

Prevention of Injury

Guidance Document

Standards, Programs & Community Development Branch
Ministry of Health Promotion
May 2010

Working Group Co-Chairs
Janice Greco
Joy Lang

Working Group Members
Steven Boyd
Christina Bradley
Jacqui Candlish
Lenni Eubanks
Carol Goodall
Betty-Ann Horbul

Working Group Writer
Daria Parsons

Editor
Diane Finkle Perazzo

ISBN: 978-1-4435-2914-3
© Queen's Printer for Ontario, 2010

Published for the Ministry of Health Promotion

Table of Contents

Acknowledgements	7
1) Section 1. Introduction	8
a) Development of MHP’s Guidance Documents	8
b) Content Overview	8
c) Goal of the Prevention of Injury and Substance Misuse Program	9
d) Intended Audience and Purpose	9
2) Section 2. Background	10
a) Relationship between Injury and the Social Determinants of Health	10
b) The International Picture.....	11
c) The National Picture	12
d) Provincial.....	13
Economic Burden of Injury in Ontario.....	14
Causes of Injury in Ontario.....	14
Requirement 1	17
3) Section 3. OPHS Injury Prevention Requirements	19
a) Falls across the Lifespan	19
i) Falls in Children.....	19
1) Economic Burden of Falls in Children in Ontario	19
Requirement 2	20
a) Situational Assessment.....	20
b) Partnerships.....	20
c) The Social Determinants of Health	22
d) Policy	22
e) Best Practice.....	24
f) Programs	24
g) Promising Practices	25
Requirement 3	26
a) Priority Populations	26
Requirement 4	26
Requirement 5	27
a) Evidence-based/Promising Policy	28
b) Crossovers.....	28
c) Key Resources.....	29
i) Falls in Older Adults.....	30
1) Economic Burden of Falls in Older Adults in Ontario.....	30

Requirement 2	30
a) Situational Assessment.....	31
b) Partnerships.....	31
c) Policy.....	34
d) Program and Social Marketing.....	35
e) Key Resources	39
Requirement 3	40
a) Priority Populations for Preventing Falls in Older Adults.....	41
b) Crossover Areas	41
c) Situational Assessment	41
d) Evidence-based/Promising Practice for Capacity Building.....	41
e) Collaborating with and Engaging Community Partners	41
f) Strategies for Mobilizing and Promoting Access to Community Resources	42
g) Providing Skill-building Opportunities, Sharing Best Practice and Evidence	42
Requirement 4	43
a) Situational Assessment.....	43
b) Evidence-based Promising Practice	43
Requirement 5	44
a) Situational Assessment.....	45
b) Evidence-based/Promising Practice.....	45
c) Additional Resources.....	45
d) On-road Safety.....	45
1) Economic Burden of Motor Vehicle Collisions in Ontario	45
Requirement 2	46
a) Situational Assessment.....	46
b) Partnerships.....	47
c) Policy.....	49
d) Program.....	49
e) Policy (Speeding/Aggressive Driving)	50
f) Program (Speeding/Aggressive Driving).....	50
g) Policy (Distracted Driving and Driver Fatigue).....	50
h) Policy (Drinking and Driving).....	50
i) Crossover.....	51
j) Program	51
Requirement 3	51
a) Situational Assessment.....	52
b) Policy	52
c) Program	53
a) Situational Assessment (Young and Novice Drivers)	53
b) Policy (Young and Novice Drivers)	53
c) Program (Young and Novice Drivers)	54
Vulnerable Road Users	54
PEDESTRIANS	54
a) Situational Assessment (Child risk factors)	54
b) Policy	54
c) Program	55
MOTORCYCLISTS	55
a) Situational Assessment (Motorcyclists).....	55
b) Policy (Motorcyclists).....	55
Requirement 4	56
a) Situational Assessment.....	56
b) Program and Social Marketing.....	56

Requirement 5	58
a) Key Resources.....	60
CYCLING	60
1) Economic Burden of Physical Activity in Ontario.....	61
Requirement 2	61
a) Situational Assessment.....	62
b) Partnerships.....	62
c) Policy.....	63
Requirement 3	64
a) Situational Assessment.....	65
b) Policy	65
Requirement 4	65
a) Situational Assessment.....	66
b) Policy	66
c) Program and Social Marketing	66
Requirement 5	66
a) Key Resources.....	67
b) Off-Road Safety.....	69
i) All-Terrain Vehicles (ATVs)	69
1) ATV Injuries in Canada	69
2) ATV Injuries in Ontario	69
Requirement 2	70
a) Situational Assessment.....	70
b) Partnerships.....	71
c) Policy.....	73
d) Programs	74
e) Social Marketing.....	75
Requirement 3	75
a) Priority Populations for All-Terrain Vehicle Injuries.....	76
b) Crossover Areas	76
Requirement 4	76
Requirement 5	76
a) ATV Legislation in Ontario – (Highway Traffic Act and Off-Road Vehicles Act)	77
b) Evidence-based/Promising Practice	77
c) Key Resources.....	79
ii) Snowmobiles	80
1) Snowmobile Injuries in Canada	80
2) Snowmobile Injuries in Ontario.....	80
Requirement 2	80
a) Situational Assessment.....	80
b) Partnerships.....	81
c) Policy.....	83
d) Programs	84
e) Social Marketing.....	84
Requirement 3	84
a) Priority Populations	85
b) Crossover Areas	85
Requirement 4	85

Requirement 5	85
a) Evidence-based/Promising Practice	86
b) Key Resources	86
Other Areas of Public Health Importance	87
d) Suicide Prevention.....	87
1) Economic Burden of Suicide and Self-Inflicted Injury in Ontario.....	88
Requirement 2	88
a) Situational Assessment.....	88
b) Partnerships.....	89
c) Policy.....	90
d) Program and Social Marketing.....	90
Requirement 3	91
a) Situational Assessment.....	91
b) Policy	92
c) Program and Social Marketing	93
d) Crossovers.....	93
Requirement 4	93
a) Situational Assessment.....	93
b) Policy	93
c) Program and Social Marketing	94
Requirement 5	94
a) Key Resources.....	94
4) Section 4. General Injury Prevention Resources	96
a) Toolkit	96
b) Evaluation Checklists.....	96
c) Training Needs.....	97
5) Section 5. Key Linkages to Other OPHS and Government Strategies and Programs	
a) Key Linkages to Other OPHS and Government Strategies and Programs	98
b) The Ontario Government’s Role	98
6) Section 6. Conclusion.....	100
List of Appendices	
Appendix A: Linkages between Prevention of Injury Requirements and Others	101
Appendix B: Ontario’s Injury Prevention Strategy	105
Appendix C: List of Ontario Lead Trauma Hospitals.....	106
Appendix D: Required Organizational Practices, Accreditation Canada	107
Appendix E: Ontario Ministry of Transportation Regional Planner Contact List	108
References	109

Acknowledgements

We would like to acknowledge the following people who provided invaluable contributions to this document.

