



System Change

Beneficial change can
inform and inspire other
system level changes

Canada and the World: A Comparative Approach to Injury Prevention

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Canada is consistently ranked as one of the best places to live in the world. A crucial part of this view is based on Canada's approach to public health, which has achieved measurable results in the rate reduction of some leading causes of disease and death. It is therefore surprising to learn that in tackling the leading cause of death for Canadian children and youth, Canada ranks a disappointing 18th of 26 nations in the Organisation for Economic Co-operation and Development (UNICEF 2001). Few are aware that unintentional injury is the leading cause of death for Canadian children and youth between the ages of one and 14. In Canada, injury kills more children and youth than all disease (Canadian Institutes of Health Research 2008). 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 problem. The reality is that injury prevention has not kept pace with other public health interventions such as tobacco control or infectious disease prevention programs. Despite its devastating impact, injury remains an invisible epidemic.

If Canada enjoyed the same child injury rate as Sweden, from 1991 to 1995 (SMARTRISK 2005)

- 1,233 children would not have died,
- between 23,000 and 50,000 would not have been hospitalized and

- more than 250,000 children would not have visited emergency rooms.

Injury prevention policies are urgently needed to reduce overall healthcare costs and improve the health of Canada's population. Proactive investment and comprehensive strategies in injury

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prevention can make a significant difference in the overall health of the population. Governments, industry and society overall pay a high price for failing to address injuries, which are largely predictable and preventable.

A comprehensive and holistic approach that includes education, enforcement and environmental changes as well as an injury prevention strategy with commitment from the federal, provincial and territorial governments are urgently needed to reduce injuries. Lessons in effective injury prevention strategies can be learned from other provinces, such as Nova Scotia, as well as from countries such as Sweden and others in the European Union that have invested in and implemented national injury prevention strategies that have resulted in increased awareness, positive public policy and reductions in injuries over time.

In this article, we lay out the current position of injury prevention in the Canadian and global contexts. By using a comparative approach that incorporates existing findings from Canadian provincial and international contexts, the article provides a comprehensive review of the growing need for an injury prevention strategy in Canada and its potential impact on the Canadian healthcare system.

This article also comes on the heels of a new opportunity that, should it be seized, will undertake concerted and coordinated action in order to reduce the burden of injury in Canada. The federal government in Canada recently pledged its commitment to a national injury prevention strategy for children in the 2010 Speech from the Throne. In this speech, then-Governor General Michaëlle Jean read the following statement: “To prevent accidents that harm our children and youth, our Government will also work in partnership with non-governmental organizations to launch a national strategy on childhood injury prevention” (Government of Canada 2010).

Injury Prevention as a Child Health Indicator

The first step in recognizing injuries and adopting measures to reduce their rate in Canada, particularly unintentional injuries in children and youth, lies in acknowledging the crucial role injury plays in overall health. It is, after all, the leading cause of death. Internationally, efforts have been under way, and have recently increased, to recognize injuries as a key child health indicator. In September 2000, the United Nations adopted a series of Millennium Development Goals (MDGs). The fourth of these goals is the reduction, by two thirds, of the mortality rate in children under five years between 1990 and 2015 (World Health Organization [WHO] 2006). Recently, concerns have been raised about the expectation of achieving these reductions, primarily because a large proportion of the remaining deaths are due to preventable injuries, a factor that has, to date, not been included in the MDG plan.

This concern comes at the same time as the absolute numbers and rates of child and adolescent injury and death in low- and middle-income countries are rising. The combination of increasing incidence and recent success in reducing other causes of death, particularly infectious diseases, means that the significance of injury is growing such that it now figures prominently among the list of leading causes of death in children and adolescents (WHO 2006).

Scope of the Invisible Epidemic

The scope of the injury epidemic is daunting, both internationally and in Canada. Injury and violence are major killers of children throughout the world, responsible for approximately 950,000 deaths annually in those under the age of 18 years. Unintentional injuries account for almost 90% of these cases (WHO 2008). The majority of the fatal injuries to children under the age of 18

years in 2004 were the result of road traffic collisions, drowning, fire-related burns, falls and poisoning (WHO 2008).

