

Preventing Serious Injuries in Children and Youth in Atlantic Canada

A Guide for Decision Makers



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Together, we can work to reduce injuries to children and youth.

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About Child Safety Link

Child Safety Link (CSL) is an injury prevention program at the IWK Health Centre dedicated to reducing the incidence and severity of unintentional injury to children and youth in the Maritimes. CSL is committed to working with community organizations, governments, and other partners to ensure children are as safe as necessary at home, on the road, and at play.

www.childsafetylink.ca

Twitter: @childsafetylink

Facebook: www.facebook.com/ChildSafetyLinkIWK

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Overview

Unintentional injuries are a leading public health issue that directly impacts the health, well-being, and quality of life of those injured, as well as their families, communities, and greater society. Nevertheless, injury is often neglected, and investment is rarely equal to the magnitude of the problem¹.

In Canada, unintentional injury is the leading cause of death, killing more children and youth than all disease².

Injury prevention matters to all of us. When we, our friends, or family are injured, it often becomes the most important focus in our lives. Bumps, bruises, and scrapes may be a part of childhood; however, serious injury, resulting in death or lifelong disability, is something no child and no family should have to experience. When an injury to a child occurs, the magnitude of its impact is felt at all levels of society. Injuries also place an enormous burden on our health-care system. By working collaboratively and applying a variety of strategies, we can, together, promote a safer community for all to live long, healthy lives.

Purpose of this document

This document is a follow-up to the *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004 – 2013]* report released in 2016 that looked at the pattern of injuries to children and youth in Atlantic Canada. (Appendix A explains this report in more detail.)

The purpose of this resource is to highlight unintentional injury issues for children and youth in Atlantic Canada and provide recommendations for a multisectoral, comprehensive approach to evidence-based policy solutions. This guide organizes actions into the three E's of injury prevention (enforcement, education, and engineering), and by level of government or organization responsibility.

The following key causes of injury hospitalizations are outlined:

- **On the Road**
 - Active transportation (includes pedestrians/bicyclists)
 - Child passengers
- **At Home**
 - Falls (focus on falls in the home)
 - Poisoning
 - Breathing-related injuries
- **At Play**
 - Playground falls
 - All-terrain vehicles

The definitions for each injury cause are outlined at the beginning of each section, as well as in Appendix B.

Data

This document looks at hospitalization data from the Canadian Institute for Health Information (CIHI). Data focuses on unintentional injuries only.

Death data, or data from specific provincial databases (specific to a hospital), is not in the scope of this document.

However, when possible, other data sources may be highlighted.

What is your role? How to use this guide.

This guide is for decision makers, public servants, policy makers, legislators, and others in Atlantic Canada who have a responsibility for keeping children safe or have a role in injury prevention—resource allocation. Everyone has an opportunity to contribute to safety in Atlantic Canada by adopting an injury prevention lens in their work. This includes having an awareness of the burden of injury in Atlantic Canada, and supporting injury prevention for the health and safety of our children.

There are several actions you can take:

- Look at your role with an injury prevention perspective.
- Identify opportunities to address injury issues among children and youth in Atlantic Canada and integrate best practices into existing efforts.
- Access and share child and youth injury prevention information with stakeholders.
- Collaborate with other organizations for a united voice.

Why should children’s injury prevention be a top priority?

Injury is a major public health issue in Canada that directly impacts the health, well-being, and quality of life of those injured, as well as their families, communities, and greater society¹. Unintentional injuries—such as those caused by motor vehicle crashes, falls, burns, drowning, and poisoning—are the leading cause of death and a leading cause of hospitalization among children in Canada and Atlantic Canada^{2, 3, 4}.

In Canada, 25 children die from injury every month; that is the equivalent of one classroom of children per month³. Deaths are only the tip of the iceberg, and for every injury death there are an estimated 30 hospital admissions, 300 emergency department attendances, and many thousands more who seek help from their general practitioner or who treat themselves³. When comparing the overall injury hospitalization rate of children in Atlantic Canada with the overall rate of Canadian provinces, the Atlantic rate is significantly higher with a rate of 571.5 hospitalizations per 100,000 population (95% CL 563.7 to 579.3) and the Canadian rate is 478.9 hospitalizations per 100,000 population (95% CL 480.9 to 476.8)⁵.

In Atlantic Canada, the overall child and youth injury hospitalization rate is significantly higher than the Canadian hospitalization rate⁵.

Despite the significance of children’s injuries, injury is often neglected, and investment is rarely equal to the magnitude of the problem¹. Injury prevention has not kept pace with other public health interventions, such as tobacco control or infectious disease prevention programs¹. Despite its impact on health, injury remains an invisible epidemic¹.

Preventable injuries (all ages) cost Canadians more than \$26.8 billion a year⁴. The economic cost of injury in Canada has increased by 35 per cent since 2004⁴. By 2035, injuries will cost Canadians \$75 billion a year, an increase of 180 per cent⁴. In 2010, injuries to children under 14 years of age cost the Canadian economy \$380 million for on-the-road injuries and \$1.3 billion for injuries from falls⁶.

Why a special focus on children?

Children are at particular risk of injury because their abilities and behaviours differ from those of adults, and they live in an environment built for adults⁷. Children are naturally curious and they develop new abilities quickly, such as walking, climbing, and running⁸. Unfortunately, children do not always have the ability to understand and respond to danger, which places them at increased risk of injury⁸.

The three E’s of injury prevention

A common strategy used to address injury prevention is called the three E’s of injury prevention and includes enforcement, education, and engineering⁹. The three E’s acknowledge the collective responsibility for injury prevention. This model shifts the focus of injury prevention from being an individual responsibility, and acknowledges the role stakeholders, such as government and communities, collectively have in injury prevention.

Enforcement includes policies, laws, and regulations that aim to reduce injuries.

Education involves providing the public with awareness, education, and skills training to prevent injuries.

Engineering involves developing or modifying products and environments to prevent injuries.

Sometimes this model is expanded to include more E’s, such as economics, evaluation, enablement, and empowerment. This document provides evidence-based recommendations for action and not necessarily specific programs. Actions for injury prevention are not limited to what is outlined.

Does injury prevention work?

Injury prevention can make a big difference in the overall health of a population¹. Government, industry, and society can all benefit from investing in injury prevention. The current cost of unintentional injury in Canada is far greater than the cost of prevention, which aims to reduce the number and severity of these injuries¹.



Some examples of cost-effective injury prevention strategies include¹⁰:

Every dollar spent on...	Saves society...
Childproof cigarette lighters	\$80
Booster seats	\$71
Bicycle helmets	\$45
Child safety seats	\$42
Zero-tolerance, driver under 21	\$25
Smoke alarms	\$18
Paediatrician counselling	\$9
Poison control centres	\$8

What if we lower injury rates?

Adopting effective and comprehensive injury prevention strategies can significantly reduce the economic and social consequences of injury¹¹. If Canada enjoyed the same child-injury rate as Sweden from 1991 to 1995¹¹:

- 1,233 children would not have died
- Between 23,000 and 50,000 would not have been hospitalized
- Over 250,000 children would not have visited emergency rooms

Most serious injuries are preventable. All of these children had the potential to lead happy, productive lives.

What are the costs of injuries to families, society, and health care?

Along with the economic costs to society as described above, there are intangible costs associated with injuries, such as pain and suffering, economic dependence, and social isolation. While these costs are difficult to quantify in economic terms, they are costs nonetheless and should be mentioned. Too many Canadians have their lives, and those of their families, irrevocably changed forever as a result of injury³.

Health Care: In addition to the trauma experienced by children, youth, and their families, injuries present a substantial burden to the health system and society at large¹². Injuries tend to require a disproportionate allocation of health resources and place immediate and unplanned demands on the system. Most parts of the health-care system are affected by treating the injured (such as wait times for some services). Community-based care, family physicians, emergency medical services, the acute-care system, and rehabilitation services are all involved in responding to the short- and long-term impacts of injury¹².

Financial Burden of Childhood Injuries for Families: Families of injured children are often under large financial burdens with unexpected costs of hospitalization, therapy, and rehabilitation⁶. Families of children hospitalized by injury often face immediate financial strains, which often include travel costs, parking fees, and the cost of meals¹³. Other unexpected costs could include purchasing specialized equipment, modifying the home (e.g. ramps), and taking time off to care for an injured child. These are just some of the financial stressors families go through with a seriously injured child¹⁴.

Social Burden to Children and Families: Serious and life-threatening injuries place a long-term burden on a child’s physical health, and also affect their social and psychological life¹³. Children who survive serious injury often require care and rehabilitation, and may be left with long-term or permanent disability, which can impact their health, education, and social inclusion⁸. This can also have major impacts on the lives of their families⁸. Parents, children, and siblings can experience significant stress as a result of injuries and changes in family structure and behaviour as a result of injury¹³.

Social determinants of injury

Canadians are not affected equally by injury¹⁵. An individual’s risk of injury can be impacted by factors such as income, income distribution, employment, housing, social environment, education, age, gender, and Aboriginal status¹⁵. Children are especially vulnerable to injury compared to other age groups¹⁵. Effective injury prevention measures must consider the social determinants of injury.

Endnotes

- Fuselli, P., and Wanounou, A. (2011). Canada and the World: A Comparative Approach to Injury Prevention. *Healthcare Quarterly*, 14(3), 84–89.
- Statistics Canada (2016). Table 13-10-0394-01 Leading causes of death, total population, by age group. Retrieved from: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310039401&pickMembers 5B0 5D=2.21&pickMembers 5B1 5D=3.1>
- MacKay, M., Vincenten, J., Brussoni, M., Towner, E., and Fuselli, P. (2011). *Child Safety Good Practice Guide: Good investments in unintentional child injury prevention and safety promotion – Canadian Edition*. Toronto: The Hospital for Sick Children.
- Parachute. (2015). *The Cost of Injury in Canada*. Parachute: Toronto, ON
- Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004 – 2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXyYg1wnb54atkzbSVggMNVV47sLZRtPMB_8fz7QoBT8JNiChLw1GGWbQOXp4Pv5jl7vXukUdfxauAI5XCeM9WZaEMhmPRpnTPzfsgPZdQsr01ONOn3GMjYgy7KtllxsCZoaimD5mkVuX-ZyBqxd0a8-7nyXFw2kMW17PEB5J6tdky9OPoUilWlb83knXjD4COLTan2HTpxs7ktkZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9DlCj1wifhB-1odmydH70WaX3z9cIhNqrg
- Parachute. (2016). *Unintentional Injury Trends for Canadian Children*. Retrieved from <https://parachute.ca/wp-content/uploads/2019/06/SKW-Trend-Report.pdf>
- Fuselli, P., Groff, P., Nesdale-Tucker, R., Waldie, R., and Wanounou, A. (2011). The Financial Costs, and Prevention Strategies of Unintentional Injuries. *Public Sector Digest*. Retrieved from: <https://publicsectordigest.com/article/financial-costs-and-prevention-strategies-unintentional-injuries>
- World Health Organization. 2008. *World Report on Child Injury Prevention: Summary*. Geneva, Switzerland: WHO.
- Groff, P. (2015). The Injury Prevention Spectrum and the 3 E’s. In I. Pike, S. Richmond, L. Rothman, and A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (pp. 399–408). Toronto, Ontario: Parachute.
- Children’s Safety Network (2014 updated). *Injury Prevention: What Works? A Summary of Cost-Outcome Analysis for Injury Prevention Programs*. Calverton, MD: Pacific Institute for Research and Evaluation; Retrieved from <http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/InjuryPreventionWhatWorks2014Update%20v9.pdf>
- SMARTRISK (2006). *The Economic Burden of Injury in Ontario*. Toronto: SMARTRISK.
- Nova Scotia Health Promotion and Protection and Injury Free Nova Scotia. 2009. *Nova Scotia’s Renewed Injury Prevention Strategy: Taking It to the Next Level*. Halifax, NS: Province of Nova Scotia
- Jiang, A. and Pike, I. (2015). The Burden of Injury. In I. Pike, S. Richmond, L. Rothman, & A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (pp. 399–408). Toronto, Ontario: Parachute.
- Foster, K., Young, A., Mitchell, R., Van, C., and Curtis, K. (2017). Experiences and needs of parents of critically injured children during the acute hospital phase: A qualitative investigation. *Injury*, 48 (1), 114–120. <https://doi.org/10.1016/j.injury.2016.09.034>
- Atlantic Collaborative on Injury Prevention. (2011). *The Social Determinants of Injury*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNp1UEFowzAQ_Iq1d0RMRYHNCdEDITgg4F5tk01i5NjR2oFclStfseNGnDjZmzsz2llCrFE74Bah87ZlgTqgTmjnm3lkFy-ezFFlvhZel8yBpSjDQjFU66ifOCs_IBuEw2HhMrotVkcjZ1gh5GdbWNNCbbAqJmE7URzyeJNkl6--MWTVjiLaBy5GJTv1COTLaoU3RnLa_R1Ml1VWqv7h_2zeuHJS1RvA6t_gvbufS79Ngh8iuff1HbnFnyajHBYV9Qpn2KkZsj3gfg4shfJlfxh-LOOT81673ubVvr5BY4Ncjw

Active Transportation

Definition: Bicycle injuries include injuries as a result of a cyclist being struck by a pedestrian/animal, other bicycle, two- or three-wheeled motor vehicle, car/pickup truck/van, heavy transport vehicle/bus, railway train, other non-motor vehicle, fixed/stationary object, falling from bicycle, other, and unspecified traffic and non-traffic incidents.

Pedestrian injuries include injuries due to pedestrian in collision with bicycle, two- or three-wheeled vehicle, car/pickup truck/van, heavy transport/bus, railway train, other non-motor vehicle, other, and unspecified transport collisions.

Active transportation refers to all human-powered forms of transportation. This section focuses specifically on walking and bicycling. Active transportation is an important part of a healthy lifestyle and can be a form of recreation as well as a mode of transportation. For children, walking is their primary mode of independent transportation¹.

Walking and bicycling take place in a variety of settings, often in close proximity to motor vehicle traffic, or, in the case of bicycles, on roadways amongst motor vehicle traffic. This places children who are walking and bicycling at an increased risk of injury.

Active transportation is an excellent way to integrate physical activity into children's daily routines and encourages healthy, life-long habits². Regularly engaging in active transportation is associated with positive physical, mental, and social health outcomes, and reduces our environmental impact by reducing emissions and energy consumption³. In order to reduce the risk of serious injury and death related to active transport, we must create supportive environments for safe active transport, and encourage safe behaviours, including wearing appropriate protective equipment (such as helmets).

How do active transportation–related injuries impact Canadians?