Firstly, we are very appreciative of the tireless work of our writer, Daria Parsons. Thank you, Daria, for your wisdom, attention to detail and patience with us!

Secondly, a heartfelt thank you goes to all of our very committed Working Group members. Your dedication to create this Guidance Document within the allotted time frame is truly commendable. Thanks too, to the project staff at Cancer Care Ontario supporting this work, Ministry of Health Promotion colleagues and those who provided insights along the way. A special thanks to Safe Kids Canada, SMARTRISK and the Ontario Neurotrauma Foundation.

Sincerely,

Janice Greco and Joy Lang

Co-Chairs, Prevention of Injury Guidance Document Working Group

Section 1. Introduction

Under Section 7 of the *Health Protection and Promotion Act* (HPPA), the Minister of Health and Long-Term Care published the *Ontario Public Health Standards* (OPHS) as guidelines for the provision of mandatory health programs and services by the Minister of Health and Long-Term Care. Ontario's 36 boards of health are responsible for implementing the program standards including any protocols that are incorporated within a standard. The Ministry of Health Promotion (MHP) has been assigned responsibility by an Order in Council for four of these standards: (a) Reproductive Health (b) Child Health (c) Prevention of Injury and Substance Misuse and (d) Chronic Disease Prevention. The Ministry of Children and Youth Services has an Order In Council pertaining to responsibility for the administration of the *Healthy Babies, Healthy Children* components of the Family Health standards.

The OPHS are based on four principles: need; impact; capacity and partnership; and collaboration. One Foundational Standard focuses on four specific areas: (a) population health assessment; (b) surveillance; (c) research and knowledge exchange; and (d) program evaluation.

a) Development of MHP's Guidance Documents

The MHP has worked collaboratively with local public health experts to draft a series of Guidance Documents to assist boards of health to implement the new OPHS. These Guidance Documents will assist the staff of boards of health to identify issues and approaches for local consideration and implementation of the standards. While the OPHS and the associated protocols published by the Minister under Section 7 of the HPPA are legally binding, Guidance Documents that are not incorporated by reference to the OPHS are not enforceable by statute.

In developing the Guidance Documents, consultation took place with staff of the Ministries of Health and Long-Term Care, Children and Youth Services, Transportation and Education. MHP has created a number of Guidance Documents to support the implementation of the program standards for which it is responsible, e.g.:

- Child Health
- Child Health Program Oral Health
- Comprehensive Tobacco Control
- Healthy Eating, Physical Activity and Healthy Weights
- Nutritious Food Basket
- Prevention of Injury
- Prevention of Substance Misuse
- Reproductive Health
- School Health

This Guidance Document provides specific advice about how the *OPHS Requirements* related to PREVENTION OF INJURY may be addressed.

b) Content Overview

Section 2 of this Guidance Document provides background information relevant to injury prevention, including the significance and burden of this specific public health issue. It also includes a brief overview about provincial policy direction, strategies to reduce the burden and the evidence and rationale supporting the direction. The background section also addresses mental well-being and social determinants of health considerations in the public health approach to the issue.

Section 3 provides a statement of each injury prevention-related program Requirement in the OPHS 2008 and discusses evidence-based practices, innovations and priorities within the context of situational assessment, policy, program and social marketing, and evaluation and monitoring. Examples of how this has been done in Ontario or in other jurisdictions have been provided.

Section 4 identifies key tools and resources that may assist staff of local boards of health to implement the respective program standard and evaluate their interventions. This section also includes training needs.

Section 5 identifies and examines areas of integration with other program standard requirements. This includes identification of opportunities for multi-level partnerships, including suggested roles at each level (provincial, municipal/boards of health, community agencies and others) and identification of collaborative opportunities with other strategies and programs. **Section 6** is the conclusion.

c) Goal of the Prevention of Injury and Substance Misuse Program

The goal of the *Prevention of Injury and Substance Misuse* program is “to reduce the frequency, severity and impact of preventable injury and of substance misuse” (Ministry of Health and Long-Term Care [MOHLTC], 2008, p.22). Achievement of this goal involves a complex interplay of internal and external factors that create safe and supportive environments where people live, work, play and learn. As a result, the *Prevention of Injury and Substance Misuse* Program Standard is structured around four key areas: alcohol and other substances; falls across the lifespan; road and off-road safety; and other areas of public health importance for the prevention of injuries.

In order to achieve the board of health and societal outcomes and overall goal for the *Prevention of Injury and Substance Misuse* Program, all OPHS Foundational Standard and *Prevention of Injury and Substance Misuse* Program Standard requirements must be met. This Guidance Document will address the injury prevention requirements of this Program Standard and the *Prevention of Substance Misuse Guidance Document* will address the substance misuse prevention-related requirements.

d) Intended Audience and Purpose

This Guidance Document is intended to be a tool that identifies key concepts and practical resources that public health staff may use in health promotion planning. It provides advice and guidance to both managers and front-line staff in supporting a comprehensive health promotion approach to fulfil the OPHS 2008 requirements for the Child Health, Chronic Disease Prevention, Prevention of Injury and Substance Misuse and Reproductive Health program standards.

This document is based on a review of various sources of data and information related to injury prevention. References to policy developments contained in this document are solely based on findings in the literature review; any recommendations made in this document do not constitute a referral or endorsement of any particular policies.

Note: In the event of any conflict between the Guidance Document and the *Ontario Public Health Standards 2008*, the *Ontario Public Health Standards 2008* will prevail.

Section 2. Background

Definition of “Injury”

For the purposes of this Guidance Document, the term *injury* shall include all the ways people can be physically hurt, impaired or killed, involving unintentional or intentional damage to the body.

Examples of unintentional injuries are motor vehicle crashes, falls, sport injuries and unintentional poisoning.

Examples of intentional injuries include those resulting from violence, self-harm and suicide.

Linkages to Other Programs

Relevant linkages for Prevention of Injury to other OPHS programs are outlined in Appendix A.

a) Relationship between Injury and the Social Determinants of Health

While all Ontarians are at risk for injury, there are definite patterns associated with age, gender, geography and socio-economic status. Infants and toddlers are at particular risk for falls, poisoning, drowning, burns, scalds and suffocation. School-age children are most likely to suffer traffic-related and playground injuries. Teens and young adults are at highest risk for injuries related to traffic, sports and the workplace. Older adults are most at risk for serious injuries due to falls. Young men tend to take larger risks than young women and are associated with a disproportionately high number of motor vehicle collisions. (1)

The risk of injury is associated with social determinants of health such as income and social status, social support networks, education, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender and culture. Although the ways these determinants interact with injury risk are not yet well understood, there is good evidence linking these factors with an individual’s risk for many causes of injury. (1)

The evidence strongly indicates that people of lower socio-economic status and people who live in less affluent areas die more often as a result of injury than people who live in other areas. (2) Mortality rates are 38 times higher for children living in less affluent areas than among the children of the most affluent parents. (3) Evidence shows that low socio-economic status increases the risk of being injured in road traffic for both fatal and non-fatal injuries, falls, burns, drowning and poisoning for both mortality and morbidity and suicide.