The picture looks remarkably similar in Canada. Every year in Canada, on average close to 300 children aged 14 and under are killed (Figure 1) and another 21,000 are hospitalized for serious injuries (Figure 2). Each day, nearly 60 children are admitted to a hospital for an injury (Public Health Agency of Canada 2009).

Children are not small adults.

Children are not small adults. Their abilities and behaviour differ from those of adults. Children's physical and mental abilities, degree of dependence, types of activities and risk-taking behaviours all change substantially as they grow older. But as children develop, their curiosity and need to experiment do not always match their ability to understand or to respond to danger, leaving them at risk for injury (WHO 2008).

When a child is injured, the magnitude of the impact is felt in all levels of society. Unintentional injuries cost Canada's healthcare system approximately \$4.2 billion in direct system costs annually, with an additional \$4.5 billion in secondary costs. Another \$4 billion in direct and indirect healthcare costs are specifically related to unintentional injuries in children and youth (SMARTRISK 2009).

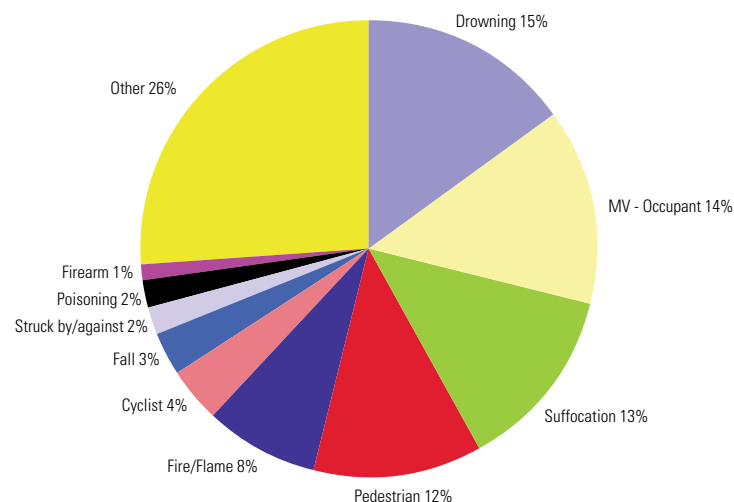
The impact of injury on these children is often lifelong. For injury survivors, the need for care and rehabilitation of the injury and the potential for permanent disability can have far-reaching impacts on their health, education and social inclusion and on their parents' livelihood. Many are left with ongoing physical, mental or psychological disabilities, and these have a major impact on their own lives as well as the lives of their families (WHO 2008).

Injury also tends to require a disproportionate allocation of health resources and places immediate and unplanned demands on the system. No part of the healthcare system is untouched by injury; even wait times for some services are affected. 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 injury (Department of Health Promotion and Protection and Injury Free Nova Scotia 2009).

Injury Prevention Saves Money

The cost of doing nothing when it comes to the prevention of unintentional injuries in children and youth is unacceptable. In 2004, the most recent year for which data are available, injuries cost Canadians \$19.8 billion and 13,667 lives. That same year, the direct costs of injury were \$10.72 billion and the indirect costs were \$9.06 billion. Crucially, unintentional