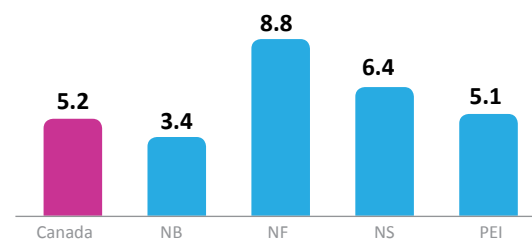
- Children ages 1 to 14 years have the highest risk of pedestrian-related death of any age group⁴.
- Pedestrian-related injuries contribute to almost 12 per cent of all injury-related deaths of children younger than 14 years of age⁵.
- Bicycling-related injuries are the fifth leading cause of hospitalization and account for 5 per cent of all unintentional injury-related deaths for those under 15 years in Canada⁶.
- Bicycling-related injuries among children aged 15 and younger comprise 4 per cent of all emergency department injuries⁶.
- Injuries to the head account for 20–40 per cent of bicycling injuries in Canadian emergency departments, and are responsible for 45–100 per cent of child and youth bicycling deaths⁶.
- In 2010, the cost of bicycling and pedestrian injuries in Canada was \$527 million⁷.

12% OF ALL
**INJURY-RELATED
DEATHS** in children
younger than 14 years of age
are due to **PEDESTRIAN-
RELATED INJURIES.**



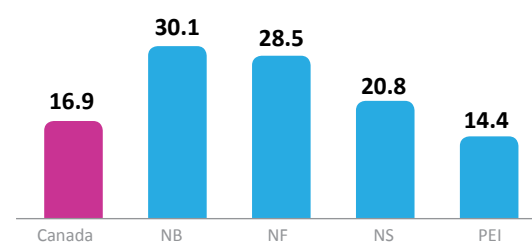
How do active transportation–related injuries impact Atlantic Canadians?⁸

- Between 2004 and 2013, **the rate of unintentional injury hospitalizations to pedestrians aged 0–14** was:
 - 5.2 per 100,000 population in Canada
 - 3.4 per 100,000 population in New Brunswick
 - 8.8 per 100,000 population in Newfoundland and Labrador
 - 6.4 per 100,000 population in Nova Scotia
 - 5.1 per 100,000 population in Prince Edward Island



- Overall rate of injury hospitalizations to pedestrians 0–14 in Atlantic Canada decreased an average of 4 per cent annually between 2004 and 2013, with an average of 21 admissions per year.

- Between 2004 and 2013, **the rate of injury hospitalizations to bicyclists aged 0–14** was:
 - 16.9 per 100,000 population across Canada
 - 30.1 per 100,000 population in New Brunswick
 - 28.5 per 100,000 population in Newfoundland and Labrador
 - 20.8 per 100,000 population in Nova Scotia
 - 14.4 per 100,000 population in Prince Edward Island



- Overall rate of hospitalizations to children on bicycles ages 0–14 decreased an average of 10.3 per cent annually between 2004 and 2013, with an average of 90 admissions per year.

How can we address active transportation–related injuries?

Effective strategies to reduce the risk of active transportation–related injuries include traffic-calming measures, road planning and design measures, and increasing the number of people choosing active transportation and public transit over driving⁹. Adopting approaches such as Vision Zero and Complete Streets can help governments reduce the risks associated with active transportation in their jurisdiction^{10,11}. The design of schoolgrounds also plays a significant role in dictating traffic circulation and congestion both on and off site. From a safety perspective, it is critical to eliminate conflicts between students arriving on foot, bicycle, or other wheeled devices, with those arriving by bus and motor vehicles^{12,13,14}. For wheeled activities, such as bicycling, helmets can significantly reduce the risk of serious head injury⁶.



BEST PRACTICES

Enforcement

Legislating and enforcing new and existing laws. (E.g. Creating tax credits and tax exemptions to improve access to bicycle helmets).

- **Federally:**
 - Adopt Vision Zero policies and practices in federal legislation¹¹.
 - Create a federal tax credit for purchasing bicycle helmets to reduce the costs for families and improve access to helmets⁶.
- **Provincially:**
 - Implement and enforce legislation that requires the use of bicycle helmets for all ages^{6, 15}.
 - Make bicycle helmets exempt from provincial sales taxes to reduce the costs for families and improve access to helmets⁶.
 - Adopt Vision Zero policies and practices in provincial legislation¹¹.
 - Adopt Complete Streets policies and practices, making all ages and abilities an integral part of all provincial transportation planning¹⁰.
- **Municipally:**
 - In areas where provincial bicycle helmet legislation does not exist, implement and enforce municipal legislation that requires the use of bicycle helmets for all ages^{6, 15}.
 - Adopt Vision Zero policies and practices in municipal legislation¹¹.
 - Adopt Complete Streets policies and practices, making safety for all ages and abilities an integral part of municipal transportation planning¹⁰.
- **Organizationally:**
 - Establish school travel planning committees in schools to encourage safe, active transportation to and from school².
 - Promote safe school zones to minimize conflicts between students arriving on foot, bicycle or other wheeled devices, and those arriving by bus and motor vehicles (separate travel modes)^{13, 14, 16}.
 - Provide education about road safety, bike and pedestrian safety in schools¹⁷.

Vision Zero and Complete Streets

Vision Zero and Complete Streets share a common focus on road safety.

Vision Zero is a multidisciplinary approach to prevent and, ultimately, eliminate all traffic fatalities through a combination of engineering, enforcement, education, and emergency response strategies with a focus on equity¹⁸. If streets are designed differently, the possibility for a mistake to have serious, deadly consequences could be eliminated¹⁹. A major component of a successful Vision Zero commitment is a plan that has targets, timelines, and performance measures²⁰.

For more information on Vision Zero and the Canadian Vision Zero Network, go to:

<https://www.parachutevisionzero.ca/>

Complete Streets are streets designed to be safe for everyone: people who walk, bicycle, take transit, or drive, and people of all ages and abilities¹⁰.

For details about Complete Streets go to:

<http://www.tcat.ca/general-news/getting-to-vision-zero-with-complete-streets/>

Education

Support the sharing of best practice information for parents and caregivers along with the enforcement community.

- **Federally:**
 - Create programs to publicize consumer information on pedestrian and cyclist safety, organized by make and model of car (such as new car assessment programs)²¹.
- **Provincially:**
 - Implement bicycle and pedestrian safety education programs in school curriculum^{4,22,23}.
 - Pair bicycle helmet legislation with social marketing and education to focus on the efficacy and importance of bicycle helmet use and accessibility of bicycle helmets⁶.
 - Use media campaigns to make the public aware of the rights and shared responsibilities of road users, as well as legislation and enforcement²¹.
- **Municipally:**
 - Implement bicycle helmet and pedestrian safety education programs in communities^{4,22,23}.
- **Organizationally:**
 - Consider implementing bicycle education programs in health-care settings. Have bicycle helmets on site for purchase, or provide to children for free^{15, 23}.

Engineering

Enhance the built environment and existing road safety measures in accordance with best practices to protect pedestrians and children on bicycles.

- **Federally:**
 - Create vehicle design standards for pedestrian and bicyclist protection²¹.
 - Earmark a set percentage of highway funding for pedestrian and cyclist infrastructure¹¹.
- **Provincially:**
 - Set a speed limit of 50 km/h or less on urban roads, which allows local authorities to further reduce these limits where appropriate. For example, further reduce to 30 km/h around schools and other areas where there are often pedestrians and/or children on bicycles present⁴.
- **Municipally:**
 - Reduce speed limits to 30km/h in residential areas, school zones, and other areas where pedestrians and/or children on bicycles are often present^{6, 11, 24, 25}.
 - Separate pedestrians and bicyclists from motor vehicle traffic through built infrastructure such as sidewalks, raised crossings, overpasses, underpasses, refuge islands, raised medians, bike lanes, bike paths, etc^{11,21}.
 - Lower vehicle speeds through traffic-calming measures (such as speed bumps, rumble strips, chicanes, other road-narrowing treatments)^{11, 24, 25}.
 - Remove obstacles that block the line of sight between pedestrians, bicyclists, and people driving vehicles²¹.
 - Improve roadway lighting, including around pedestrian crossings²¹.
 - Restrict vehicle movement in urban and residential areas⁴.
 - Create pedestrian-only zones in city centres by restricting vehicular access²⁶.
 - Use infrastructure solutions to enhance safety for school children on their routes to and from school²⁴.
 - Design, or redesign, cities in such a way that people’s homes, workplaces, schools, shops, etc. are in close proximity²¹.
 - Ensure safe and continuous cycling and pedestrian facilities and services²¹.

- **Organizationally:**
 - Design school pick-up and drop-off locations to minimize conflict between various modes of transportation^{13, 14}.

Links of Interest:

Establishing a baseline: Active Transportation and Health Indicators in the Halifax Region: <https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/ahprc/Establishing%20a%20Baseline-AT%20and%20Health%20Indicators%20in%20the%20Halifax%20Region%20FINAL.pdf>

Endnotes

- 1 Safe Kids Canada (2008). *Child Pedestrian Injuries Report: 2007–2008*. Retrieved from https://childsafetylink.ca/wp-content/uploads/2019/10/ChildPed_Report_0708.pdf
- 2 Green Communities Canada (2016). *Canadian School Travel Planning Facilitator Guide*. Retrieved from: https://www.tdsb.on.ca/Portals/0/AboutUs/Innovation/docs/STP-Guide-2017_update.pdf
- 3 Transport Canada (2011). *Active Transportation in Canada: a resource and planning guide*. Retrieved from: http://publications.gc.ca/collections/collection_2011/tc/T22-201-2011-eng.pdf
- 4 Canadian Council of Motor Transportation Administrators (2013). *Countermeasures to Improve Pedestrian Safety in Canada*. Ottawa, ON: CCMTA. Retrieved on January 31, 2018 from http://ccmta.ca/images/publications/pdf/CCMTA_Pedestrian_Report_Eng_FINAL.pdf
- 5 Public Health Agency of Canada, Injury Surveillance On-line. Leading Causes of Injury Deaths in Canada 2005. Retrieved from: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/is-sb/leadcauses/leading_causes_inj_mort_2005-eng.pdf
- 6 Hagel, B., Yanchar, N. (2013). Canadian Paediatric Society, Injury Prevention Committee. Bicycle helmet use in Canada: The need for legislation to reduce the risk of head injury. *Paediatrics Child Health*, 18(9), 475–480.
- 7 Parachute (2015). *The Cost of Injury in Canada*. Parachute: Toronto, ON
- 8 Atlantic Collaborative on Injury Prevention (ACIP) & Child Safety Link (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004–2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54atkzbSVggMNVV47sLZRtPM B_8fz7QoBT8JNiChLw1GGWbQOXp4Pv5jI7vXukUdfxauAi5XCeM9WZaEMhmPRpnTPzfsqPZdQsr01ONOn3GMjYgy7KtlxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXFw2kMW17PEB5J6tdky9OPoUilWlb83knXjD4COLTan2HTpxs7ktkZzAC193wQxXYbwEiphWGSU1NbPup_IVsj0t9Dlcl1wifhB1odmydH70WaX3z9clhNqrg
- 9 World Health Organization (WHO) (2004). *World Report on Road Traffic Injury Prevention*. Geneva, Switzerland.
- 10 Complete Streets for Canada (2017). *Ten elements of a complete streets policy*. Retrieved from: <https://smartgrowthamerica.org/resources/the-ten-elements-of-a-complete-streets-policy/>
- 11 Vision Zero Canada (n.d.). Policies & practices. Retrieved from: https://visionzero.ca/policies-and-practice/#ten_tips
- 12 Parachute Canada (June 2018) *Safe Schools* retrieved from: <https://parachute.ca/wp-content/uploads/2019/07/Vision-Zero-Safe-Schools.pdf>
- 13 Parachute Vision Zero Network (June 2018). *Safe School Zones (Case Study Series Issue 5)*. Retrieved from: <https://parachute.ca/wp-content/uploads/2019/07/Vision-Zero-Case-Study-5.pdf>
- 14 Warsh, J., Rothman, L., Slater, M., Steverango, C., and Howard, A. (2009). Are school zones effective? An examination of motor vehicle versus child pedestrian crashes near schools. *Injury Prevention*, 15 (4). Retrieved from: <http://injuryprevention.bmj.com/content/15/4/226.short>
- 15 Lindsay, H., Brussoni, M. (2014). Injuries and helmet use related to non-motorized wheeled activities among pediatric patients. *Chronic Diseases and Injuries in Canada*, 34(2-3), 74–81.
- 16 Manitoba Infrastructure and Transportation (July 2015). *School Area Traffic Safety Guidelines for Manitoba* Retrieved from: https://www.gov.mb.ca/mit/traffic/pdf/school_area_guidelines.pdf
- 17 Pucher, J., and Buehler, R. (2008.) Making cycling irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews*, 28 (4). 495–528.
- 18 Smart Growth America (n.d.). *Complete Streets and Vision Zero: Engineering for Safe Streets*. Retrieved from: https://smartgrowthamerica.org/app/uploads/2017/10/Vision_Zero_Statement.pdf
- 19 Toronto Centre for Active Transportation (n.d.) *Getting to Vision Zero with Complete Streets*. Retrieved from: <http://www.tcat.ca/general-news/getting-to-vision-zero-with-complete-streets/>
- 20 Vision Zero Network (n.d) 9 Components of a strong vision zero commitment. Retrieved from: <https://visionzeronetWORK.org/project/9-components-of-a-strong-vision-zero-commitment/>

- 21 World Health Organization (WHO). (n.d.). *Make Walking Safe: A Brief Overview of Pedestrian Safety Around the World*. Retrieved from http://www.who.int/violence_injury_prevention/publications/road_traffic/make_walking_safe.pdf?ua=1
- 22 Child Safety Link (2014). *Pedestrian Safety in Nova Scotia: A Scan of Stakeholders and Initiatives Focusing on Children and Youth*. Halifax, Nova Scotia.
- 23 Owen, R., Kendrick, D., Mulvaney, C., Coleman, T., and Royal, S. (2011). Non-legislative interventions for the promotion of cycle helmet wearing by children. *Cochrane Database of Systematic Reviews 2011*, Issue 11. Art. No.: CD003985. DOI: 10.1002/14651858.CD003985.pub3.
- 24 Toronto Centre for Active Transportation (2016). *Guide to safer streets near schools*. Retrieved from: <https://www.tcat.ca/resources/guide-to-safer-streets-near-schools/>
- 25 National Institute for Health and Care Excellence (NICE). (2010). *Unintentional injuries on the road: interventions for under 15s (PH31)*. Retrieved from: <https://www.nice.org.uk/guidance/ph31>
- 26 Bunn, F., Collier, T., Frost, C., Ker, K., Steinbach, R., Roberts, I., and Wentz, R. (2003). Area-wide traffic calming for preventing traffic related injuries. *Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD003110. DOI: 10.1002/14651858.CD003110.

Child Passengers

Definition: Child passenger injuries include injuries due to car occupant injured in collision with pedestrian, animal, bicycle, two- or three-wheeled motor vehicle, car/pickup truck/van, heavy transport vehicle/bus, railway train, other non-motor vehicle, fixed/stationary object, overturning without collision, other, and unspecified traffic and non-traffic incidents. Excludes bicycles and off-highway vehicles (ATV, dirt bikes, snowmobiles), which are reported separately.