Although the understanding of how the determinants of health affect injury risk is limited, it is clear that these factors do not operate in isolation of one another. (1) For example, people of lower socio-economic status may live in lower-quality physical environments, have lower levels of education and limited knowledge of risk and protective factors. In turn, these factors may lead to a greater risk of injury.

Socio-economic status. A retrospective study of injuries to children in the Kingston, Ontario, area in 1996 found strong evidence of a connection between increasing economic disadvantage and higher risk for childhood injury. (4) The gradients were evident for home, recreation/play and fall injuries but much less so for sport injuries. These findings are consistent with other studies of childhood injury. The authors note that individuals living in poverty have fewer resources for supervised child care or for safety measures in the home. Impoverished neighbourhoods may also have fewer safe play areas and they may be closer to busy streets and industrial sites. They note that other studies have demonstrated strong socio-economic gradients for pedestrian and bicycle injuries and fatalities. Injury death rates among Canadian children in 1991 were 40% higher in impoverished environments. The difference was most significant for deaths from fires, drowning and falls.

Economic disparities were even more evident in hospitalizations for injury among children. Hospital admissions for fire, burn and poisoning injuries are twice as high among less fortunate children. Choking and suffocation injuries are almost 40% higher. (5) A strong relationship between children's use of bicycle helmets and socio-economic status has recently been demonstrated, even in the presence of Ontario's bike helmet legislation. Helmet use rose among all income groups observed in several Toronto locations in 1995 (when the legislation was passed), and stayed high among the highest income groups but fell substantially among the middle and lowest income groups. In 2001, 85% of children in high-income areas were observed wearing helmets compared with 50% of children in middle-income areas and just 33% of children in low-income areas. (6)

Physical environment. Factors that relate to housing and the design of communities and transportation systems all contribute to injury levels. For example, higher child pedestrian injury rates among lower socio-economic groups can be partly accounted for by greater exposure to traffic. (7) Researchers discovered that children in poorer Montréal neighbourhoods had to cross, on average, 50% more streets per day than children in wealthier neighbourhoods. A study of Canadian playgrounds found a significantly higher proportion of play structures in poorer neighbourhoods were below the standards of the *Canadian Standards Association (CSA)* than play structures in wealthier neighbourhoods. (8)

Culture. In Ontario, substantially higher injury rates are found among Aboriginal people who experience three times the injury death rate of Canadians as a whole. Aboriginal people are also among the Province's poorest. (9)

b) The International Picture

Unintentional injuries are one of the leading causes of death, hospitalization and disability around the world. (10) Worldwide, the number of people who die in road traffic crashes each year is estimated at almost 1.2 million. The number injured could be as high as 50 million. (10)

Approximately 28–35% of people aged 65 years and over fall each year (11–13) and this number increases to 32–42% for those over 70 years. (14–16) The frequency of falls increases with age and frailty level. Older people living in nursing homes fall more often than those living independently in the community. Approximately 30–50% of people living in long-term care institutions fall each year and 40% of them experience recurrent falls. (17)

Canada ranks 22nd out of 29 among Organization for Economic Co-operation and Development (OECD) countries when it comes to preventable childhood injuries and deaths. (18).

c) The National Picture

In 2004, injuries cost Canadians \$19.8 billion and 13,667 lives. The direct costs of injury were \$10.72 billion or 54% of total injury costs. Indirect costs were \$9.06 billion or 46% of total injury costs. Unintentional injuries accounted for 81% of injury costs (\$16 billion) while intentional injuries represented 17% (\$3.3 billion) of injury costs. The remaining 2% (0.46 billion) were of undetermined intent. Suicide/self-harm was the number one cause of all injury deaths (3,616) in 2004 followed by transport incidents (3,067) and falls (2,225). Falls accounted for 50% of all injury-related hospitalizations and were the leading cause of total permanent disability (50%) and permanent partial disability (47%). Falls were the leading cause of overall injury costs in Canada, accounting for \$6.2 billion or 31% of total costs. (19)

Canada, however, spends less than one per cent of its health research budget on injury research. (20) As a percentage of the total economic burden of injury in Canada, this amount makes injury the second lowest funded health burden category when it comes to research.

Injury is the leading killer and disabler of Canadians in the prime of their lives and kills more youth and young adults than all other causes combined. (21) Injuries, both intentional and unintentional, are the leading causes of death for those aged 1 to 44 years. (21) Across all age groups, unintentional injury ranks fourth among the leading causes of death after cancer, circulatory system and respiratory diseases. Injury remains responsible for more deaths to Canadian children aged 1 to 14 years than any other cause. (22)

Despite strategies that have been developed for injury prevention, injury has historically been overlooked as a health issue. This is due, in part, to the common belief that injuries are “accidents” that can be neither anticipated nor prevented. (23) Like diseases, however, most injuries follow a distinct pattern and are, therefore, both predictable and preventable. Where evidence-based prevention measures have been introduced, significant reductions in disability and loss of life have resulted. (23)

The dramatic success of mandatory seat belt and bicycle helmet laws are two examples of evidence-based prevention measures. Despite this success, Canadian policy-makers and the public are largely unaware of the human and economic burden associated with preventable injury and the many effective ways it can be reduced. As a result, one of Canada’s most critical health problems continues to go largely unaddressed. As Canada focuses on containing rising health care costs and ensuring the sustainability of Canada’s public health care system, it is critical for policy-makers to recognize injury prevention as one of the most promising means to significantly reduce hospitalizations, wait times and related health care costs. This can be accomplished without compromising the accessibility and quality of health care.

Provincial governments are turning their attention to injury prevention as one of a range of solutions to the health care sustainability challenge. (23) Injury prevention strategies have been developed by Manitoba (24), NWT (25), Nova Scotia (26), Alberta (28) and Ontario (27). These governments have signalled the need for federal leadership in establishing a coordinated, pan-Canadian strategy to support and help drive effective, evidence-based prevention efforts to enable provinces and territories to have a coordinated approach to injury prevention.

Dr. Kellie Leitch recommends that the following key elements be included in a national prevention of injury strategy: (18)

- Leadership and coordination, including the development of specific indicators, desired targets, benchmarks and national standards.
- Social marketing, public promotion, advertising and education to change parent behaviour and educate parents, children and youth.
- Knowledge translation research on injury prevention in children and youth that provides parents and organizations with the tools to create safe environments for their children.
- National standards for consumer products and equipment use.
- Effective data collection, surveillance and information dissemination.
- Collaboration among key stakeholders.
- Incentives and support for parents.