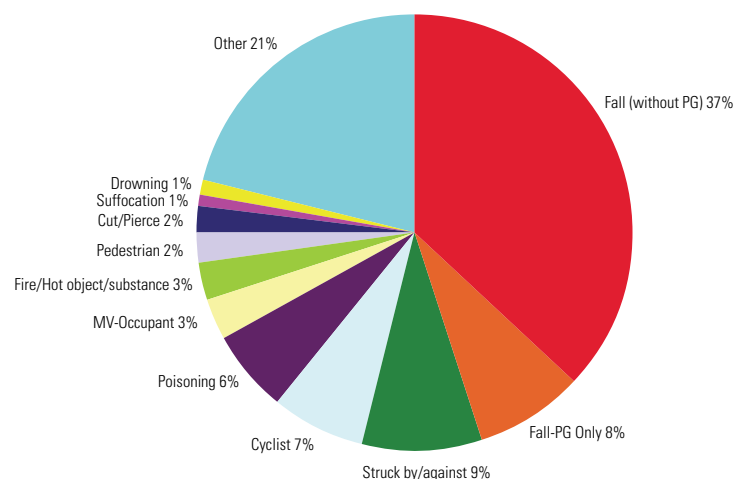
FIGURE 1.
Leading causes of unintentional injury deaths among Canadian children ages 0–14, in 2000–2005



MV = motor vehicle.

Source: Data from Public Health Agency of Canada (2009).

FIGURE 2.
Leading causes of injury hospitalizations among Canadian children, ages 0–14 years, 2000–2005



MV = motor vehicle; PG = playground.

Sources: Data from Public Health Agency of Canada (2009) and Canadian Institute for Health Information (2009).

permanently disabled (SMARTRISK 2009).

The cost of primary programs is much cheaper than treating a child, sometimes for months, because of a preventable injury. Effective strategies for injury prevention have been shown to save not only lives but also dollars (Gyllensvard 2010; SMARTRISK 2009; WHO 2005a). The numbers are illuminating. The return on investment for every \$1 spent on prevention strategies shows that prevention is extremely cost-effective (SMARTRISK 2009); for example,

- \$1 spent on bicycle helmets saves \$29,
- \$1 spent on child safety seats saves \$32,
- \$1 spent on road safety improvements saves \$3,
- \$1 spent on prevention counselling by pediatricians saves \$10 and
- \$1 spent on poison control services saves \$7.

Furthermore, studies have shown that, on average, a \$46 child safety seat generates \$1,900 in benefits to society; a \$31 booster seat generates \$2,200; and a \$10 bicycle helmet generates \$570 (Pacific Institute for Research and Evaluation 2005).

What an Injury Prevention Strategy Looks Like

Addressing the invisible epidemic of injuries in Canada requires a multi-faceted approach that engages several sectors to work together in coordinated action. There is no doubt that injury prevention strategies are effective in reducing the rate and burden of injury on societies. In countries that have adopted injury prevention strategies and programs, injury rates have halved over a 20-year period, largely attributed to concerted prevention efforts (WHO 2006).

While the healthcare sector manages the outcome of injury, the prevention strategies that have been proven effective require coordination between sectors. As a result of the need for intersectoral action, a

injuries account for 81% of all injury costs. On a human level, over 211,000 Canadians were hospitalized, there were over three million emergency room visits and over 67,000 Canadians were

strategic and coordinated effort is required to address the issue and ensure it receives adequate investment that will lead to meaningful reductions. The best approach is the development

of a government-endorsed strategic plan with specific action steps outlined, including the identification of resources and organizations responsible – in essence, a “road map” or action plan (EuroSafe 2007).

Several examples of injury prevention strategies exist to guide Canada in the adoption of its own approach. Two examples are highlighted here. The first is in Nova Scotia, where the provincial injury prevention strategy has been effective in coordinating activities among multiple sectors in the province to reduce the rate of injuries. The second is the European context, and the leadership and coordination taking place within and between countries for injury prevention.

Injury Prevention in Nova Scotia

In 2006, Nova Scotia's injury prevention strategy was recognized by WHO as an example of a successful sub-national injury prevention policy (Department of Health Promotion and Protection and Injury Free Nova Scotia 2009). The current strategy in Nova Scotia is a revision of the original strategy enacted in 2004 and builds heavily on the successes achieved to date. The purpose of the strategy is to serve as an integrated and comprehensive guide for collective efforts in the province to create healthy communities and thereby reduce injuries.