The youngest occupants of vehicles are some of the most vulnerable road users. In Canada, motor vehicle collisions are a leading cause of injury death among children under 14 years of age^{1,2}. Proper use of child-restraint systems, such as car seats, booster seats, and seat belts, as well as keeping children in the back seat of a vehicle, can significantly reduce a child's risk of injury as a result of a motor vehicle collision^{2,3,4,5,6}.

Restraint use

The correct use of car seats and booster seats would reduce the risk of serious injury in a collision by 50-70 per cent⁷. The 2010 Canadian National Survey on Child Restraint Use found that while 95.8 per cent of child passengers observed were restrained, only 64.17 per cent of child passengers were in the correct restraint system based on their age⁸. A Nova Scotia study supported by Child Safety Link saw a greater percentage of children in proper restraint systems, but found a large portion of restraint systems were installed or used incorrectly⁹. In this study, 99.6 per cent of children were restrained; 91 per cent were in correct restraint systems based on their age, weight, and height; and 92 per cent of children were in the back seat⁹. However, 72 per cent of car seats observed were installed or used incorrectly, 30 per cent of children in booster seats did not meet the minimum weight requirement of 18 kg (40 lbs.), and 52 per cent of children using seat belts were not legal to do so and should have been using a booster seat⁹. The most common errors reported included the car seat being improperly secured to the vehicle, non-use of the tether for forward-facing seats, loose harness straps, incorrect positioning of the chest clip, and improperly fitting lap and shoulder belts for children using seat belts⁹. While most families in Atlantic Canada are aware of child-restraint laws, they may be unaware of best safety practices and guidelines (such as Transport Canada recommendations)⁹.

How do child passenger-related injuries impact Canadians?

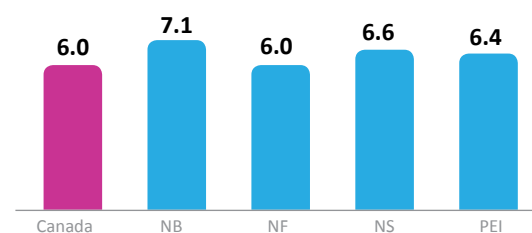
- Motor vehicle collisions are a leading cause of injury death for children and youth in Canada^{2,10}.
- From 2011 to 2015, there were an average of 73.2 deaths per year in children ages 0–14 as a result of motor vehicle collisions¹⁰.
- In 2010, the cost of motor vehicle collisions (all ages) in Canada was \$2.2 billion¹¹.
- In 2012, on-the-road injuries contributed to nearly 50 per cent of all unintentional injury-related deaths in children. On-the-road includes pedal cycling (4 per cent), motor vehicle occupant (13 per cent), pedestrian (12 per cent), and other transportation related injuries (20 per cent)².

73 CHILDREN
(between ages 0-14 yrs)
DIE EACH YEAR
in Canada because of a
MOTOR VEHICLE
CRASH.

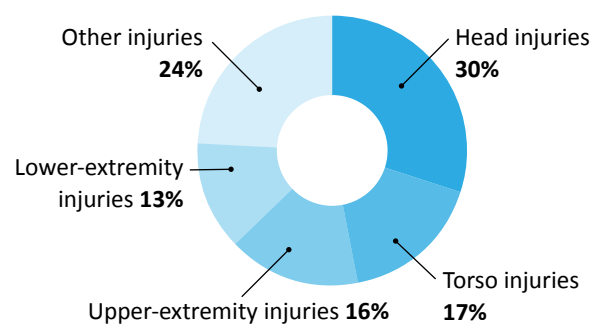


How do child passenger–related injuries impact Atlantic Canadians?¹²

- Between 2004 and 2013, the rate of **child passenger–related unintentional injury hospitalizations** for those aged 0–14 was:
 - 6.0 per 100,000 population in Canada
 - 7.1 per 100,000 population in New Brunswick
 - 6.0 per 100,000 population in Newfoundland and Labrador
 - 6.6 per 100,000 population in Nova Scotia
 - 6.4 per 100,000 population in Prince Edward Island



- Overall rate of injury hospitalizations to child passengers ages 0–14 in Atlantic Canada decreased an average of 6.3 per cent annually between 2004 and 2013, with an average of 24 admissions per year.
- **The most common body part injured** was the head (30 per cent), followed by torso (17 per cent), upper-extremity injuries (16 per cent), and lower-extremity injuries (13 per cent). Other injured regions accounted for 24 per cent, which include injuries to the back, spinal cord, vertebral column, etc.
- Thirty-two percent (32 per cent) of those with head injuries were diagnosed with an internal brain injury, 24 per cent with a concussion, and 10 per cent with a fractured skull or facial bone. Of the lower extremities, 75 per cent were fractures.



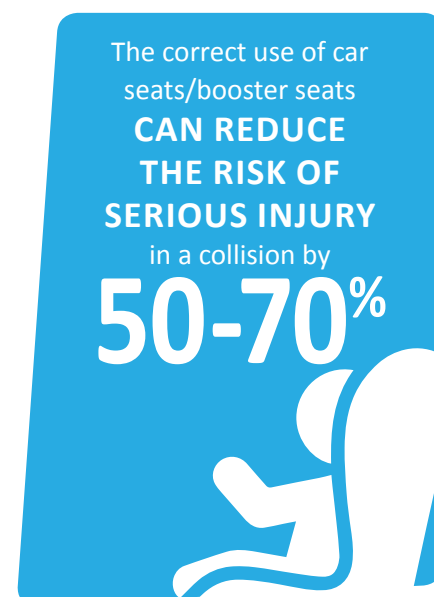
How can we address child passenger injuries?

To reduce child passenger injuries, we must increase correct usage of child-restraint systems¹. Appropriate restraints for child and youth passengers in motor vehicles vary by height and weight in relation to stage of development¹³.

- From birth, infants should be seated in a rear-facing car seat¹³.
- Once a child outgrows their initial rear-facing seat, they should be moved into a larger rear-facing seat¹⁴.
- Toddlers should remain rear facing until they outgrow their larger rear-facing seat. Most rear-facing convertible seats can accommodate a child up to 18 kg (40 lbs.) and 102 cm (40 in.). Maximum height and weight limits are indicated by the manufacturer. Rear-facing seats are safest for infants and toddlers as they support a child’s head, neck, and spine in the event of a sudden stop or collision¹³.
- When a child has outgrown their larger rear-facing seat, and is at least two years old, they can move to a forward-facing seat¹⁵.
- Once they are at least four years old and 18 kg (40 lbs.) with the maturity to sit correctly, they can safely move into a booster seat. Children should remain in their booster seat until they are at least 145 cm (4’9”) tall and can fit the adult seat belt correctly.
- Children under the age of 13 should be seated in the back seat of a vehicle.

Community-wide, multi-pronged interventions combining dissemination of child passenger restraint safety information with enforcement campaigns lead to increased use of restraints^{16, 17}.

Successful intervention components include long-term strategy, focused leadership, multi-agency collaboration, and appropriate targeting and timing techniques¹⁸.



BEST PRACTICES

Enforcement

Enhance existing child passenger safety seat regulations in accordance with best practices. There is strong evidence caregivers are more likely to secure young children in safety restraints if their use is mandated by law¹⁹.

- **Federally:**
 - Create a federal tax credit/exemption for car seats and booster seats to reduce the costs for families and improve access to developmentally appropriate restraints²⁰.
 - Have RCMP conduct high-visibility roadside checks⁹.
 - Provide appropriate training and financial support for First Nations Child and Family Services to help families properly restrain children of all ages in vehicles²¹.
 - Create an allowance for car seats and booster seats for First Nations families on income assistance²².
- **Provincially:**
 - Improve legislation that requires the use of car seats/booster seats^{19, 23}.
 - Increase the minimum legislation to better align with best practice recommendations for safety²⁴.
 - Require infants to be secured in a rear-facing seat until at least two years old and 10 kg (22 lbs.)^{15, 25}.
 - Require children to be secured in a forward-facing seat until at least four years old and 18 kg (40 lbs.)²⁵.
 - Require children to use a booster seat until they are 12 years old or 145 cm (4' 9" in.)^{13, 14, 25}. Many jurisdictions in Canada do not require booster seat use after age nine, but over 97 per cent of nine-year-olds in Canada are under 145 cm²⁵.
 - Require all children to be properly secured in the back seat of the vehicle (when possible) until they are 13 years old^{13, 25}.
 - Create unified child-passenger laws for Atlantic Canada to allow for ease of travel between provinces and unified messaging²⁶.
 - Create a dedicated allowance for car seats and booster seats for families on income assistance. (Nova Scotia currently has a dedicated car seat or booster seat allowance for families on income assistance²².)
 - Make car seats and booster seats exempt from provincial sales taxes to reduce the costs for families and improve access to developmentally appropriate restraints²⁰.
 - Require use of appropriate car seats and booster seats for children travelling in taxis. In some Atlantic provinces, taxis are currently exempt from child restraint laws²⁷.
- **Municipally:**
 - Have municipal police conduct high-visibility roadside checks^{28, 29}.
 - Require use of appropriate car seats and booster seats for children travelling in taxis if this is not already required by the province³⁰.
- **Organizationally:**
 - Health centres should address child passenger safety in their discharge policies. Staff responsible for discharging infants and children should be trained on correct use of child-restraint systems³¹.
 - Enforcement campaigns supported by school-based promotion tactics have demonstrated increases in seat belt use¹⁶.

Education

The basic concept behind education is that the public, given information or skill training, will retain what has been taught and use it to reduce the risk of injury⁶.

- **Federally**
 - Advocate for Canada-wide child passenger safety technician training programs³².
- **Provincially:**
 - Implement booster seat education in schools to increase booster seat use²⁹.
 - Support and endorse child passenger safety technician training, preferably as a part of a provincial child-passenger safety strategy³³.
 - Support the sharing of best practice information to parents and caregivers and the enforcement community⁶.
- **Municipally:**
 - Implement child passenger safety education programs in communities¹.
- **Organizationally:**
 - Implement child passenger safety education programs in communities¹.
 - Support family resource centres' staff members and other agencies that work with young families/vulnerable populations to receive child passenger safety technician training^{18, 34}.
 - Encourage/support agencies that work with young families to share child passenger safety best practices information with families¹⁶.

Engineering

Enhance road safety for all ages by addressing speed, impairment, distraction, and occupant restraints.

- **Federally:**
 - Improve vehicle design standards for child passenger protection through the Motor Vehicle Safety Act^{35,36}.
 - Increase car seat and booster seat design standards for child passenger protection through the Canadian Motor Vehicle Safety Act³⁵.
- **Organizationally:**
 - Car seat manufacturers should develop products that are easy to use and fit in vehicles to prevent user error³³.

Endnotes

- 1 Parachute. (2015). *The Cost of Injury in Canada Summary Report: Falls & Transport Injury Trends in Children 2004 and 2010*. Parachute: Toronto, ON.
- 2 Parachute (2016). *Unintentional Injury Trends for Canadian Children, June 2016 Report*. Toronto: Parachute. Retrieved from: <https://parachute.ca/wp-content/uploads/2019/06/SKW-Trend-Report.pdf>
- 3 Transport Canada (2018). *Choosing a child car seat or booster seat*. Retrieved from: <https://www.tc.gc.ca/en/services/road/child-car-seat-safety/choosing-child-car-seat-booster-seat.html>
- 4 Safe Kids Worldwide (n.d.). *In and Around Cars Safety Policy Brief*. Retrieved from: <http://www.safekids.org/and-around-cars-safety-policy-brief>
- 5 Scipione, A., Armstrong, J., Lai, G., Salway, A., Kumagai, J., and Rudin-Brown, C. (2006). Usability Study of the Universal Anchorage System (UAS) for Child Restraint Systems (CRS) in School Buses and Passenger Vehicles. Paper presented at the Proceedings of the Human Factors and Ergonomics Society, 2138-2142. Retrieved from https://www.researchgate.net/publication/273891410_Usability_Study_of_the_Universal_Anchorage_System_UAS_for_Child_Restraint_Systems_CRS_in_School_Buses_and_Passenger_Vehicles
- 6 Pike I., Richmond S., Rothman L., and Macpherson, A. (Eds.) (2015). *Canadian Injury Prevention Resource*. Parachute, publisher: Toronto, ON.
- 7 Snowdon, A., Hussein, A., Purc-Stevenson, R., Bruce, B., Kolga, C., Boase, P., and Howard, A. (2009). Are we there yet? Canada's progress towards achieving road safety vision 2010 for children travelling in vehicles. *International Journal of Injury Control & Safety Promotion*, 16(4), 231–237.
- 8 Snowdon, A., Abdulkadir, H. and Ahmed, E. (2010). Technical Report: *Canadian National Survey on Child Restraint use 2010*. Retrieved from https://www.tc.gc.ca/media/documents/roadsafety/Child_Restraint_Survey_2010.pdf
- 9 Bruce, B., Cramm, C., Mundle, K., Williams, D., and Conrad, A. (2015). Roadside Observation of Child Passenger Restraint Use. *Advances in Pediatric Research*, 2 (24), 1–6.
- 10 Statistics Canada (n.d.). Table 13-10-0392-01 (formerly CANSIM 102-0551) *Deaths and age-specific mortality rates, by selected grouped causes*. Canada, annual. CANSIM (database). (Accessed March 22, 2018).
- 11 Parachute. (2015). *The Cost of Injury in Canada*. Parachute: Toronto, ON.
- 12 Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review (2004 – 2013)*. Retrieved from: http://acip.ca/component/easyfolderlist/ngpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54tkzbSVggMNVV47sLZRtPMB_8fz7QoB78JNiCHLw1GGWbQOXp4Pv5jl7vXukUdfxauAI5XceM9WZaEMhmPRpnTPzfsgPZdQsr01ONOn3GMjYgy7KtllxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXFw2kMw17PEB5J6tdky9OPoUilWlb83knXjD4COLTaN2HTpxs7ktkZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9DlcJ1wifhB-1odmydH70WaX3z9clhNqrg
- 13 Transport Canada. (2017). *Installing and using a child car seat or booster seat*. Retrieved from: <https://www.tc.gc.ca/en/services/road/child-car-seat-safety/installing-child-car-seat-booster-seat.html>
- 14 National Highway Traffic Safety Administration (NHTSA). (n.d.). *Car Seat Types*. (Accessed March 23, 2014). Retrieved from: <https://www.nhtsa.gov/equipment/car-seats-and-booster-seats#car-seat-types>
- 15 American Academy of Pediatrics. (2011). Policy Statement: Child Passenger Safety. *Pediatrics*, 127(4):788–793. Reaffirmed November 2011.
- 16 Turner, C., McClure, R., Nixon, J., and Spinks, A. (2005). Community-based programs to promote car seat restraints in children 0–16 years -- a systematic review. *Accident Analysis & Prevention*; 37(1):77–83.
- 17 Zaza, S., Sleet, D., Thompson, S., Sosin, D., and Bolen C. (2001). *Reviews of evidence regarding interventions to increase use of child safety seats*. *American Journal of Preventative Medicine*; 21(4 Suppl 1):31–47. Retrieved from: <https://www.healthevidence.org/view-article.aspx?a=reviews-evidence-interventions-increase-child-safety-seats-15779>
- 18 Klassen, T., MacKay, M., Moher, D., Walker, A., and Jones, A. (2000). Community-based injury prevention interventions. *Future Child*, 10(1):83–110.
- 19 Brubacher, J., Desapriya, E., Erdelyi, S. and Chan, H. (2016). The impact of child safety restraint legislation on child injuries in police-reported motor vehicle collisions in British Columbia: An interrupted time series analysis. *Pediatric Child Health*, 21 (4): e27-e31.
- 20 Van Schaik, C., Canadian Paediatric Society (2008). Transportation of infants and children in motor vehicles. *Paediatric Child Health*, 13 (4). 313-318.
- 21 Government of Canada (n.d). Jordan's Principle. Retrieved from: <https://www.canada.ca/en/indigenous-services-canada/services/jordans-principle.html>. Date modified Oct 23, 2018
- 22 Government of Nova Scotia (2019). Program Policy: Employment Support and Income Assistance: Retrieved from: https://novascotia.ca/coms/employment/documents/ESIA_Program_Policy_Manual.pdf.
- 23 WHO (2013). *Strengthening Road Safety Legislation: A practice and resource manual for countries*. ISBN 978 92 4 150510 9 WHO Library Cataloguing. Retrieved from: https://apps.who.int/iris/bitstream/handle/10665/85396/9789241505109_eng.pdf?sequence=1.
- 24 Christoffel, T., and Gallagher, S. (1999). *Injury prevention and public health: practical knowledge, skills, and strategies*. Maryland: Aspen Publishers.
- 25 Canadian Paediatric Society. (2017). *Car seat safety*. Retrieved from: https://www.caringforkids.cps.ca/handouts/car_seat_safety
- 26 National Institute for Health and Care Excellence (2010). Unintentional injuries: prevention strategies for under 15s. Retrieved from: <https://www.nice.org.uk/guidance/ph29>
- 27 St. John's Newfoundland and Labrador (2018). *Highway Traffic Act. Chapter H-3" An act respecting the law relating to the use and operation of vehicles*. <https://www.assembly.nl.ca/legislation/sr/statutes/h03.htm#178>
- 28 Centers for Disease Control and Prevention (CDC). (2015). *High-Visibility Enforcement for Seat Belts and Child Restraint and Booster Laws*. Retrieved from: <https://www.cdc.gov/motorvehiclesafety/calculator/factsheet/highvis.html>