In Alberta, recommended strategies have included (28) the following:

- Raising awareness about the concept of injury.
- Raising awareness and acceptance that injuries can be prevented.
- Encouraging positive attitudes and social norms supporting injury prevention.
- Developing, implementing and evaluating education and community-based programs and public information campaigns aimed at high injury areas, targeting the public, professionals, media and policy-makers.
- Convening injury-related forums to focus on issues likely to influence the development of effective injury prevention interventions.
- Providing opportunities for public and private investment in injury prevention strategies and programs.
- Encouraging integration of injury prevention strategies in related provincial and organizational business plans.
- Encouraging local governments to create safer environments.
- Using champions, including injury survivors, to advance knowledge and awareness about injury priorities.

Pan-Canadian Public Health Network

The current mandate of the Network's *Injury Prevention and Control Task Group*, consisting of injury prevention experts from across Canada, is the identification of key injury prevention priorities and how to enhance the coordination of injury prevention efforts across Canada.

d) Provincial

Injury is clearly one of the most pervasive health challenges facing Ontarians. More than 2,000 people are injured in the province every day. (1) This is more than one person injured every minute. Injury is the fourth leading cause of hospitalization. Unintentional injury is also a very significant contributor to potential years of life lost.

Economic Burden of Injury in Ontario

The total annual cost of intentional and unintentional injuries in Ontario, including direct and indirect costs, amounted to more than \$6.8 billion and 4,643 lives in 2004. (19) Falls, suicide/self-harm and transport incidents were the leading causes of injury-related deaths. This is in addition to the untold amount of human pain and suffering that injury inflicts upon individuals, friends and family members of those hurt or killed. Most injuries in Ontario in 2004 were unintentional.

Unintentional injuries account for approximately \$5.5 billion or 81% of the total cost of injury.

- Falls were:
 - The leading cause of injury deaths per capita (8.6/100,000).
 - Responsible for 51% of hospitalizations due to injury.
 - The most frequently specified cause of emergency room visits to treat injury (29%).
 - The leading cause of permanent partial disability (47%) and permanent total disability (51%) from an injury.

Falls cost \$2.1 billion in Ontario. Transport incidents were the second most costly at \$1.1 billion.

Intentional injuries cost a total of about \$1.1 billion or 16% of the total economic costs of injury. (19) Suicide/self-harm-related injury cost \$842 million in Ontario and violence-related injury cost Ontarians \$266 million.

Healthy public policies are an important component of prevention for a wide range of injury prevention issues, as well as impaired driving. For example, several policies, such as restricting the hours or days of retail alcohol sales, reducing the number of alcohol outlets and increasing alcohol taxes, are shown to be best practices for preventing alcohol-related problems and injuries. (29)

Causes of Injury in Ontario

Acute injuries are the most common reason for emergency department (ED) visits in Ontario accounting for 25% (50% in 10–14 years) and are a common cause of hospitalization (1 in 17). (30) Every 30 seconds, an injury causes someone to visit an Emergency Department (ED). Every ten minutes, someone is admitted to hospital for an injury. (30) Injuries are the fourth leading cause of hospitalization overall. (1)

On July 30, 2009, the Canadian Institute for Health Information (CIHI) released the *2008 Report: Major Injury in Ontario*. This report includes data from 11 lead trauma hospitals collected in the fiscal year 2007–2008. The data source for this report is the Ontario Trauma Registry Comprehensive Data Set (OTR CDS).

Findings of the 2008 CIHI Report

Overall Trends

- In Ontario in 2007–2008, there were 4,354 cases hospitalized with major trauma in participating facilities. This represents an increase of 11% compared to 2003–2004 and an average annual increase of 3% over that time period. The report does not speculate about the reason for this increase.
- In 2007–2008, these major trauma cases accounted for 62,568 days in the participating facilities.
- Most (70%) of these cases were male, with an average age of 47 years.
- Of the 4,354 cases, 12% died either in hospital or in the emergency department.
- The number of in-hospital deaths has decreased by 2% from 2003–2004 to 2007–2008. The number of emergency department deaths has decreased by 12% since 2003–2004. The report does not speculate about the reasons for this decrease.

Trends by Cause

- Motor vehicle collisions were responsible for nearly one-half of hospitalizations (42%).
- Unintentional falls were the second leading cause of hospitalizations (34%).
- Injury purposefully inflicted by another person (homicide and assault) (9%) and suicide and self-inflicted injury (excluding poisoning) (3%) were the next most common causes of injury.
- Among the trauma cases, motor vehicle collisions were the leading cause of injuries in all age groups.
- Falls were the second leading cause of injury in all age groups except among those aged 20 to 34 years. For this group, motor vehicle collisions (excluding cyclists) were still the number one cause of injuries (57%). The second most common cause of injury was injury purposely inflicted by another person (17%).

Context of Injury

- Ten per cent of the major trauma cases were injured while involved in a sports or recreational activity.
- Six per cent of admissions were documented to be work-related.
- More than half of the cases had blood-alcohol testing. Of those, 29% had a blood-alcohol concentration (BAC) greater than zero and 22% had an alcohol concentration (defined as greater than or equal to 17.4 mmol/L) reflecting the legal positive blood-alcohol limit.

Clinical Aspects of Injury

- The most common clinical injury types were the following:
 - Internal organ injuries (85%).
 - Musculoskeletal injuries (72%).
 - Superficial (32%) injuries.
- Ninety-three per cent of documented injury cases involved a blunt injury (including lacerations), 6% had penetrating injuries and 1% were hospitalized due to burns.

Injury Severity

- The Injury Severity Score (ISS) is an internationally recognized scoring system developed to assign a level of severity to injury. ISS scores range from 1 (minor) to 75 (major).
- In Ontario in 2007–2008, the ISS was 24.
- The highest mean ISS occurred among injuries due to:
 - Pedestrian on a railway (ISS=31).
 - Suicide and self-inflicted injury, excluding poisoning (ISS=28).
 - Water Transport (ISS=28).

Ontario's Injury Prevention Strategy, launched in August 2007, is a comprehensive, coordinated plan that aims to reduce the frequency, severity and impact of preventable injury in Ontario. Based on an understanding of the determinants of health, the strategy provides a framework outlining the principles, approaches, settings, levers and strategic directions to effectively prevent injury. This framework is included in Appendix B.

Return on Investment

Achieving a 20% reduction in the incidence of fall-related incidents in older adults would lead to over 4,000 fewer hospital stays and 1,000 older adults in Ontario would avoid being permanently disabled. The direct health care costs avoided would amount to almost \$121 million annually. Every one dollar invested in comprehensive community-based fall prevention for high-risk seniors would provide a US\$7 return on savings in health care costs within the first year. (23)

Utilizing prevention strategies to achieve a 20% reduction in the incidence of fall-related injuries for those aged 0–14 years in Ontario would result in 660 fewer hospitalizations, over 2,300 fewer non-hospitalized injuries and 193 fewer injuries leading to permanent disability. The cost savings would total over \$62 million each year.