Furthermore, the strategy takes a holistic approach to injury by seeking to reduce the physical, emotional and economic impacts of injury. This holistic approach is critical to effective injury prevention strategies everywhere and is linked to the growing need to acknowledge the central role the social determinants of health play in well-being, related to injuries and beyond. *Social determinants of health* refers to a broad range of socio-economic factors that affect health and well-being, including injury risk. Factors include family income, maternal education, single parenting, maternal age, the number of children, the number of household occupants, the type of housing and the level of overcrowding.

The impacts of the social determinants of health and socio-economic status on injuries in children and youth are a widely acknowledged reality (Burrows et al 2010; Canadian Institute for Health 2009; EuroSafe 2006; WHO 2006). Injuries are unevenly distributed between countries, and within countries between socio-economic groups, to the detriment of more disadvantaged families and communities (Burrows et al. 2010). Children living in poverty are more likely to be exposed to hazardous environments, including high-volume, fast-moving traffic, a lack of space and facilities for safe play, cramped living conditions with no proper kitchen, open cooking fires, unprotected windows, open roofs and stairs without handrails (WHO 2006).

In Canada, there exists a strong correlation between socio-economic status and the risk of injury-related death among children (Birken et al. 2006). Children in low socio-economic levels are more than twice as likely to die of injury as are children

in high socio-economic levels (Macpherson et al 1998). In a comparison of low- and high-income areas, hospitalization rates due to injuries were high among those with low socio-economic status (Canadian Institute for Health).

In 2004, the direct costs of injury were \$10.72 billion and the indirect costs were \$9.06 billion.

In addition to incorporating the role of the social determinants of health, Nova Scotia's injury prevention strategy successfully leverages several key elements important to its success. Leadership from the provincial government, including a \$4.5 million investment into the strategy, helped create the multi-level action needed to achieve results. A series of short-, intermediate- and long-term measures were established as indicators of success, and these are instrumental to tracking progress over time and allow Nova Scotia to identify challenges, develop solutions and celebrate success along the road to reducing the burden of injury.

Finally, the guiding principle of Nova Scotia's injury prevention strategy was rooted in the Three Es approach to injury prevention: education, enforcement and engineering. This approach allows for the promotion of specific attitudes about injuries through targeted awareness campaigns; the creation and enforcement of laws, regulations and policies; and engineering seeking to alter the environment, including the design of products, to decrease the risk of injury. These three elements are apparent in some of the recent injury prevention initiatives in the province. Nova Scotia is the only province in Canada with an all-ages, all-wheeled helmet legislation mandating the use of protective head gear. Nova Scotia's Trauma Registry is a comprehensive, province-wide surveillance program that conducts population-based surveillance of major trauma. The province's comprehensive child passenger safety initiatives have included coordination and collaboration across sectors, including booster seat legislation, educational campaigns and collaboration with law enforcement at the community level.

Injury Prevention in Europe

As in Canada, the relationship between injury rates and socio-economic status is present in the international context. More than 95% of all unintentional childhood injury deaths occur in low- and middle-income countries. Within the high-income countries, there is also a strong socio-economic gradient of child and adolescent injury, with children from poor families being considerably more likely to sustain an injury than their more affluent counterparts (WHO 2005).

The European Child Safety Alliance of EuroSafe is composed of 18 member countries and has instituted the Child Safety

Action Plan Project, a large-scale initiative whose aim is to develop government-endorsed injury prevention national strategies across Europe. EuroSafe recommends the same measures found in Nova Scotia in strategizing to reduce injuries. These include developing a coordinated national action plan that includes multi-sectoral action, ensuring investment commensurate with the magnitude of the problem, addressing socioeconomic inequalities, adopting evidence-based good practices and enhancing capacity in the injury prevention field to implement effective strategies. To facilitate the implementation of injury prevention strategies that work, EuroSafe developed Child Safety Report Cards as an assessment and grading tool for member countries. The report cards reflect the current level of adoption, implementation and enforcement of evidenced good practice policy in specific countries, and provide a way to identify strengths, weaknesses and gaps in injury prevention.