- 29 Bruce, B., Mundle, K., Cramm, C., and Williams, D. P. (2017). Promoting booster seat use for young children: A school-based intervention pilot study. *Paediatrics & Child Health*, 22(2), 89–91.
- 30 Keshavarz, R., Patel, R., Bachar, R., Laddis, D. (2006). Children in taxis: an opportunity for pediatricians and emergency physicians to save lives? *Pediatric Emergency Care*, 22 (11). 704–709.
- 31 National Highway Traffic Safety Administration (NHTSA). (2014). *Hospital Discharge Recommendations for Safe Transportation of Children*. Retrieved from: http://cpsboard.org/cps/wp-content/uploads/2014/02/FINAL_dischargeprotocol_7_3_20141.pdf
- 32 Walker, L., Isaac, M., and Carr, K. (2016). 907 Building sustainable national child passenger safety technician training programs. *Injury Prevention*, 22:A323.
- 33 Safe Kids Worldwide (2017). *Child Passenger Safety: Impact of Safe Kids Buckle Up Inspections on Caregiver Knowledge, Confidence and Skill*. Retrieved from: https://www.safekids.org/sites/default/files/cps_study_2017.pdf
- 34 Fridman, L., Fraser-Thomas, J.L., Pike, I., and Macpherson, A. K. (2018). Canadian Child Safety Report Card: a comparison of injury prevention practices across the provinces. *Injury Prevention*, Epub ahead of print (March 22, 2018).
- 35 Peden, M., Scurfield, R., Sleet, D., Mohan, D., Hyder, A., Jarawan, E., and Mathers, C. (Eds.). (2004). *World report on road traffic injury prevention*. World Health Organization, Geneva.
- 36 Atlantic Collaborative on Injury Prevention. (2011). *The Social Determinants of Injury*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNp1UEFowzAQ_lq1d0RMR YHNCdEDITgg4F5tk01i5NjR2oFclsTfseNGnDjZMzsz2IlCrE74 Bah87ZlgTqgTmjnm3lkFy-ezFFlvhZeI8yBpSjDQiFU66ifOcS_IB uEw2HhMrotVkcjZ1gh5GdbWNNCbbAqJmE7UR zyeJNkl6--MWTVjiPLaBy5GJTv1COTLaoU3RnLa_R1Ml1VWqv7h_2zeuHJS1RvA6t_gvbufS79Ngh 8iuff1HbnFnyajHBYV9Qpn2KkZsj3gfg4sHfJlfxh-LOOT81673ubVvr5BY4Ncjw

Falls

Falls can happen anywhere including the home. Falls include slipping on ice and snow; slipping/tripping/stumbling; collision with, or being pushed by, another person (not sports-related); falling while being carried or supported by another person; falls involving wheelchairs and other types of walking devices; and falls from furniture.

This section does not include playground falls and selected sports-related falls. Playground falls are reported separately.

Falling is a normal part of childhood. As children develop, they walk, run, jump, play, climb, and explore their surroundings¹. Most childhood falls are of little consequence, resulting in only minor cuts and bruises. Some falls, however, go beyond the resilience of a child's body and can result in serious injury or death¹. In Canada, falls are the leading cause of injury requiring medical attention in children and youth ages 0–14². Falls are of particular concern in younger children, and, according to the National Trauma Registry, falls are responsible for about 50 per cent of injury hospitalizations in Canadian children ages 0–9 years³.

Falls can occur in the home and at play. Falls involving infants and young toddlers ages 0–4 most commonly occur around the home². The most common mechanisms of home-fall injuries in young children include falls on stairs, falls from furniture, and same-level stumbles and trips². Infants and young toddlers age 0–4 most commonly fall on stairs or from furniture, such as changing tables, beds, and highchairs, while older toddlers tend to fall while walking, running, or crawling around the house². Fall injuries are more common in boys than girls, and in children with low-socioeconomic status².

How do falls impact Canadians?

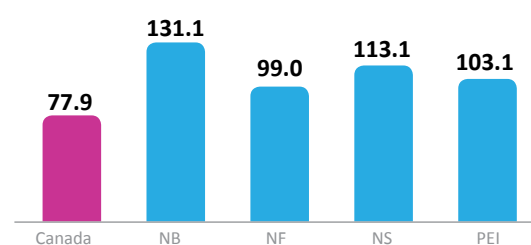
- Falls are the leading cause of unintentional injury hospitalizations in Canadian children and youth⁴.
- In 2010, over 7,000 children and youth ages 0–14 were admitted to a hospital, and over 150,000 visited an emergency department as a result of a fall⁵.
- From 2011 to 2015, there were an average of 5.6 deaths per year in children 0–14 as a result of falls⁶.
- In 2010, falls cost Canadians more than any other type of injury—an estimated \$7.8 billion⁷.
- Falls in children ages 0–14 cost an estimated \$1.2 billion⁷.



How do falls impact Atlantic Canadians?⁸

For more information, see Child Safety Link's infographic at: <https://childsafetylink.ca/wp-content/uploads/2018/10/Childrens-Falls-7.pdf> and read our backgrounder: Preventing Young Children's Falls in the Home at: <https://childsafetylink.ca/wp-content/uploads/2018/11/Backgrounder-Childrens-Falls-in-the-Home-Final-Nov-1-2018.pdf>

- Falls are the leading cause of unintentional-injury hospitalization in Atlantic Canadian children and youth.
- When comparing the fall-related hospitalization rates, the children of Atlantic Canada had a rate significantly higher than the Canadian rate.
- The rate in Atlantic Canada was 114.9 hospitalizations/100,000 population, and the Canadian rate was 77.9 hospitalizations/100,000 population.
- Between 2004 and 2013, **the rate of fall-related hospitalizations** for those aged 0–14 was:
 - 77.9 per 100,000 population in Canada
 - 131.1 per 100,000 population in New Brunswick
 - 99.0 per 100,000 population in Newfoundland and Labrador
 - 113.1 per 100,000 population in Nova Scotia
 - 103.1 per 100,000 population in Prince Edward Island
- Overall rate of fall-related injury hospitalizations in children aged 0–14 in Atlantic Canada decreased an average of 4.9 per cent annually between 2004 and 2013, with an average of 416 admissions per year.
- Falls from furniture accounted for 700 hospital admissions, while falls involving stairs and steps accounted for over 400 hospital admissions.
- Infants younger than one year of age experienced an increase in fall-related injury hospitalizations of 2.3 per cent annually.

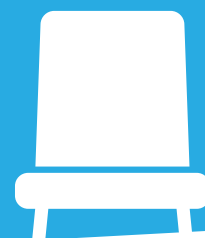


How can we address fall-related injuries?

Falls in the home can be prevented by using safety equipment, such as baby gates and window guards; educating caregivers on behaviours that can prevent falls; improving building design standards; and by removing dangerous products, such as baby walkers, from the market⁵. In a 2012 study conducted for Child Safety Link, families living in low-rental housing in the Halifax Regional Municipality of Nova Scotia identified the cost of safety equipment to be a barrier to use⁹. Participants also identified damage to their home, lack of information about safety equipment, and lack of knowledge and skills to install safety equipment as barriers to using such equipment⁹. Poor design, construction, and maintenance of stairs; lack of proper handrails; and poor tread surfaces are main contributing factors to falls in the home¹⁰. In some cases, families simply cannot afford the necessary or recommended safety equipment, and often operate on a risk continuum when approaching injury prevention—they assess where the lesser risk is and focus on doing what they can to prevent it¹¹.

Between 2004 and 2013,

700
HOSPITAL
ADMISSIONS
were caused by
**FALLS FROM
FURNITURE.**



While affordability remains an issue to accessing necessary injury-prevention equipment and structures for preventing children’s falls in the home, a lack of understanding of how to properly install and use such devices is also quite common, particularly for families of lower-socioeconomic status. Evidence indicates that simply providing the equipment without cost and leaving it to the caregiver to install does not increase usage of the particular device, nor reduce injuries. General use of home safety devices is far improved and injuries reduced when the safety device is provided in the context of a home safety education visit and installed for/with the caregiver¹². While window falls are rare, they are often severe. New York City has seen dramatic decreases in window falls after mandating window guards in multi-unit dwellings where children reside¹³. There is also a common misperception that window screens are a sufficient safety barrier for preventing harm or potential fatality from a fall².

BEST PRACTICES

Enforcement

Improve access to safety equipment, ensure new and renovated buildings are held to building standards, and improve safety in low-income housing¹⁴.

- **Federally:**
 - Create a federal tax credit for home safety equipment (such as baby gates, window guards, etc.) to reduce the costs for families and improve access¹⁵.
 - Create an allowance for home safety equipment for vulnerable families on income assistance^{16, 17}.
- **Provincially:**
 - Provinces should consider adopting window guard requirements in low-income housing and/or in apartment buildings¹⁶.
 - Create an allowance for home safety equipment for families on income assistance to reduce the costs for families and to improve access^{1, 17, 18}.
 - Make home safety equipment exempt from provincial sales taxes to reduce the costs for families and improve access¹⁹.
 - Ensure low-income housing meets building code standards and make safety equipment available to residents of low-income housing¹⁶.
 - Enforce the building code^{20, 21}.
- **Municipally:**
 - Ensure low-income housing meets building code standards; make safety equipment available to residents of low-income housing¹⁶.
 - Enforce the building code^{20, 21}.
- **Organizationally:**
 - Ensure Early Childhood Education Centres adhere to or exceed safety requirements (conduct safety checks)²².

Education

Support the sharing of best practice information for parents and caregivers.

- **Provincially:**
 - Create social marketing campaigns on use of home safety equipment and falls prevention¹⁴.
 - Invest or financially support the development of research and programs that provide education¹⁷.
 - Create programs to educate caregivers on proper use of home safety equipment. Programs that pair education and distribution of home safety equipment are most effective^{14, 17}.
 - Create programs that educate caregivers on behaviours that prevent falls in children¹⁴.
- **Municipally:**
 - Invest or financially support the development of research and programs that provide education¹⁷.
 - Create programs to educate caregivers on proper use of home safety equipment. Programs that pair education and distribution of home safety equipment are most effective^{14, 17}.
 - Create programs that educate caregivers on behaviours that prevent falls in children¹⁴.
- **Organizationally:**
 - Invest or financially support the development of research and programs that provide education¹⁷.
 - Create programs to educate caregivers on proper use of home safety equipment. Programs that pair education and distribution of home safety equipment are most effective^{14, 17}.
 - Create programs that educate caregivers on behaviours that prevent falls in children¹⁴.
 - Share information through communication channels that reach caregivers and professionals who work with families of young children (newsletters, social media etc.) in collaboration with enforcement and engineering efforts¹⁷.

Engineering:

Enhance home safety for all ages through building design standards. Remove hazardous products from the market¹⁴.

- **Federally:**
 - Ensure the National Building Code uses evidence-based practices to protect children and youth from falls in the home.
 - Stair rise should be no greater than 180 mm (7 in.) and stair run should be at least 280 mm (11 in.)¹⁰.
 - Remove dangerous products, such as baby walkers, from the market¹⁴.
- **Provincially:**
 - Provinces have jurisdiction over building and design. Provinces should adopt the National Building Code or create a stronger provincial code that uses evidence-based practices to protect children and youth from falls in the home.
 - Stair rise should be no greater than 180 mm (7 in.) and stair run should be at least 280 mm (11 in.)¹⁰.
- **Municipally:**
 - Municipalities can adopt the National Building Code or create a stronger municipal code that uses evidence-based practices to protect children and youth from falls in the home. For example, PEI did not adopt the National Building Code province-wide, but major municipalities in PEI did¹⁰.
- **Organizationally:**
 - Advocate for the adoption of building code standards at all levels of government²³.