A 20% reduction in the incidence of self-inflicted poisoning in Ontario would translate into 50 fewer deaths, 1,600 fewer hospitalizations and 198 fewer people permanently disabled, annually. The cost savings from such a strategy would amount to more than \$91 million annually of which \$54 million would be in direct health care costs alone. (21)

In line with *Road Safety Vision 2010*, achieving a 30% reduction in the incidence of motor vehicle traffic collisions in Ontario would lead to 246 fewer deaths, 2,170 fewer hospitalizations, 22,511 fewer injuries treated outside a hospital setting and 786 fewer injuries leading to permanent disability. The projected cost savings would be approximately \$300 million annually. (23)

The examples above clearly demonstrate that there are interventions that can effectively reduce the incidence of injuries, save lives and provide a substantial return on investment.

Requirement 1

- Alcohol and other substances;
- Falls across the lifespan;
- Road and off-road safety; and may include
- Other areas of public health importance for the prevention of injuries as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).

Some primary sources of data and information for injury include the following:

Provincial

- *intelliHEALTH* data available to Ontario Public Health Units
 - Public health epidemiologists and analysts may be trained on and have access to *intelliHEALTH* Ontario, a web-based application that permits the user to query the Ontario clinical administrative data sets held by the Ministry of Health and Long-Term Care in the Provincial Health Planning Data Base (PHPDB).
- Canadian Institute for Health Information (CIHI) Ontario Trauma Registry. (Minimal, Comprehensive and Death Data Sets) <http://www.cihi.ca/otr>.
- Ontario Ministry of Transportation (Ontario Road Safety Annual Report). <http://www.mto.gov.on.ca/english/safety/orsar>.
- Ontario Injury Prevention Resource Centre <http://www.oninjuryresources.ca>.
 - Injuries Among Seniors in Ontario Report. http://www.oninjuryresources.ca/downloads/seniors_report.pdf.
 - Ontario Injury Compass publications. <http://www.oninjuryresources.ca/Publications/Compass>.
- Institute for Clinical Evaluative Studies *Injuries in Ontario – ICES Atlas*. <http://www.ices.on.ca> (publications).
- Rapid Risk Factor Surveillance System (RRFSS) <http://www.rrfss.on.ca>.
 - Current data collection, analysis, reporting and dissemination processes at a limited number of health unit jurisdictions across Ontario provide the opportunity to locally monitor injury trends.
- Office of the Chief Coroner of Ontario (Ministry of Community Safety and Correctional Services).
 - http://www.mcscs.jus.gov.on.ca/english/office_coroner/about_coroner/about_coroner.html (publications and reports).
 - Public health units (and other researchers) may apply for direct access to the Coroner’s paper files for research purposes through the Office of the Chief Coroner at 416-314-4000. The process requires the applicant to apply for ethics board approval, write up the proposal and send both the approval and the proposal to the Chief Coroner. The application is reviewed by a committee and if suitable, an agreement is developed and a permission letter provided. This process may take several weeks.
- Lead Trauma Hospitals (local injury data and trends).
- Local Hospitals.
- *Lifesaving Society Ontario Drowning Report* <http://www.lifesavingsociety.com>.
- Ontario Neurotrauma Foundation <http://www.onf.org>.

National

- CIHI (National Ambulatory Care Reporting System, Discharge Abstract Database, National Rehabilitation Reporting System, Medical Claims [OHIP], Continuing Care Reporting System).
 - National Trauma Registry <http://www.cihi.ca/ntr>.
- Canadian Community Health Survey (CCHS)
 - Public health units receive the “share” file of record-level CCHS data on Ontario respondents who have agreed their data can be shared with provincial health ministries.
 - This file is distributed to public health units by the Ministry of Health and Long-Term Care (MOHLTC), Health Analytics Branch.
 - Public health units also receive the CCHS Public Use Microdata File (PUMF) of record-level data, where some of the responses are grouped into categories to ensure anonymity. This arrangement is through Statistics Canada, on the advice of MOHLTC, Health Analytics Branch.
- Transport Canada <http://www.tc.gc.ca/eng/roadsafety/resources-researchstats-menu-847.htm>.
- Canadian Association for Suicide Prevention (CASP).
<http://www.casp-acps.ca/Publications/blueprint%20final%20september.pdf>.
- Canadian Agricultural Injury Surveillance Program (CAISP) <http://www.caisp.ca>.
- Statistics Canada (Vital Statistics, Canadian Community Health Survey, Canadian Population Health Survey) from the Ontario Office of the Registrar General; see reference to *intelliHEALTH*.
- Health Canada.
 - *Injury Surveillance in Canada: Current Realities and Challenges Report*
- Public Health Agency of Canada Publications <http://www.phac-aspc.gc.ca/inj-bles/index-eng.php>.
 - Injury Surveillance On-Line http://dsol-smed.phac-aspc.gc.ca/dsol-smed/is-sb/index_e.html.
 - Canadian Hospital Injury Reporting and Prevention Program (CHIRPP)
<http://www.phac-aspc.gc.ca/injury-bles/chirpp/injrep-rapbles/index-eng.php>.
 - Data Sources for Falls Prevention <http://www.phac-aspc.gc.ca/seniors-aines/publications/pro/injury-blessure/scan-analyse/part-partie-a-eng.php#parta-02>.
- SMARTRISK http://www.smartrisk.ca/researchers/economic_burden_studies.
 - *Economic Burden of Injury in Canada Report*.
 - *Economic Burden of Injury in Ontario Report*.
- Lifesaving Society (National Drowning Report). <http://www.lifesaving.ca/main.php?lang=english&cat=publications&sub=dr>.
- Water Incident Research Alliance (WIRA) <http://www.waterincident.ca/home.cfm>.
- Safe Kids Canada <http://www.safekidscanada.ca>.
 - Child and Youth Unintentional Injury: 10 Years in Review (report link under Resource Section on home page).
- Traffic Injury Research Foundation <http://www.tirf.ca>.

International

- CDC Injury Data and Resources <http://www.cdc.gov/nchs/injury.htm>.
- World Health Organization (WHO) http://www.who.int/violence_injury_prevention/surveillance.