If all member states were to adopt the proven good practice policies, 90% of injury deaths could be prevented.

In comparison to 2007 results, the 2009 EuroSafe Child Safety Report Cards found general improvements for all member countries. Further, the report cards demonstrated that countries that traditionally had lower injury rates – Sweden, the United Kingdom and the Netherlands – all had relatively high overall performance grades and, in particular, high scores for leadership, infrastructure and capacity (EuroSafe 2009). In general, countries that use a combination of broad approaches, in addition to encouraging a culture of safety and displaying strong political commitment, have made the greatest progress in reducing their child injury burden. EuroSafe estimates that if all member states were to adopt the proven good practice policies, 90% of injury deaths could be prevented. Thousands of children's lives would be saved each year (EuroSafe 2009).

Conclusion

Further action is being taken in the international context to address the invisible epidemic of injuries. The resolution was officially passed and adopted on May 24, 2011. The resolution states that it will be difficult to achieve MDG four, to reduce child mortality, in some countries without addressing child injury. The resolution calls for member states to

- prioritize the prevention of child injury and ensure that necessary intersectoral coordination mechanisms are established or strengthened;

- ensure that funding mechanisms for public health programs for child survival or child health cover child injury prevention; and
- implement as appropriate the recommendations of the WHO/UNICEF world report on child injury prevention, among others (WHO 2011).

The resolution also requests that the director-general of WHO collaborate with United Nations organizations, international development partners and non-governmental organizations (NGOs) to establish a mechanism for communication and coordination of child injury, and to support capacity building, data collection and emergency care within member states, among other initiatives.

The promising movement on injury prevention taking place internationally presents a prime opportunity for Canada to join the effort to reduce the burden of injury for all Canadians, particularly children and youth. As highlighted at the outset of this article, the government of Canada has recently stated its commitment to adopting a national child injury prevention strategy. What are needed now are the tools and mechanisms to make such a strategy a reality.

Through the perseverance of NGOs, provincial injury prevention organizations and a small but dedicated group within the federal government, Canada has realized some success in the fight to prevent injuries. Several initiatives are in place across Canada and reflect the Three *E*s approach to injury prevention. The Canadian Hospital Injury Report and Prevention Program collects and analyzes data on injuries from 15 hospitals across Canada. Coordination and information sharing through networks is taking place through avenues such as the Canadian Collaborative Centres for Injury Prevention and the Atlantic Collaborative for Injury Prevention. Efforts are also under way to modify the environment to make it as injury proof as possible, most notably through the recent passage of Bill C-36: An Act Respecting the Safety of Consumer Products (Government of Canada 2011).

While many provinces and territories have strategies for injury prevention, Canada continues to seek national leadership and coordination on this issue, and a commitment to address this epidemic. These can be better achieved with human resources and funding at a level more in line with the burden of injury on society – and more in keeping with resources dedicated to other comparable health issues, including resources to sustain a “home” to lead an evidence-informed pan-Canadian strategy for injury prevention. A strategy should include leadership in data collection and surveillance; coordination and collaboration; injury prevention research; collaboration with NGOs to broker knowledge in Canada; the development of a strategy to engage potential stakeholders to encourage full investment and

engagement; and the increase in awareness of and attention to the injury problem in Canada.

In the period 1995–2004, Canada's injury death rate decreased by 10%. Effective interventions are known, and many can be implemented quickly. With growing government engagement and support for effective injury prevention programming, it is possible to make even more significant gains in the decade ahead. The ripple effect an injury has on a child and the family extends into Canadian society at large. "In Canada, there are more than 5 million women of childbearing age and their children will add to the 8 million children and youth in Canada that represent the future of our country" (Canadian Institutes of Health Research 2010: 8). When it comes to the safety and health of Canada's children and youth, the cost of inaction is simply too high. **HQ**

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