Endnotes

- 1 World Health Organization (2004). *Children and Falls: World Report on Child Injury Prevention*. Retrieved from http://www.who.int/violence_injury_prevention/child/injury/world_report/Falls_english.pdf
- 2 Morrongiello, B. A. (2015A). Falls: Children. In I. Pike, S. Richmond, L. Rothman, and A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (pp. 399–408). Toronto, Ontario: Parachute.
- 3 Canadian Institute of Health Information (2008). *National Trauma Registry: 2007 Injury Hospitalizations Highlights Report (In Focus: Pediatric Injury Hospitalizations in Canada, 2005–2006)* Retrieved from: https://secure.cihi.ca/free_products/ntr_highlights_2007_en.pdf
- 4 Parachute. (2016). *Unintentional Injury Trends for Canadian Children*. Retrieved from <https://parachute.ca/wp-content/uploads/2019/06/SKW-Trend-Report.pdf>
- 5 Parachute. (2015A). *The Cost of Injury in Canada – Summary Report: Falls & Transport Injury Trends in Children 2004 to 2010*. Parachute: Toronto, ON.
- 6 Statistics Canada. Table: 13-10-0392-01 (formerly CANSIM 102-0551) – *Deaths and age-specific mortality rates, by selected grouped causes*. Canada, annual. (Accessed April 4, 2018).
- 7 Parachute. (2015B). *The Cost of Injury in Canada*. Parachute: Toronto, ON
- 8 Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004 – 2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54atkzbsVggMNVV47sLZRtPMB_8fz7QoBT8JNiChLw1GGWbQOXp4Pv5ji7vXukUdfxauAI5XCeM9WZaEMhmPRpnTPzfsgPZdQsr01ONOn3GMjYgy7KtllxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXfW2kMW17PEB5J6tdky9OPoUilWlb83knXjD4COLTan2HTpxs7ktkZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9Dlc1wifhB-1odmydH70WaX3z9cIhNqrg
- 9 Research Power Inc. (2012). *Challenges for Safety and Injury Prevention for Families in Low-rental Housing – Summary of Research*. Final Report and Data. Unpublished.
- 10 Canada Mortgage and Housing Corporation (2016). *Preventing Falls on Stairs*. Retrieved from <https://www.cmhc-schl.gc.ca/en/Data-and-Research/Publications-and-Reports/Preventing-Falls-on-Stairs>
- 11 Baker, S. (Fishermen’s Memorial Hospital), personal communication, December 2016.
- 12 Morrongiello, B. A. (2015B). *Intervention to Prevent Fall Injuries to Young Children in the Home*. Retrieved from <https://clinicaltrials.gov/ct2/show/record/NCT01845415>
- 13 Spiegel, C. N. and Lindaman, F. C. (1977). Children can’t fly: a program to prevent childhood morbidity and mortality from window falls. *American Journal of Public Health*, 67(12), 1143–1147.
- 14 MacKay, M., Vincenten, J., Brussoni, M., Towner, E., and Fuselli, P. (2011). *Child Safety Good Practice Guide: Good investments in unintentional injury prevention and safety promotion – Canadian Edition*. Toronto: The Hospital for Sick Children.
- 15 Canadian Paediatric Society (Principal author Banerji, A.) (2002)(Reaffirmed 2017). Preventing unintentional injuries in Indigenous children and youth in Canada Retrieved from: <https://www.cps.ca/en/documents/position/unintentional-injuries-indigenous-children-youth>.
- 16 National Institute for Health and Care Excellence (2010a). Unintentional injuries: Prevention strategies for under 15s. Retrieved from: <https://www.nice.org.uk/guidance/ph29/resources/unintentional-injuries-prevention-strategies-for-under-15s-pdf-1996245405637>
- 17 Atlantic Collaborative on Injury Prevention. (2011). *The Social Determinants of Injury*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNp1UEFOwzAQ_lq1d0RMRYHNCdEDITgg4F5tk01i5NjR2oFclsTfs eNGnDjZMzsz2lICrfe74Bah87ZlgTqgTmjnm3lkFy-ezFFlvhZel8yBpSjDQiFU66ifOcs_IBuEw2HhMrotVkcjZ1gh5GdbWNNCbbAqJmE7URzyeJNkl6--MWTVjiPLaBy5GJTv1COTLaoU3RnLa_R1Ml1VWqv7h_2zeuHJS1RvA6t_gvbufS79Ngh8iuff1HbnFnyajHBYV9Qpn2KkZsj3gfgq4shfJlfxh-LOOT81673ubVvr5BY4Ncjw
- 18 National Institute for Health and Clinical Excellence (2010b). Strategies to prevent unintentional injuries among the children and young people aged under 15: Evidence Update February 2013. Retrieved from: <https://www.nice.org.uk/guidance/ph30/evidence/strategies-to-prevent-unintentional-injuries-among-under15s-evidence-update-pdf-67472317>
- 19 The Network for Public Health Law (2018). Tax Incentives and Public Health: Injury Prevention on the Road, on the Water, and at Home. https://www.networkforphl.org/_asset/1ct3d3/Tax-Incentives-and-Public-Health-Injury-Prevention-5-22-18.pdf
- 20 National Research Council of Canada (2015). National Building Code of Canada 2015 Frequently Asked Questions. Retrieved from: https://www.nrc-cnrc.gc.ca/eng/solutions/advisory/codes_centre/faq/application.html
- 21 Canadian Mortgage and Housing (2016). Preventing Falls on Stairs. Retrieved from: <https://epdpscrmsa01.blob.core.windows.net/cmhcprodcontainer/sf/project/cmhc/pubsandreports/pdf/63637.pdf?sv=2017-07-29&ss=b&srt=sco&sp=r&se=2019-05-09T06:10:51Z&st=2018-03-11T22:10:51Z&spr=https,http&sig=0Ketq0sPGtnokWOe66BpquDljVgBRH9wL0Cg8HfE3w%3D>
- 22 Canadian Paediatric Society (Leduc, D. Ed). *Well Beings: A Guide to Health in Child Care*, 3rd edition. Retrieved from: <https://bookstore.cps.ca/stock/details/well-beings-a-guide-to-health-in-child-care-3rd-edition>
- 23 Pike, I., Richmond, S., Rothman, L., and Macpherson A (Eds.) (2015). *Canadian Injury Prevention Resource*. Parachute, publisher: Toronto, ON.

Poisoning

Poisoning injuries include the following: poisoning when not specified, whether accidental or with intent to harm; accidental overdose of a drug; wrong drug given or taken in error; and drug taken inadvertently. Includes medications, alcohol, petroleum products, agricultural/horticultural products, vapours/gases and other and unspecified chemical and noxious substances. Excludes suicide/self-inflicted and intent to harm.

A poison is any substance that is harmful when too much is ingested, inhaled, or absorbed through the skin. An unintentional poisoning occurs when the person taking or giving too much of a substance did not mean to cause harm¹. Young children are especially vulnerable to unintentional poisonings as they explore their environments by crawling, touching, and tasting². It is estimated that 50 per cent of poison exposures occur in children under the age of five³. Children are most at risk for poisonings between the ages of 18 and 35 months². During this period of development, children have the ability to climb and reach new things, but lack the experience needed to determine what is safe and what is not². Children are also more vulnerable to harmful substances due to their size and developmental stage⁴.

Children can be exposed to many potential poisons in the home. Medication is involved in 67 per cent of poisonings among Canadian children and youth ages 0–14⁵. Iron pills are the leading cause of poisoning death in children². Other potential poisons found in the home include household cleaners, laundry detergent, laundry pods, plants, cosmetics, alcohol, pest killers, and carbon monoxide⁵.

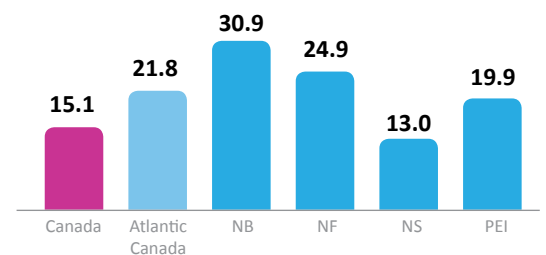


How do unintentional poisonings impact Canadians?

- Approximately 1,700 Canadian children are hospitalized each year with serious injuries due to poisoning².
- From 2011 to 2015, there were an average of 3.6 deaths per year in children ages 0–14 as a result of unintentional poisonings⁶.
- Unintentional poisonings (all ages) cost Canadians \$1.26 billion in 2010⁷.

How do unintentional poisonings impact Atlantic Canadians?⁸

- Between 2004 and 2013, **the rate of unintentional poisoning hospitalizations** for those aged 0–14 was:
 - 15.1 per 100,000 population in Canada
 - 21.8 per 100,000 population in Atlantic Canada
 - 30.9 per 100,000 population in New Brunswick
 - 24.9 per 100,000 population in Newfoundland and Labrador
 - 13.0 per 100,000 population in Nova Scotia
 - 19.9 per 100,000 population in Prince Edward Island
- Overall unintentional poisoning hospitalization rates in children aged 0–14 in Atlantic Canada decreased an average of 2.9 per cent annually between 2004 and 2013, with an average of 80 admissions per year.



- Medication is involved in 64 per cent of poisoning hospitalizations in Atlantic Canadian children aged 0–14.
- The IWK Regional Poison Centre, which serves Nova Scotia and PEI, receives approximately 9,000 phone calls each year regarding poison exposure and information⁹.
- In 2016, 72 per cent of calls to the IWK Regional Poison Centre were unintentional poisonings (all ages)⁹.

Trend Alert—Cannabis

Non-medical cannabis was recently legalized in Canada (October 2018), and, therefore, the Atlantic Canada data used in this document does not capture unintentional cannabis use. Cannabis edibles will not be legalized for sale until 2019. It is anticipated there will be an increase in exposure of cannabis leading to poisonings because of an increase in accessibility.

Overall cannabis-related calls to the IWK Regional Poison Centre have more than doubled, from 36 calls in 2007 to 106 calls in 2017¹⁰.

Edibles (cannabis-infused food products) are of great concern. Users can make their own personal edibles that can easily be mistaken for common cookies, candies, or beverages¹¹. Edibles will eventually be sold in stores and may also be indistinguishable to young children from other food and drinks¹².

For more information on edible cannabis, read Child Safety Link Backgrounder:

Cannabis Legalization, Cannabis Edibles & Unintentional Poisonings in Young Children at

<https://childsafetylink.ca/wp-content/uploads/2018/10/Cannabis-Edibles-Backgrounder-October-2018-FINAL.pdf>

How can we prevent unintentional poisonings?

While effective, packaging cannot be a standalone approach to preventing unintentional poisonings. Secure storage of poisonous items, including medications, removes a larger portion of poisoning risk than strictly caregiver awareness and supervision¹³. Health Canada has warned parents regarding the serious harm, including misuse, overdose and side-effects, that may occur in children under six years of age when using over-the-counter cough and cold products. Despite recommendations and labelling on these products, recent reports indicate that children under six years of age are still being given cough and cold medications by parents or caregivers¹⁴. Health Canada reminds parents and caregivers to not use over-the-counter cough and cold medicines in children under the age of six.

Poison control centres play a key role in preventing poisoning-related injuries. Poison centres divert unnecessary use of the health system and improve the management of poisoned patients¹⁵. It is estimated that every dollar invested in poison centres saves Canadians seven dollars⁷. Ninety percent (90 per cent) of calls to the IWK Regional Poison Centre, despite their sometimes serious nature, are resolved at home without a health-centre visit⁹.

BEST PRACTICES

Enforcement:

- **Federally:**
 - Include a requirement for carbon monoxide alarms in all residences in the National Building Code².
 - Continue strengthening legislation on child-resistant packaging of harmful products^{16, 17}.
 - Remove cough and cold medicine for children under the age of six from the market¹⁸.
- **Provincially:**
 - Require carbon monoxide alarms in all homes².
- **Municipally:**
 - Require carbon monoxide alarms in all residences if not required by provincial legislation².

Education:

- **Federally:**
 - Create a national phone number for poison information to increase access of safety information².
 - Create a national surveillance system to collect data on poisoning. This will allow for standardization in data collection among provinces².
- **Provincially:**
 - Invest in or financially support the creation/development of campaigns and programs¹⁹.
 - Create campaigns to increase public awareness of the importance of carbon monoxide alarms².
 - Create campaigns to increase public awareness of poison control centres¹³.
 - Create programs to teach caregivers behaviours to prevent unintentional poisonings in the home. Pair these programs with distribution of home safety equipment, such as locked boxes for poisons¹³.
- **Municipally:**
 - Invest in or financially support the creation/development of campaigns and programs¹⁹.
 - Create campaigns to increase public awareness of the importance of carbon monoxide alarms².
 - Create campaigns to increase public awareness of poison control centres¹³.
 - Create programs to teach caregivers behaviours to prevent unintentional poisonings in the home. Pair these programs with distribution of home safety equipment, such as locked boxes for poisons¹³.
- **Organizationally:**
 - Create campaigns to increase public awareness of the importance of carbon monoxide alarms².
 - Create campaigns to increase public awareness of poison control centres¹³.
 - Create programs to teach caregivers behaviours to prevent unintentional poisonings in the home. Pair these programs with distribution of home safety equipment, such as locked boxes for poisons¹³.
 - Communicate safety information to increase public awareness of the importance of safe packaging and storage of medications and other potentially poisonous products found in the home¹.

Engineering:

- **Federally:**
 - Require potentially harmful prescription drugs, over-the-counter medications, and cannabis products to have child resistant packaging that complies with the Canadian Standard Association, European, or the United States federal regulations standards¹³.