Section 3. OPHS Injury Prevention Requirements

a) Falls across the Lifespan

i) Falls in Children

The definition of a fall is, “Unintentionally coming to rest on the ground, floor or other lower level with or without an injury.” (52)

Child Fall-Related Injuries in Canada (22)

- Among children zero to five years, 66% of all injuries occur in the home. (31)
- Falls are the primary reason children are hospitalized, accounting for 37% of childhood injury admissions. (22)
- Approximately 1,700 children 14 years and under are hospitalized every year for a fall related to chairs, beds, stairs and steps.
- Children can fall from adult chairs, high chairs, car seats and bouncy chairs. Falls from bouncy chairs or car seats can happen when they are placed on an elevated surface (kitchen counter).
- Growth and development play a crucial role in the risk of falls in children (rolling over for the first time on a change table while diaper is being changed).
- The majority (68%) of children hospitalized due to falls from beds or chairs are under five years.
- Sixty-three per cent of falls involving stairs and steps were in children under 5 years, 23% for 5–9 years and 14% for children aged 10–14 years.
- Approximately 2,500 children 14 years and under are hospitalized annually for playground injuries of which
 - Fourteen per cent are head injuries, 81% are for fractures in other parts of the body and 5% for other injuries (dislocation, open wound, etc).
 - Playgrounds are a significant setting for injury – especially among school-aged children. (32)
- A fall down the stairs in a baby walker makes it twice as likely for a child to sustain a serious head injury.
- Falls from windows are rare but can lead to serious injury or death when a child reaches an open window while climbing on furniture.
- Babies fall off beds or from cribs while playing, sleeping or trying to get out of it. Between 1990 and 2007, there were 5,403 cases of injuries associated with the use of bunk beds. The most common circumstances cited were playing, sleeping/resting in and getting in or out of the top bunk.
- Trampoline injuries are rising. Between 1990–2007, there was an average annual per cent increase of 15.4% for these types of injuries.
 - The majority of trampoline injuries occur on backyard trampolines from falls on the trampoline mat. (33)
 - Injuries from ground impact are the most severe resulting in almost two-thirds of all fractures and one in five patients being admitted to hospital. (34)
- The 2005 rate of fall-related deaths in children 0–19 years was 0.3 deaths/100,000 persons of which 80.9% were male. (34)

1) Economic Burden of Falls in Children in Ontario

Injuries from falls among children 0–14 years cost Ontario \$311 million in 1999. Many of these injuries could be prevented by constructing safer playgrounds (addressing height and impact-absorbing surfacing), targeting hazards in the home (window guards), modifying/removing equipment known to be dangerous (banning mobile baby walkers) and teaching caregivers and older children how to anticipate and manage potentially risky situations. (21)

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- Alcohol and other substances;
- Falls across the lifespan;
- Road and off-road safety; and may include
- Other areas of public health importance for the prevention of injuries as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).

a) Situational Assessment

- Identify related local policies, programs and environmental supports being developed or implemented within the community, including a falls prevention network and strategy.
- Identify the role of public health in the prevention of falls in children within this local context, considering all aspects of a comprehensive health promotion approach.
- Identify gaps in programs related to falls prevention in children.
- Support partners in assessing their capacity to prevent falls in children (seek opportunities to build understanding of linkages between issues, partners and programs).

b) Partnerships

Identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

Local Community Partners

- Retailers – (e.g., sporting goods, protective equipment, furniture, playground equipment, baby gates)
- Local hospitals
- Ontario Early Years Centres
- Brighter Futures Projects – Canada Action Program for Children (CAPC) and Canada Prenatal Nutrition Program (CPNP)
- Aboriginal CAPC as they include local home visiting and group programs targeted to high-risk families
- Family physicians
- Family and Children’s Services Home Visiting Program
- Day care providers (must have their playground inspected)
- Municipal planners (playgrounds)
- Boards of education
- Recreation centres
- Child care centres/preschools
- Licensed home day cares
- Unlicensed home day cares through informal associations
- Parent groups
- Farm associations
- Researchers
- Youth sports leagues

National/Provincial Partners

- Safe Kids Canada
- Safe Communities Canada
- Ontario Injury Prevention Resource Centre (SMARTRISK)
- ThinkFirst
- Lead Trauma Hospitals (Appendix C)
- Ontario Neurotrauma Foundation (ONF)
- Public Health Agency of Canada
- Provincial Trauma Network
- Health Canada – Product Safety

Protective Factors

- Parental Supervision
 - Not allowing children under five years on playground equipment higher than five feet and actively supervising play of young children.
- Wearing the Gear: wrist/knee/elbow pads/helmet. (10)
- Playground equipment meeting CSA standards (equipment height less than 1.5 metres [five feet]; soft surface material).
- Access to home safety devices.
- Home equipment (roof railings, stair gates, window guards and securing furniture (big screen television, bookcase, etc)).

Risk Factors

- Height of a fall
 - The greater the height, the more severe the injury. (10)
 - Falls from heights less than 1.5 metres do not usually cause multiple or serious injuries except if a child is dropped by a caretaker.
 - Short height falls may have long-term implications including speech problems and learning difficulties. (35)
 - Falls from playground equipment greater than 1.5 metres (five feet) increase the risk of injury.
- Gender
 - Boys are more at risk: 64.3% of fall-related hospitalizations were male in 2005/06. (34)
- Products
 - Walkers.
 - Trampolines: multiple users at the same time and inadequate supervision.
 - Bunk beds: children under the age of six sleeping on the top bunk.
 - Baby slings/carriers worn by the caregiver have led to serious injuries and in some cases, the death of babies in Canada. Slings that use knots or rings to hold the two ends of fabric together pose a potential safety risk because knots can come loose and fabric can slip through the ring. (Health Canada, Consumer Product Safety). <http://www.hc-sc.gc.ca/cps-spc/index-eng.php>.
- Age and Development of the Child
 - Zero to five years: falls from one level to another, fall into a hole/pit, fall from a bed or other furniture.
 - Five to nine years: falls from playground equipment.
 - Ten to nineteen years: falls involving skates, skis, sport boards, roller blades and from tripping, slipping and increasing heights at work. (36)

- Time of the Year
 - Injuries are more likely to occur in warmer weather months (may be due to more outdoor activities/more leisure time. (36, 38)
- Underlying Conditions
 - There is evidence that children who are minimally mobile but considered immobile by their caregiver due to disability are at increased risk of falls. Children with mental disability, psychomotor or sensory disability or in a wheelchair are at increased risk of falls. (36)

c) The Social Determinants of Health (poverty, education) (36–38)

It is important to consider the effect of broader social determinants on the incidence of childhood falls. Given the different settings and types of childhood falls, it is not surprising that prevention efforts take place across a range of sectors. For example, preventing falls from work in the agricultural sector means working with parents, governmental and commercial bodies in that sector, as well as landowners, farmers, manufacturers of farming equipment, occupational health workers, labour unions and community groups. Efforts to prevent falls in the home include a range of partners such as municipal authorities, architects, builders, town planners, furniture designers, product manufacturers, health care services, social services and non-governmental organizations. Children may also be injured as a result of one or more of a range of factors relating to their caregiver’s poverty, ignorance and lack of control over the environment, fatigue, depression and malevolence. Agencies that might address some of these factors include those dealing with mental health, criminal justice, social service agencies and community and non-governmental organizations.

