Saint John Regional Hospital. CSL recognizes the importance of partners in preventing child and youth injuries. With support from industry and government, plus guidance from an Advisory Council, CSL supports families, caregivers and health professionals by providing information and programming about booster/car seat, helmet, home and playground safety as well as poisoning prevention.

The Atlantic Collaborative on Injury Prevention (ACIP), formerly the Atlantic Network for Injury Prevention, is a collaboration of more than 200 individuals and organizations working for injury prevention and control. The goal of ACIP is to reduce the burden of injury in Atlantic Canada through interprovincial leadership, surveillance, research, policy development and capacity building. ACIP works with partners, coalitions and networks in all four provinces on a variety of injury prevention issues, including those that affect children and youth.