Endnotes

- Centers for Disease Control and Prevention. (2017). Poisoning. Retrieved from: <https://www.cdc.gov/homeandrecreationsafety/poisoning/index.html>
- Parachute. (2011). *White Paper on the Prevention of Poisoning of Children in Canada*. Retrieved from https://parachute.ca/wp-content/uploads/2019/07/WhitePaper_Poisoning.pdf
- Safe Kids Canada. (2012). *Safe Kids Canada Position Statement Poison Prevention*. Retrieved from: https://childsafetylink.ca/wp-content/uploads/2019/10/SKCPositionStatement_PoisonPrevention.pdf
- World Health Organization. 2008. *World Report on Child Injury Prevention: Summary*. Geneva, Switzerland: WHO.
- IWK Regional Poison Centre. (n.d.). Household Poisons. Retrieved from <https://iwkpoisoncentre.ca/Documents/PDF/householdpoisons.pdf>
- Statistics Canada (n.d.). Table: 13-10-0392-01 (formerly CANSIM 102-0551)—Deaths and age-specific mortality rates, by selected grouped causes. *Canada, annual*. (Accessed April 4, 2018).
- Parachute. (2015). *The Cost of Injury in Canada*. Parachute: Toronto, ON.
- Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review, [2004 – 2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsxmV6enjXvYg1wnb54atkzbSVggMNVV47sLZRtPMB_8fz7QoBT8JNiCHLw1GGWbQOXp4Pv5jl7vXukUdfxauAl5XCeM9WZaEMhmPRpnTPzfgPZdQsr01ONOn3GMjYgy7KtllxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXFw2kMW17PEB5J6tdky9OPoUilWlb83knXjD4COLTaN2HTpxs7ktkZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9DlCj1wifhB-1odmydH70WaX3z9clhNqrg
- IWK Regional Poison Centre. (2018B). *National Poison Prevention Week March 18–24, 2018*. (Press release). Retrieved from: <http://www.iwk.nshealth.ca/news#/news/national-poison-prevention-week-march-18-24-2018>
- IWK Regional Poison Centre (2018A). *Cannabis exposures 2007–2018*. Unpublished raw data.
- Canadian Centre on Substance Abuse and Addiction. (2018). *Cannabis. Canadian Drug Summary*. Retrieved online on July 23, 2018, from <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Canadian-Drug-Summary-Cannabis-2018-en.pdf>
- MacCoun, R. J., and Mello, M. M. (2015). Half-baked—The Retail Promotion of Marijuana Edibles. *New England Journal of Medicine*, 372(11), 989–991.
- MacKay, M., Vincenten, J., Brussoni, M., Towner, E., and Fuselli, P. (2011). *Child Safety Good Practice Guide: Good investments in unintentional injury prevention and safety promotion – Canadian Edition*. Toronto: The Hospital for Sick Children.
- Health Canada (2016). *Health Canada reminds parents not to give cough and cold medication to children under 6 years old*. Retrieved from: <http://healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2016/57622a-eng.php>
- Godwin, J., Thompson, M., Kent, D., and Pursell, R. (2015). Poisoning. In I. Pike, S. Richmond, L. Rothman, & A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (pp. 399–408). Toronto, Ontario: Parachute.
- Rodgers, G. (1996). The Safety Effects of Child-Resistant Packaging for Oral Prescription Drugs: Two Decades of Experience. *JAMA*.275(21):1661–1665. https://www.researchgate.net/publication/236322870_The_Safety_Effects_of_Child-Resistant_Packaging_for_Oral_Prescription_Drugs
- US Consumer Product Safety Commission (2005). *Poison Prevention Packaging: A Guide for Healthcare Professionals*. Washington, DC: US Consumer Product Safety Commission. <https://www.cpsc.gov/s3fs-public/384.pdf>
- Health Canada (n.d.). Concerns about children’s medication: Avoiding cough and cold medications. Retrieved from: <https://www.canada.ca/en/health-canada/services/drugs-medical-devices/concerns-about-children-s-medication.html>
- Atlantic Collaborative on Injury Prevention. (2011). *The Social Determinants of Injury*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNp1UEF0wzAQ_lq1d0RMRYHNCdEDITgg4F5tk01i5NjR2oFclsTfs eNGnDjZMzsz2llCrE74Bah87ZlgTqgTmjnm3lkFy-ezFFivhZel8yBpSjDQjFU66ifOcS_IBuEw2HhMrotVkcjZ1gh5GdbWNNCbbAqJmE7URzyeJNkl6--MWTVjiPLaBy5GJTv1COTLaoU3RnLa_R1Ml1VWqv7h_2zeuHJS1RvA6t_gvbufS79Ngh8iuff1HbnFnyjHBYV9Qpn2KkZsj3gfg4sHfJfXh-LOOT81673ubVvr5BY4Ncjw

Breathing-Related Injuries

Definition: Breathing-related injuries include injuries due to suffocation/strangulation in bed by bed linen/mother's body/pillow; due to cave-in, falling earth, and other substances; inhalation of gastric contents; inhalation/ingestion of food causing obstruction of respiratory tract; inhalation/ingestion of other objects causing obstruction of respiratory tract; confined to or trapped in low-oxygen environment; suffocation by plastic bag; and unspecified threats to breathing.

Breathing-related injuries occur as the result of choking, suffocation, strangulation, entrapment, aspiration, and traumatic (crush) asphyxia^{1,2}. Breathing-related injuries are the leading cause of injury deaths in infants and toddlers². Forty percent (40 per cent) of unintentional injuries in infants under the age of one are the result of choking or strangulation². Deaths due to choking, suffocation, strangulation, or entrapment are the result of asphyxia, a lack of oxygen supply to the brain. Asphyxia may also occur in enclosed spaces, such as a toy box, old refrigerator or freezer, a grain silo, or the trunk of a car². Children younger than three years of age are at highest risk for choking because their airway development and eating can be difficult at this developmental age and stages³. At this age, children put many items they come into contact with in their mouth³.

Choking occurs when breathing is interrupted by an object inside the airway^{2,4}. Food and latex balloons are involved in a majority of choking cases, but anything that can fit in an empty toilet paper roll can be considered a choking hazard for children². Certain characteristics, including shape, size, and consistency, of certain toys and foods increase their potential to cause choking among children⁴.

Suffocation occurs when breathing is interrupted by an external object blocking the nose and mouth^{1,2}. Suffocation is more common in infants than children, and suffocation hazards include cribs, beds, bedding, plastic materials, and egg-shaped toys that can cover the nose and mouth and create a seal⁴.

Strangulation occurs when there is an external force constricting the neck to the point where it interferes with breathing². Strangulation is more common in older children than infants and strangulation hazards include window-blind cords and drawstrings on clothing².

Entrapment occurs when the head and neck are caught in a constricting place or position that interferes with breathing. Entrapment hazards include gaps in play structures, car windows, railings, and bunk-bed barriers². Entrapment can result in suffocation, strangulation, or asphyxia².

Aspiration occurs when an object is inhaled into the respiratory system². Traumatic (crush) asphyxia occurs when the chest is crushed by weight, such as by burial in soil, grain, etc². [The Atlantic Injury Hospitalization Report¹ did not include injuries due to fallen furniture or a closing garage door under breathing-related injuries].

40%

of **UNINTENTIONAL INJURIES** in infants under the age of 1 year are because of **CHOKING OR STRANGULATION**.

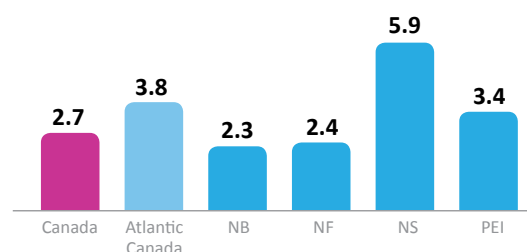


How do breathing-related injuries impact Canadians?

- Choking, suffocation, and strangulation are important causes of unintentional injuries in children and rank as leading causes of unintentional injury deaths in infants and toddlers^{2,5}. Breathing-related injuries are a leading cause of unintentional-injury death in infants and toddlers in Canada².
- Approximately 40 per cent of unintentional injuries in infants under the age of one are the result of choking or strangulation².
- For every breathing-related death, there are approximately 110 emergency department visits^{2,6}.

How do breathing-related injuries impact Atlantic Canadians?¹

- Between 2004 and 2013, **the rate of breathing-related hospitalizations** for those aged 0–14 was:
 - 2.7 per 100,000 population in Canada
 - 3.8 per 100,000 population in Atlantic Canada
 - 2.3 per 100,000 population in New Brunswick
 - 2.4 per 100,000 population in Newfoundland and Labrador
 - 5.9 per 100,000 population in Nova Scotia
 - 3.4 per 100,000 population in Prince Edward Island
- Overall breathing-related hospitalization rates in children aged 0–14 in Atlantic Canada increased an average of 4 per cent annually between 2004 and 2013, with an average of 14 admissions per year.
- Sixty eight percent (68 per cent) of breathing-related hospitalizations were the result of food, 26 per cent were the result of choking on non-food items, and 6 per cent were the result of mechanical suffocation.



Trend Alert: *There are many products that are also marketed as health products that can actually increase the risk of injury (such as amber teething necklaces). Amber teething necklaces, often marketed as a safe remedy for teething discomfort, can pose both a strangulation and choking risk to infants and toddlers^{7,8}. Health Canada has warned caregivers about aspiration and strangulation risks of amber teething necklaces⁹.*

A study from the IWK Health Centre showed these necklaces failed to release when pulled, contradictory to claims made by retailers and manufacturers⁸.

For every **DEATH** there are

110

**EMERGENCY
DEPARTMENT VISITS**

by children due to a
**BREATHING-RELATED
INJURY**



How can we prevent breathing-related injuries?

By ensuring products intended for children do not pose a threat to breathing, labelling products to make caregivers aware of potential threats, and educating caregivers on how to identify and avoid threats to breathing, we can reduce the risk of breathing-related injuries to children and youth².

BEST PRACTICES

Enforcement:

- **Federally:**
 - Ban the sale and use of cribs manufactured before 1986².
 - Require products for children that pose a potential threat to breathing to have warning labels indicating specific risk factors (not just the age the item is appropriate for)^{2, 10}.
 - Require plastic films, latex balloons, and other products that pose a potential threat to breathing to have warning labels indicating specific risk factors (not just the age the item is appropriate for)^{2, 10}.
 - Require window coverings to have warning labels indicating the risk of breathing-related injuries¹¹.
 - Revise the Hazardous Products Act to include window-covering cords, children’s clothing with draw strings, bunk beds, and toddler-bed guardrails².
 - Prohibit marketing of amber teething necklaces as a safe option for teething relief OR ban the sale of amber teething necklaces⁷.
- **Provincially:**
 - Create safety standards for child-care centres that reduce the risk of choking and strangulation².
 - Ban the use of corded window coverings.
 - Ensure all playgrounds meet CSA standards.
 - Ensure all school playgrounds meet CSA standards².
 - Ensure all playgrounds in provincial parks meet CSA standards².
- **Municipally:**
 - Ensure all municipal playgrounds meet CSA standards².
- **Organizationally:**
 - Advocate for safety standards and policies that create safe environments in these settings¹².

For other playground-related best practices, go to Playground Falls section.

Education:

- **Federally:**
 - Monitor breathing-related injuries to identify new trends and potential hazards².
- **Provincially:**
 - Create a home-visit program to educate parents and caregivers about reducing the risk of breathing-related injuries in the home².
- **Municipally:**
 - Create safe environments for children in child-care settings⁴.
 - Encourage pediatricians, dentists, and other infant- and child-health providers to provide choking prevention counselling⁴.
- **Organizationally:**
 - Encourage organizations that work with young families to provide them with educational resources/ counselling to reduce the risk of breathing-related injuries in the home^{2, 7}.

Engineering:

- **Federally:**
 - Require toys intended for use by children under the age of three to pass a small-parts test².
 - Create safe environments for children in child-care settings⁴ and other settings where young children frequent.

Endnotes

- 1 Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004 – 2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54atkzbsVggMNVV47sLZRtPMB_8fz7QoBT8JNiCHLw1GGWbQOXp4Pv5jl7vXukUdfxauAI5XCeM9WZaEMhmPRpnTPzfsGpZdQsr01ONOn3GMjYgy7KtllxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXfw2kMW17PEB5J6tdky9OPoUilWlb83knXjD4COLTan2HTpxs7ktkZzAC193wQxYbwEiphWGSU1NbPup_IVsj0t9Dlcl1wifhB-1odmydH70WaX3z9clhNqrg
- 2 Canadian Paediatric Society (2012). Preventing choking and suffocation in children. *Paediatrics & Child Health* 17 (2). 91–92. Retrieved from: <https://doi.org/10.1093/pch/17.2.91>
- 3 Tarrago, S. (2000). Prevention of choking, strangulation, and suffocation in childhood. *Wisconsin Medical Journal*, 99(9):43-6, 42.
- 4 American Academy of Pediatrics (2010). Policy Statement – Prevention of Choking Among Children. *Pediatrics*, 125 (3). 601–607. Retrieved from <http://pediatrics.aappublications.org/content/125/3/601>
- 5 Health Canada (2011). *Canadian injury data: Mortality 2005 and Hospitalizations, 2001–2005*. Ottawa, Government of Canada.
- 6 Centers for Disease Control and Prevention (CDC) (2002). Nonfatal choking-related episodes among children--United States, 2001. *Morbidity & Mortality Weekly Report*, 51 (42) 945–948.
- 7 Cox, C., Petrie, N., and Hurley, K. (2017). Infant Strangulation from an Amber Teething Necklace. *Canadian Journal of Emergency Medicine*, 19 (5), 400–403.
- 8 Soudek, L. and McLaughlin, R. (2018). Fad over fatality? The hazards of amber teething necklaces. *Paediatrics & Child Health*, 23(2), 106–110.
- 9 Recalls and Safety Alerts (Dec 2013). *Health Canada Urges Parents to Safeguard Children from Cord Strangulations*. Retrieved from: <http://www.healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2013/37171a-eng.php>
- 10 MacKay, M., Vincenten, J., Brussoni, M., Towner, E., and Fuselli, P. (2011). *Child Safety Good Practice Guide: Good investments in unintentional injury prevention and safety promotion – Canadian Edition*. Toronto: The Hospital for Sick Children.
- 11 Government of Canada (n.d.). Window covering safety. Retrieved from: <https://www.canada.ca/en/health-canada/services/home-safety/blind-cord-safety.html>
- 12 Atlantic Collaborative on Injury Prevention. (2011). *The Social Determinants of Injury*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNp1UEFOWzAQ_lq1d0RMRYHNCdEDITgg4F5tk01i5NjR2oFclstfs eNGnDjZMzs2llCrfe74Bah87ZlgTqgTmjnm3lkFy-ezFFlvhZel8yBpSjDQifU66ifOcS_IBuEw2HhMrotVkcjZ1gh5GdbWNNCbbAqJmE7URzyeJNkl6--MWTVjiPLaBy5GJTv1COTLaoU3RnLa_R1Ml1VWqv7h_2zeuHJS1RvA6t_gvbufS79Ngh8iuff1HbnFnyajHBYV9Qpn2KkZsj3gfg4sHfJlfxh-LOOT81673ubVvr5BY4Ncjw

Playground Falls

Definition: *Playground injuries include falls from swings, slides, teeter-totters, monkey bars, trampolines, other, and unspecified playground equipment.*

Playgrounds can offer children many health benefits. Playgrounds are places where children can be active, healthy, social, and creative¹. While playgrounds offer many benefits, there are risks associated with them². Playground fall injuries are often to the extremities, and fractures are the most common diagnosis². Equipment most often involved in serious playground fall injuries includes climbing equipment, slides, and swings². One study found that children attending low-socioeconomic schools were at an increased risk of playground injury³. A study in Kingston, Ontario, found children were 12 times more likely to be injured on a school playground than at the municipal playground⁴.

How do playground falls impact Canadians?

- Each year, approximately 28,000 Canadian children experience a playground injury that requires medical attention². Seventy-five percent (75 per cent) of these injuries are the result of a fall from equipment². In Canada, playground falls are the leading cause of fall-related injury in children ages five to nine, and the second-leading cause of fall-related injury in children ages zero to four^{5, 6}.
- In 2010, 1,553 children and youth ages 0–14 were admitted to a hospital and 21,952 visited an emergency department as a result of a fall⁶.
- In 2010, falls cost Canadians more than any other type of injury—an estimated \$7.8 billion⁶.
- Falls in children ages 0–14 cost an estimated \$1.2 billion.
- Playground falls (all ages) cost an estimated \$239 million.

\$239

MILLION spent a year
on **PLAYGROUND
FALL INJURIES**
in Canada.