The following recommended range of activities is based on evidence informed/promising practices and policies.

d) Policy

Prevention Strategies for Playground Injuries (32)

Equipment

Efforts should be directed at decreasing the risk of a fall from playground equipment through the following actions:

- Reduce the fall height
 - Modify existing playgrounds to reduce the fall height to a maximum of 1.5 m (five feet) for preschool-aged children and 2.3 metres (seven feet) for school-aged children.
 - Use innovative designs for new equipment with lower heights.
 - Use age-appropriate equipment.
 - Spaces should be smaller than 3.5 inches and larger than 22.5 centimetres (nine inches) and have good handrails, barriers and railings.
- Decrease the likelihood of falling from equipment
 - Use protective barriers and guardrails.
 - Use vertical rather than horizontal bars (discourages climbing).
 - Use peaked or curved surfaces for guardrails (discourages use as a play surface).
 - Ensure that adults are actively supervising.

- Improve the protective surfacing under and around play equipment by using
 - Surfaces should be soft rubber mats, sand, pea gravel or woodchips.
 - Loose fill, such as coarse sand or pea gravel (smooth, round, pea-sized stones)
 - Depth recommendations for loose fill: minimum of 15 centimetres (six inches) for preschool equipment; minimum of 30 centimetres (12 inches) for full-sized equipment.
 - Wood chips.
 - Synthetic surfaces.
- Increase parental/caregiver awareness
 - Supervise children younger than five years.
 - Clothing items can become trapped in equipment and may result in strangulation, so remove drawstrings and other cords from clothing.
 - In the winter, use a neck warmer rather than a scarf and use mitten clips rather than cords.
 - Bicycle helmets should not be worn by children on playground equipment due to the potential for entrapment and strangulation.
 - Children five years and younger should use only playgrounds designed for preschool children.
 - Look for adequate surfacing, such as deep, loose fill (see recommended depths above). Good surface materials include sand, pea gravel (smooth, round, pea-sized stones), wood chips and synthetic surfaces. Grass, dirt, asphalt and concrete are not acceptable surfaces for underneath and around equipment.
 - Advise local playground operators regarding concerns about the safety of local playground equipment.

Health Care Providers

- Report playground injuries to local playground operators and authorities.
- Educate playground operators about playground injuries and their prevention.
- Advocate for compliance with the Canadian Standards Association (CSA) playground standards in the community.
- Only day cares in Ontario applying for licensing are required to have playground inspections to ensure they meet CSA standards. For playground standards, see Safe Kids Canada's website.
- A copy of CSA standards can be found at <http://www.csa.ca> or by calling 1-800-463-6727.
- A chart on the various options is available at <http://www.safekidscanada.ca>.
- Surfaces should be soft rubber mats, sand, pea gravel or woodchips to a depth of at least 15 centimetres (six inches); heights – equipment should be less than 1.5 metres (five feet) and key elements include spaces should be smaller than 3.5 inches and larger than 22.5 centimetres (nine inches), and have good handrails, barriers and railings.
- Advocate for the use of barriers (gates).
- Advocate for apartment building window bars in apartment buildings higher than one storey. (36)

e) Best Practice

- Active parental supervision is recommended. (31)
- Bunk beds: the top bunk is not safe for children under age six; allow only one person on top bunk; no playing on top bunk; guard rails should be installed on all sides and meet standards (ASTM F1427). (34)
- Trampolines: children less than six years should not use a trampoline; supervise children constantly; follow assembly instructions; allow only one person on the trampoline at a time; ensure the model meets ASTM International Safety standards and set up on level ground surrounded by impact absorbing surface, such as loose fill or sand. (34)
 - The Canadian Paediatric Society and the Canadian Academy of Sport Medicine recommend (among other things) that trampolines should not be used for recreational purposes at home and should not be part of outdoor playgrounds. (33)

Key Message

Children under five years should be kept off playground equipment higher than 1.5 metres (five feet).

f) Programs

Kids Can't Fly (Window Falls Prevention Program for Urban Settings) is a program geared toward preventing falls from high rises targeting children aged zero to six years. Its aim is to

- Increase awareness of the danger posed by open windows.
- Expand outreach.
- Make available information and technical assistance to the public.
- Provide a forum for discussion with industry representatives on the design and manufacture of an operable window guard.
- Expand inter-agency cooperation and involvement.
- Encourage property owners to voluntarily install window guards.
- Identify and track voluntary installation of window guards.
- Improve coordination for accurate tracking of incidents.
- Participate in industry discussion on product specifications and standards.

In New York City, the program decreased window falls by 50% and deaths by 35% within two years after the program was started. (39)

Safe Kids/Healthy Neighborhoods Program (now known as the Injury Free Coalition for Kids in Harlem) was developed in response to the high incidence of severe injuries to children aged 5 to 16 years in Harlem. Because the leading causes of injury were falls and motor vehicle collisions and assaults, the Harlem Hospital Injury Prevention Program (HIPP) initiated a coalition to reduce outdoor injuries and assaults to school-aged children. The coalition developed alliances with city and community agencies and the private sector to

- Renovate playgrounds.
- Involve children in safe, supervised activities that would teach them useful skills.
- Provide injury and violence prevention education.
- Provide safety equipment (bicycle helmets) at a reasonable cost.

The former Safe Kids/Healthy Neighborhoods Program (now known as the Injury Free Coalition for Kids) has been replicated in 44 sites in 40 cities across the US. For more information visit www.oninjuryresources.ca/BestPractices/HarlemHospitalSafeKidsHealthyNeighborhoods.htm.

Home Safety Checklist

- Plan interventions that use home assessment tools to assess caregiver, child and environmental characteristics such as *The Chilliwack Safe Baby Program*. (31)

Risk Watch (Canadian version from the Ontario Office of the Chief Fire Marshal) is a school-based, comprehensive injury prevention program developed by the US National Fire Protection Association (NFPA). This program was adapted for use in Canada by SMARTRISK in collaboration with public health. It links teachers with community safety experts and parents. The curriculum is divided into five age-appropriate teaching modules (Pre-K/Kindergarten; Grades 1–2; Grades 3–4; Grades 5–6 and Grades 7–8) and each module addresses eight topics (motor vehicle, bike/pedestrian and water and ice safety, the prevention of poisoning and injuries from falls/in playgrounds, firearms, choking/strangulation/suffocation and fires/burns). The ninth lesson brings together concepts in a culminating activity. Topics cover the areas of greatest risk of unintentional injury for children age 14 and under. This program is recommended by Curriculum Services Canada to support the grade three and four curriculum across Canada in addressing personal safety and injury prevention.