Trend Alert: Trampolines

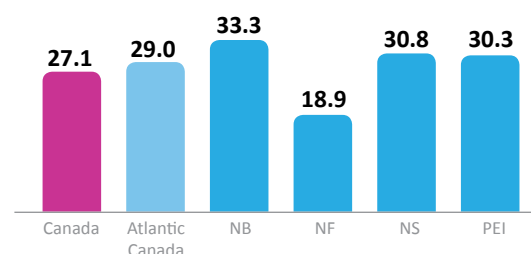
Trampoline-related injuries continue to be on the rise⁷. The Canadian Paediatric Society⁸ and the American Academy of Pediatrics⁹, have each recommended against recreational backyard trampoline use.

Trampoline-related injuries most commonly occur while multiple people are on the trampoline at once. When that happens, the lighter participant is up to 14 times more likely to be injured than the heavier participant⁸.

Trampoline parks are also a growing concern and require additional research and standardized regulations¹⁰.

How do playground falls impact Atlantic Canadians?¹¹

- Between 2004 and 2013, the rate of playground-related injury hospitalizations for those aged 0-14 was:
 - 27.1 per 100,000 population in Canada
 - 29.0 per 100,000 population in Atlantic Canada
 - 33.3 per 100,000 population in New Brunswick
 - 18.9 per 100,000 population in Newfoundland and Labrador
 - 30.8 per 100,000 population in Nova Scotia
 - 30.3 per 100,000 population in Prince Edward Island



- The overall rate of playground-related injury hospitalizations in children aged 0–14 in Atlantic Canada increased an average of 1.1 per cent annually between 2004 and 2013, with an average of 104 admissions per year.
- From 2009 to 2013, where the type of playground equipment was identified, 40 per cent of the injuries were as a result of a child playing/falling from a trampoline¹¹.

How can we address playground fall injuries?

Falls on the playground can be prevented through playground design, playground surfacing, and education for caregivers and children on behaviours that reduce the risk of playground injury. One study found that modifying playgrounds to meet CSA standards reduced the risk of injury by 49 per cent¹².

BEST PRACTICES

Enforcement:

Ensure playgrounds are held to CSA standards for children’s playspaces and equipment¹³.

- **Federally:**
 - Endorse CSA standards for children’s playspaces and equipment.
 - Introduce legislation to require warnings of trampoline danger on trampoline product labels⁸.
- **Provincially:**
 - Ensure all school playgrounds meet CSA standards and are age appropriate for the school population².
 - Ensure all playgrounds in provincial parks meet CSA standards².
- **Municipally:**
 - Ensure all municipal playgrounds meet CSA standards.
 - Remove trampolines from outdoor playgrounds⁸.
- **Organizationally:**
 - Day cares, family resource centres, and other organizations with playgrounds onsite should ensure playgrounds meet CSA standards and are age appropriate.
 - Remove trampolines from outdoor playgrounds⁸.



Education:

Teach children about playground injury prevention and support the sharing of best practice information for parents and caregivers.

- **Federally:**
 - Conduct research on trampoline injuries sustained in supervised settings, such as schools, gym clubs, and training programs, to assess the risk of injury in these settings⁸.
- **Provincially:**
 - Implement programs in schools to teach children about playground hazards and how to reduce their risk of injury².
- **Municipally:**
 - Educate caregivers on the risk of injury to children and adolescents associated with trampoline use^{8,14}.
 - Discourage caregivers from purchasing backyard trampolines for recreational purposes^{8, 14}.
 - Educate parents and caregivers that children under six years old should not use a trampoline¹⁵.
- **Organizationally:**
 - Raise awareness about risks versus hazards and the role that healthy risk taking can play in healthy child development and injury prevention.
 - Investigate/research strategies for keeping children “as safe as necessary” not “as safe as possible.”¹⁶

Engineering:

Ensure playgrounds include safe surfacing in their design and are in line with CSA standards.

- Protective surfacing around equipment should be loose fill (sand, pea gravel, wood chips, or synthetic surfaces) and should be at least 15 cm deep for preschool equipment and 30 cm deep for full-sized equipment¹.
- Reduce maximum fall height of equipment¹.
- Ensure equipment height is age appropriate for the setting (lower fall heights for playgrounds used by younger children)¹.
- Reduce risk of falling from equipment through the use of protective barriers and guardrails, and design guardrails that discourage climbing or use as a play surface (vertical bars instead of horizontal, peaked or curved surfaces)¹.

Risky Play

There is increasing interest amongst injury prevention practitioners in Canada in the issue of risk taking as a positive contributor to resiliency and injury prevention among children. Societal perceptions of danger are sometimes disproportionate to actual danger and can significantly influence parents' concerns for child safety. This has the potential to result in overprotection and fewer opportunities for free play¹⁶.

*For more information read *Risky Play: Balancing Child Development and Injury Prevention*, a joint statement from ACIP and Child Safety Link (2017) <https://childsafetylink.ca/library/risky-play/>*

Endnotes

- 1 Canadian Paediatric Society (2012). *Position statement: Preventing playground injuries*. Retrieved from: <https://www.cps.ca/en/documents/position/playground-injuries>
- 2 Morrongiello, B. A. (2015). Falls: Children. In I. Pike, S. Richmond, L. Rothman, and A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (pp. 399–408). Toronto, Ontario: Parachute.
- 3 Macpherson, A. K., Jones, J., Rothman, L., MacArthur, C. and Howard, A. W. (2010). Safety standards and socio-economic disparities in school playground injuries: a retrospective cohort study. *BMC Public Health*, 10, 542.
- 4 Mowat, D. L., Wang, F., Pickett, W., and Brison, R. J. (1998). A case-control study of risk factors for playground injuries among children in Kingston and area. *Injury Prevention*, 4(1), 39–43.
- 5 Parachute. (2016). *Unintentional Injury Trends for Canadian Children*. Retrieved from <https://parachute.ca/wp-content/uploads/2019/06/SKW-Trend-Report.pdf>
- 6 Parachute. (2015). *The Cost of Injury in Canada – Summary Report: Falls & Transport Injury Trends in Children 2004 to 2010*. Parachute: Toronto, ON.
- 7 Deepa, P., McFaul, S., Cheesman, J., Do, M., Purcell, L., and Thompson, W. (2018). The ups and downs of trampolines: Injuries associated with backyard trampolines and trampoline parks *Paediatrics & Child Health*, pxy066, <https://doi.org/10.1093/pch/pxy066>
- 8 Canadian Paediatric Society (2007). Trampoline use in homes and playgrounds *Paediatric Child Health*, 12 (6). 501-505. [Reaffirmed Jan 30, 2013].
- 9 Briskin, S. and LaBotz, M., Council on Sports Medicine and Fitness, (2012). American Academy of Pediatrics. Trampoline Safety in Childhood and Adolescence. *Pediatrics*, 130 (4). 775–779.
- 10 Wilson, G., Sameoto, C., Fitzpatrick, E., and Hurley, K. (2018). Impact of a Canadian Pediatric Society Position Statement on Trampoline-related Injuries at IWK Health Centre, Halifax, Nova Scotia. *Cureus*, 10 (5). E2609, doi: 10.7759/cureus.2609
- 11 Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review, [2004–2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54atkbSVggMNVV47sLZRtPMB_8fz7QoBT8JNiCHLw1GGWbQOXp4Pv5jl7vXukUdfxauAI5XCeM9WZaEMhmPRpnTPzfsgPZdQsr01ONOn3GMjYgy7KtlIxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXFw2kMW17PEB5J6tdky9OPoUiLWlb83knXjD4COLTaN2HTpxs7kktZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9Dlclj1wifhB-1odmydH70WaX3z9clhNqrg
- 12 Howard, A. W., MacArthur, C., Willan, A., Rothman, L., Moses-McKeag, A., and MacPherson, A. (2005). The effect of safer play equipment on playground injury rates among school children. *CMAJ*, 172(11), 1443–1446.
- 13 Parachute (July 2019). Built playgrounds. Retrieved from: <https://parachute.ca/en/injury-topic/playgrounds-and-play-spaces/built-playgrounds/>
- 14 American Academy of Pediatrics. (2012). *AAP Advises Against Recreational Trampoline Use*. Retrieved from <https://healthychildren.org/English/news/Pages/AAP-Advises-Against-Recreational-Trampoline-Use.aspx>
- 15 Health Canada (2006). *Trampoline Safety*. Retrieved from: <https://www.canada.ca/en/health-canada/services/healthy-living/your-health/products/trampoline-safety.html>
- 16 Brussoni, M., Olsen, L., Pike, I. and Sleet, D. (2012). Risky play and children’s safety: Balancing priorities for optimal child development. *International Journal of Environmental Research and Public Health*. 9, 3134-3148; doi:10.3390/ijerph9093134.

All-Terrain Vehicles (ATVs)

[Also known as Off-Highway Vehicles (OHV)]

Definition: All-terrain vehicle (off-road vehicle) related injuries include injuries due to the use of motor vehicles designed primarily for off-road use. This includes all-terrain vehicles (ATVs), quads, side-by-sides, utility vehicles, and dirt bikes.

The popularity of off-road vehicles, particularly all-terrain vehicles (ATVs), has increased significantly over the past 20 years¹. There has also been an increase in the number of severe ATV-related injuries and deaths, particularly among children and youth². ATVs are three- to four-wheeled off-road motorized vehicles (some new models may have up to six wheels) with large tires designed for off-road terrain^{3,4}. They come in a wide variety of sizes, with engine displacements ranging from 50cc to over 700cc, and can weigh more than 300 kg (661 lbs.). (This data and section excludes snowmobiles.)

ATVs are capable of reaching high speeds and are prone to tipping and rollovers because their high centre of gravity⁵ makes them unstable⁶. This makes them unsafe for children⁶. Most ATVs are built for one rider and are not intended for carrying passengers. ATVs are used for recreation, transportation, and work-related tasks³. Recreation is the primary purpose for ridership by children and youth. ATV use is common in rural and remote areas of Canada, including in First Nations, Inuit, and Metis communities.

ATV-related injuries and deaths in Canadian children are a serious public health problem⁷. There is a risk of serious and fatal injury to anyone operating an ATV; however, the risks to children and youth are particularly high^{3,8}. Injury experts agree that children younger than 16 years of age do not have the physical development or cognitive ability to safely drive these machines⁹. Inadequate physical size and strength, undeveloped cognitive and motor skills, and lack of experience all contribute to the increased risk of injury for children and youth^{9,10,11,12}. Studies have shown that almost 60 per cent of incidents involving four-wheeled ATVs result from tipping and overturning¹³. An increase in ATV power may also contribute to ATV rollovers and subsequent injuries¹. Drivers and passengers can be thrown from these ATVs or can be crushed beneath them¹³.

While the Canadian ATV industry recommends youth-sized vehicles for different age groups, there is little evidence that choosing a youth-sized vehicle alone is safe^{3,12,14}. The risk to a child or teen operating a youth-model ATV is still almost twice as high as that for an adult on a larger machine². Models with varying sizes and maximum speeds are marketed for children and youth ages six and older, ages 10 and older, ages 12 and older, and ages 14 and older³.

25%

of all **ATV-RELATED DEATHS** in Canada are among **CHILDREN 15 YEARS OF AGE OR UNDER.**



Trend Alert—Utility Vehicles (side-by-sides)

A UTV (utility vehicle, utility task vehicle, or side-by-side) is a small two- to six-person four-wheel drive off-road vehicle. It is also called an ROV (recreational off-highway vehicle), or a MOHUV (multipurpose off-highway utility vehicle)¹⁵.

A UTV has controls similar to a motor vehicle and comes in all sizes. UTVs have seating side by side rather than positioned on top like a motorcycle or ATV.

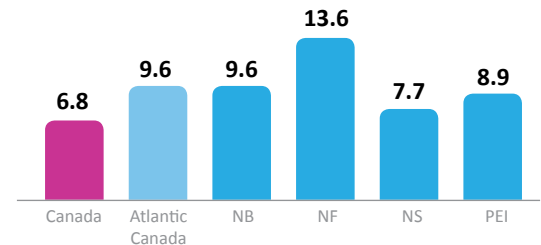
These vehicles are more powerful than traditional ATVs. More research is needed to determine safety risks that may be the same or different from ATVs.

How do ATV injuries impact Canadians?

- In Canada, 25 per cent of all ATV-related deaths are among children 15 years of age or younger⁹.
- Thirty four percent (34 per cent) of ATV-related hospitalizations in Canada are experienced by children and youth ages 19 years and younger³.
- Injuries resulting from ATV use are often severe, with 20 per cent involving trauma to the head¹⁶.
- Rollovers cause 51 per cent of ATV-related deaths¹⁷.

How do ATV injuries impact Atlantic Canadians?¹⁸

- Between 2004 and 2013, **the rate of ATV-related hospitalizations** for those aged 0-14 was:
 - 6.8 per 100,000 population in Canada
 - 9.6 per 100,000 population in Atlantic Canada
 - 9.6 per 100,000 population in New Brunswick
 - 13.6 per 100,000 population in Newfoundland and Labrador
 - 7.7 per 100,000 population in Nova Scotia
 - 8.9 per 100,000 population in Prince Edward Island
- Overall ATV-related hospitalization rates in children aged 0–14 in Atlantic Canada increased an average of 1.8 per cent annually between 2004 and 2013, with an average of 35 admissions per year.



How can we prevent ATV injuries?

ATV injuries can be prevented by legislating age-appropriate ATV use, providing driver education, requiring use of helmets, not allowing passengers on single-rider ATVs, restricting where ATVs can be driven, and not allowing smaller-sized ATVs to be marketed as a safe option for child operators⁹. Currently, more research is needed regarding the effectiveness of specific driver-training approaches⁹. Parachute, a national organization dedicated to preventing injuries, recommends legislating a minimum age of 16 years for commencing driver training. However, in the absence of legislation preventing the operation of off-highway vehicles by children under 16, Parachute does recognize the value of educating younger riders in rural and farming communities for the purpose of work and travel⁹. The consistency of unsafe behaviours across genders and age categories supports the importance of basic and wide-reaching public health campaigns and training¹.

The Canadian Paediatric Society and Child Safety Link recommend children and youth under the age of 16 years do not operate ATVs^{3, 19}.

Active measures require conscious action by individuals to prevent or minimize the risk of injury (such as wearing a helmet). Passive measures do not require an individual to act to prevent injury, and are often more effective in situations where active measures are less reliable and inconsistently applied. Passive measures include industry regulations that ensure safer products²⁰.

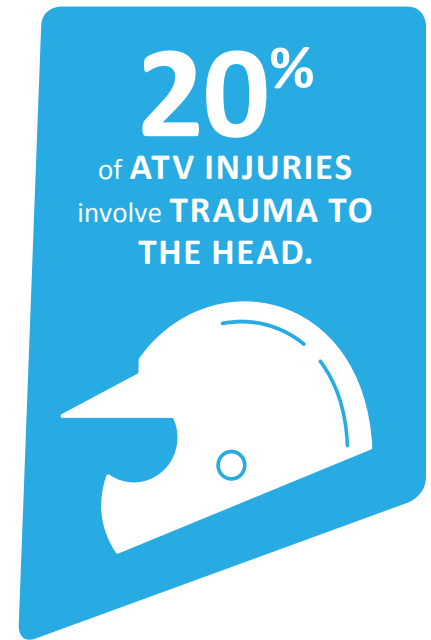
BEST PRACTICES

Enforcement:

- **Federally:**
 - Prohibit marketing of youth-model ATVs as a safe option for child operators⁸.
- **Provincially:**
 - Enhance investment into enforcement of ATV safety regulations. These are often challenging to enforce because riding occurs in off-road areas.
 - Prohibit operation of ATVs by children and youth under 16 years of age^{3, 5, 9, 11, 16, 21}.
 - Prohibit passengers under the age of six²².
 - For riders/passenger over 16 years of age:
 - Require use of certified helmets for those operating ATVs and for passengers^{3, 11, 17, 23}.
 - Require use of eye protection and safety clothing (protective equipment)²⁴.
 - Limit passengers to the number for which the vehicle was designed^{3, 17, 23}.
 - Require training and licensing for operating ATVs^{3, 23, 24}.
 - Prohibit operation of ATVs while under the influence of alcohol and/or other drugs^{3, 17, 23}.
 - Prohibit use of ATVs on public roads and highways^{3, 23}.
 - Prohibit use of ATVs between sunset and sunrise^{3, 23}.
- **Municipally:**
 - Prohibit use of ATVs on public roads and highways^{3, 23}.

Education:

- **Provincially:**
 - For riders/passenger over 16 years of age:
 - As with any successful injury prevention/population health initiative, work collaboratively with key stakeholders (such as ATV and off-highway vehicle associations) to promote and disseminate safety information to riders²⁵.
 - Require public safety training for operating ATVs and in ATV storage and transport¹.
- **Municipally:**
 - Conduct wide-reaching public health campaigns and training¹.
 - Implement community-based education for children on the potential dangers of ATVs while promoting safer riding behaviours, especially in remote and isolated communities³.
- **Organizationally:**
 - Promote/conduct community-based education for children on the potential dangers of ATVs, while promoting safer riding behaviours (for those over 16 years), especially in remote and isolated communities^{3,16}.
 - Encourage/support health-care practitioners, including pediatricians to promote safety⁷.



Engineering:

- **Federally:**
 - Make youth-model ATVs subject to children's product safety regulations and monitoring^{3,26}.
 - Require roll-protection devices on ATVs^{17,23}.
- **Provincially:**
 - Require roll-protection devices on ATVs^{17,23}.
- **Municipally:**
 - Require roll-protection devices on ATVs^{17,24}.
- **Organizationally:**
 - Manufacture safer ATVs by improving vehicle design and operating standards to reduce the large margin for driver error³ (such as installing seatbelts, roll-over bars, automatic headlights, speed governors, and restricted passenger seating; improve stability¹⁸).

Endnotes

- 1 Krauss, E., Dyer, D., Laupland, K., and Buckley, R. (2010). Ten Years of All-Terrain Vehicle Injury, Mortality, and Healthcare Costs. *The Journal of Trauma*, 69 (6). 1338-1343.
- 2 Canadian Paediatric Society (2016). Are we doing enough? A status report on Canadian public policy and child and youth health. Retrieved from: https://www.cps.ca/uploads/advocacy/SR16_ENG.pdf
- 3 Canadian Paediatric Society. (2012). Preventing injuries from all-terrain vehicles. Retrieved from: <https://www.cps.ca/en/documents/position/preventing-injury-from-atvs>
- 4 Canadian Institute for Health Information, National Trauma Registry Analysis in Brief: ATV Injury Hospitalizations in Canada, 2004–2005, (Toronto: CIHI, 2007). Retrieved from: http://publications.gc.ca/collections/collection_2012/icis-cihi/H117-5-4-2007-eng.pdf
- 5 Murphy, N, and Yanchar, N. (2004). Yet more pediatric injuries associated with all-terrain vehicles: Should kids be using them? *Journal of Trauma*, 56(6):1185–1190.
- 6 Bowman, S. and Aitken, M. (2010). Still unsafe, still in use: ongoing epidemic of all-terrain vehicle injury hospitalizations among children. *Journal of Trauma*. 69(6):1344–1349pmid:20962681
- 7 Gill, P, McLaughlin, T., Rosenfield, D., Hepburn, C., Yanchar, N., and Beno, S. (2018). All-terrain vehicle serious injuries and death in children and youth: A national survey of Canadian paediatricians. *Paediatrics & Child Health*. Pxy059, 1-6. Doi.org/10.1093/pch/pxy059
- 8 Scutchfield, S. (2003). All-Terrain Vehicles: Injuries and Prevention. *Clinical Orthopaedics and Related Research*, 409. 61–72. DOI: 10.1097/01.blo.0000060441.40507.3e
- 9 Parachute. (n.d.). All-terrain vehicle safety. Retrieved from: <http://www.parachutecanada.org/injury-topics/topic/C1>
- 10 CPSC Blogger (May 27, 2016). CPSC Warns Families About ATV Dangers for Kids. Retrieved from: <https://onsafety.cpsc.gov/blog/2016/05/27/cpsc-warns-families-about-atv-dangers-for-kids/> [United States Consumer Product Safety Commission].
- 11 McLean, L., Russell, K., McFaul, S., Warda, L., Tenenbein, M., and McGavok, J. (2017). Age and the risk of All-Terrain Vehicle-related injuries in children and adolescents: a cross sectional study. *BMC Pediatrics*, 17(81). DOI: 10.1186/s12887-017-0807-y
- 12 Association of Registered Nurses of Newfoundland and Labrador (2004). Joint Position Statement: All-Terrain Vehicles and Health & Safety. Retrieved from: https://www.arnnl.ca/sites/default/files/documents/CD_ATV_Safety.pdf
- 13 Strohecker, K., Gaffney, C., Graham, J., Irgit, K., Smith, W., and Bowen, T. (2017). Pediatric all-terrain vehicle (ATV) injuries: An epidemic of cost and grief. *Acta Orthopaedica et Traumatologica Turcica*, 51 (5). 416-419. <https://doi.org/10.1016/j.aott.2017.06.003>
- 14 Canadian Paediatric Society. Preventing injuries from all-terrain vehicles, *Paediatrics & Child Health* 2004;9(5): 337–340.
- 15 Side by Side (UTV). (Nov 8, 2018). Retrieved from [https://en.wikipedia.org/wiki/Side_by_Side_\(UTV\)](https://en.wikipedia.org/wiki/Side_by_Side_(UTV))
- 16 Canadian Paediatric Society. (2012b). *Are we doing enough? A status report on Canadian public policy and child and youth health*. Retrieved from: <https://www.cps.ca/uploads/advocacy/StatusReport2012.pdf>
- 17 Injury Prevention Centre. (2018). *Quad injuries in Alberta: topic summary*. Retrieved from: https://injurypreventioncentre.ca/downloads/summaries/IPC_Quad_Injuries_TS_4pg_2018.pdf
- 18 Atlantic Collaborative on Injury Prevention (ACIP) and Child Safety Link. (2016). *Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004–2013]*. Retrieved from: http://acip.ca/component/easyfolderlistingpro/?view=download&format=raw&data=eNpFkMFOxCAQhI-FcNKDsaxmV6enjXvYg1wnb54atkzb5VgMNVV47sLZRtPMB_8fz7QoBT8JNiCHLw1GGWbQOXp4Pv5jI7vXukUdfxauA15XCeM9WZaEMhmPRpnTPzfsgPZdQsr01ONOn3GMjYgy7KtIxsCZoaimiD5mkVuX-ZyBqxd0a8-7nyXFw2kMW17PEB5J6tdky9OPoUilWlB83knXjD4COLtAN2HTpxs7ktkZzAC193wQxXYbwEiphWG5U1NbPup_IVsj0t9Dlcl1wifhB-1odmydH70WaX3z9clhNqrg
- 19 Child Safety Link. (2014). *Facts on . . . All-terrain vehicles (ATVs)*. [Unpublished document]. <https://childsafetylink.ca/wp-content/uploads/2018/07/updated-ATV-fact-sheet-July-2018.pdf>
- 20 Razzak, J., Scott, M., Sasser, A., and Kellermann, L.(2005). Injury prevention and other international public health initiatives. *Emergency Medicine Clinics of North America*, 23 (1). 85-98. Retrieved from: <https://doi.org/10.1016/j.emc.2004.09.008>
- 21 CPSC ATV Safety Information Center. Do not allow children under 16 to drive or ride an adult ATV. <https://www.cpsc.gov/Safety-Education/Safety-Education-Centers/ATV-Safety-Information-Center>
- 22 CPSC ATV Safety Information Center (n.d.). Children younger than 6 years of age should never be on an ATV even as a passenger. Retrieved from: <https://www.cpsc.gov/safety-education/safety-guides/sports-fitness-and-recreation/atv-safety-no-young-children-allowed>
- 23 American Academy of Pediatrics. (2000). All-Terrain Vehicle Injury Prevention: Two-, Three-, and Four-Wheeled Unlicensed Motor Vehicles. Retrieved from: <http://pediatrics.aappublications.org/content/105/6/1352>
- 24 Aitken, M., Graham, C., Killingsworth, J., Mullins, S., Parnell, D., and Dick, R. (2003). All-terrain vehicle injury in children: strategies for prevention. *Injury Prevention*, 10 (5). 303–307. doi: [10.1136/ip.2003.004176].
- 25 Groff, P. (2015). The Injury Prevention Spectrum and the 3 E's. In I. Pike, S. Richmond, L. Rothman, & A. Macpherson (Eds.), *Canadian Injury Prevention Resource: An Evidence-Informed Guide to Injury Prevention in Canada*. (51–55). Toronto, Ontario: Parachute.
- 26 Jessula, S., Murphy, N., and Yanchar, N. (2017). Injury severity in pediatric all-terrain vehicle-related trauma in Nova Scotia. *Journal of Pediatric Surgery*. 52 (5) p. 822–825. <https://doi.org/10.1016/j.jpedsurg.2017.01.039>

Appendix A

Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004–2013] (2016)

Data was commissioned from the Canadian Institute for Health Information hospitalization trends (2004–2013) for childhood injury over a 10-year period, the most recent years for which data were available both at the national and provincial levels. The purpose of this report was to determine the pattern of injuries to children and youth in Atlantic Canada and, where possible, whether these injury patterns follow national trends.

The data in this report mainly focuses on hospitalizations of children from birth to age 14 (inclusive) and is about unintentional injuries only. Injuries considered intentional, meaning those resulting from acts of violence or attempts of suicide, are not within the scope of this report. Death data is also not included. A detailed description of the methodology used is in the report. Hospital admission rates are age standardized and calculations are based on population. Rates are not adjusted for duration of play and/or participation. This report does not reflect any changes in medical practice, advances in medical technologies, or medical service availability in each of the provinces that may affect injury rates. Definitions are in Appendix B.

Appendix B

ATLANTIC CANADA: Child & Youth Unintentional Injury Hospitalizations: 10 Years in Review [2004-2013]

The definitions below were used in the development of the Child & Youth Unintentional Injury Hospitalization report [2004–2013] and were used for each section in the document.

Mechanism of Injury definitions

Fall Injuries

Falls can happen anywhere including the home. Falls include slipping on ice and snow; slipping/tripping/stumbling; collision with, or being pushed by, another person (not sports-related); falling while being carried or supported by another person; falls involving wheelchairs and other types of walking devices; and falls from furniture. Excludes falls from playground equipment and selected sports-related falls.

Sports-related Injuries

Sports-related injuries include injuries due to the following: falls involving skates, skis, sports board and in-line skates; being struck against or by sports equipment, including a ball, bat, hockey stick, hockey puck, other specified sports equipment or unspecified sports equipment; being struck against or by other objects including while skiing/snowboarding, tobogganing, playing hockey, football/rugby, soccer, baseball, or other sports/recreation activities; and being struck or bumped into by another player while participating in a sport activity (includes skiing/snowboarding, tobogganing, hockey, football/rugby, soccer, baseball, other sports/recreation activity).

Bicycle Injuries

Bicycle injuries include injuries as a result of a cyclist being struck by a pedestrian/animal, other bicycle, two- or three-wheeled motor vehicle, car/pickup truck/van, heavy transport vehicle/bus, railway train, other non-motor vehicle, fixed/stationary object, falling from bicycle and other and unspecified traffic and non-traffic incidents.

Poisoning Injuries

Poisoning injuries include the following: poisoning when not specified, whether accidental or with intent to harm; accidental overdose of a drug; wrong drug given or taken in error; and drug taken inadvertently. Includes medications, alcohol, petroleum products, agricultural/horticultural products, vapours/gases and other and unspecified chemical and noxious substances. Excludes suicide/self-inflicted and intent to harm.

Playground Injuries

Playground injuries include falls from swings, slides, teeter-totters, monkey bars, trampolines, other, and unspecified playground equipment.

Child Passenger Injuries

Child passenger injuries include injuries due to car occupant injured in collision with pedestrian, animal, bicycle, two- or three-wheeled motor vehicle, car/pickup truck/van, heavy transport vehicle/bus, railway train, other non-motor vehicle, fixed/stationary object, overturning without collision, other, and unspecified traffic and non-traffic incidents. Excludes: bicycles and off-highway vehicles (ATV, dirt bikes, snowmobiles), which are reported separately.

All-Terrain Vehicle Injuries

All-terrain Vehicles (off-road vehicle) related injuries include injuries due to the use of motor vehicles designed primarily for off-road use. This includes, all-terrain vehicles (ATVs), quads, side-by-sides, utility vehicles, and dirt bikes.

Snowmobile Injuries

Snowmobile injuries include injuries due to driver/passenger/unspecified occupant of snowmobile involved in traffic and non-traffic collisions, and falls through ice.

Pedestrian Injuries

Pedestrian injuries include injuries due to pedestrian in collision with bicycle, two- or three-wheeled vehicle, car/pickup truck/van, heavy transport/bus, railway train, other non-motor vehicle, other, and unspecified transport collisions.

Drowning Injuries

Drowning injuries include injuries due to drowning/submersion in bathtub, swimming pool, natural water, reservoir, and other unspecified drowning/submersion.

Breathing-related Injuries

Breathing-related injuries include injuries due to suffocation/strangulation in bed by bed linen/mother's body/pillow; due to cave-in, falling earth and other substances; inhalation of gastric contents; inhalation/ingestion of food causing obstruction of respiratory tract; inhalation/ingestion of other objects causing obstruction of respiratory tract; confined to or trapped in low-oxygen environment; suffocation by plastic bag; and unspecified threats to breathing.

Burn Injuries

Burn injuries include those due to contact with hot drinks/food, fats and cooking oils, hot fluids, steam, vapours, air and gases; contact with hot household appliances (stove/cooker/oven, hot plate, iron, curling iron, toaster, saucepan, kettle, pot, and other hot household appliances); and contact with hot heating appliances, radiators, pipes, hot metal, other and unspecified heat and hot substances.