- <http://www.curriculum.org/csc/resources/riskwatch34.shtml>
- <http://www.ofm.gov.on.ca/english/Fire%20Safety%20&%20Public%20Education/Risk%20Watch/default.asp>

TD ThinkFirst for Kids is a school-based curriculum program for children in grades K–8, which was designed as a teacher’s resource. It meets the curriculum requirements in all Canadian provinces and territories and is endorsed by Curriculum Services Canada. The six-week program was developed by a multi-disciplinary team including teachers, curriculum experts, physicians and neuroscientists and teaches children how to think first and play safely to prevent brain and spinal cord injuries. Developmentally appropriate classroom interactions and homework assignments deal with violence prevention, playground/sport/recreation as well as bicycle, water, vehicle/pedestrian safety and the anatomy and function of the brain and spinal cord. For more information, visit <http://www.thinkfirst.ca/programs/tdthinkfirst.aspx>.

g) Promising Practices

Parenting programs and home visits especially to high-risk families are effective in improving home safety especially when the information is targeted, age-appropriate and combined with the provision and installation of safety equipment. (36)

Nurse home visit programs

- Children from families who received the parenting education and training programs usually from home visiting programs had fewer injuries than children from families who had not received the programs. (40)
- Home safety education and safety equipment found a lack of evidence that these interventions reduced childhood injury despite strong evidence that they increased home safety practices and behaviours. (41) It may be that interventions to improve home safety are effective in reducing child injury only if they also address other aspects of parenting. (40) This has specific implications and crossover with *Healthy Babies, Healthy Children*.

Other promising practices (31)

- Interventions occur after an injury or in a health care setting.
- Focus on a single cause of injury (e.g., window falls or bunk beds).
- Use home assessment tools that assess caregiver, child and environmental characteristics.
- Target the caregiver rather than the child.
- Increase caregiver knowledge about the age and stage of the child and how this affects the risk of injury.
- Increase caregiver's belief that their child can be injured and that injuries are serious.
- Interventions using the WHO Safe Communities model show a decrease in injury hospitalization rates for children.

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a) *Collaborating with and engaging community partners;*
- b) *Mobilizing and promoting access to community resources;*
- c) *Providing skill building opportunities; and*
- d) *Sharing best practices and evidence for the prevention of injury and substance misuse.*

a) Priority Populations

- Parents/caregivers of infants and young children from birth to two years.
- Parents/caregivers of boys.
- Families in low socio-economic and low-income neighbourhoods with poor-quality housing.

Evidence-based/promising program

- Supportive home visiting and provision of safety equipment for high-risk families. (36)

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).*

These efforts shall include:

- a) *Adapting and/or supplementing national and provincial health communication strategies and/or*
- b) *Developing and implementing regional/local communication strategies.*

Examples of mass media campaigns for parents and health workers are outlined below. (36)

A Step Ahead (York Region/Toronto)

This awareness campaign for falls in children has had a process evaluation not outcome evaluation (awareness campaign). (42) The campaign is targeted to caregivers of children aged five to nine. It includes fact sheets, brochures, posters and mall advertisements.

Be Aware. Be There Campaign (Central West)

This campaign includes promising/awareness campaigns, child safety resources for teachers and early childhood educators and posters that encourage parents to always be aware what their child is doing and actively supervise them beginning at a young age. It addresses child choking, poisoning, falls down stairs and burns and includes EB Monkey safety website with resources for children, parents/grandparents, teachers and early childhood educators. (43)

Million Messages (Capital Health)

Includes best practice at professional visits and a program to standardize injury prevention messages for parents of children from birth to five years of age (immunization clinics, healthy beginnings, home visits and follow-up for healthy beginnings and prenatal classes). (44)

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

Community Action

The aim is to achieve Canadian Standards Association (CSA) compliance of all public playgrounds. This process should include the following:

- Inspection by certified experts to assess and document hazards.
- Prioritize hazards for modification or correction.
- Maintenance of playground equipment, surfacing and grounds.
- Injury reporting and follow-up to correct hazards.
- Planning of future play areas that comply with the standards.

a) Evidence-based/Promising Policy

Playground safety standards required for day cares

- The CSA standards can be found at <http://www.csa.ca> or by calling 1-800-463-6727.

Enforce the Canadian ban on baby walkers

- Since 2004, baby walkers are banned in Canada. It is a criminal offence to sell, advertise, give away or import new or used baby walkers. Health Canada inspectors enforce law. (34)

Cribs

- Cribs made before September 1986 do not meet current safety regulations and should not be used. It is a criminal offence to advertise, sell, or give away these cribs.

Bunk Beds

- Remain unregulated product under the *Hazardous Products Act*.

Trampolines

- Remain unregulated under the *Hazardous Products Act*.

Building Codes

- To ensure windows on second stories and higher have mechanism to prevent falls. Currently bylaws are in place in the City of Toronto and Mississauga. (35)

Warning Labels

- Place warning labels on car seats and bouncy chairs to place on floor.

Safety Gear

- Required on ski slopes and skateboard parks.

Bylaws

Nova Scotia has provincial legislation that requires mandatory helmet use for cycling, skateboarding and in-line skating. This legislation can be found at <http://www.gov.ns.ca/news/details.asp?id=20070125003>.

The City of Guelph requires every person in-line skating on a highway to wear at all times a Canadian Standards Association (CSA) approved helmet appropriate for in-line skating, with the chin strap securely fastened.

Both Nova Scotia and Guelph were able to overcome the liability concerns at the provincial and municipal level and there are a number of municipalities currently considering similar laws, including the City of Ottawa.

b) Crossovers

- **Public Health Inspectors** if they are involved in playground inspections.
- **Child Health staff** – *Healthy Babies, Healthy Children*.

c) Key Resources

Safe Kids Canada

- Information Line 1-888-SAFE-TIPS (1-888-723-3847).
- **Ontario's Children Rural Safety Program Resources.**
- **North American Guidelines for Children's Agricultural Tasks (NAGCAT)** is a project to help farm families engage their children safely in farming life. <http://www.safekidscanada.com/SKCFForParents/section.asp?s=Safety+Information+by+Topic&slD=10774&ss=Rural+Safety&sslD=11336&sss=NAGCAT+Guidelines&ssslD=12734>.

Canadian Standards Association (Playground Equipment): <http://www.csa.ca>.

Alberta Centre for Injury Control & Research: <http://www.acicr.ualberta.ca>.

British Columbia Injury Research and Prevention Unit: <http://www.injuryresearch.bc.ca>.

Best Start Resource Centre: http://www.beststart.org/index_eng.html.

Canadian Paediatric Society

- <http://www.cps.ca/> contains information for parents as well as position statements on preventing playground injuries and trampoline use in homes and playgrounds.
- <http://www.cps.ca/english/statements/IP/IP07-01.pdf>.
- <http://www.caringforkids.cps.ca/keepkidssafe/playgroundsafety.htm>.

Centre for Disease Control

<http://www.cdc.gov/safechild>.

Protect the Ones You Love: Child Injuries are Preventable 2009. Comprehensive website that addresses multiple childhood injury issues including falls. Fact sheets, podcasts, etc., are available.

WHO 2008 World Report on Child Injury Prevention

http://www.who.int/violence_injury_prevention/child/injury/world_report/en/index.html

Health Canada

Consumer Product Safety

<http://www.hc-sc.gc.ca/cps-spc/index-eng.php>.

The use of baby slings and baby carriers (worn by the caregiver) has led to serious injuries and in some cases, the death of babies in Canada. Slings that use knots or rings to hold the two ends of fabric together pose a potential safety risk because knots can come loose and fabric can slip through the ring, causing the baby to fall. It is important to choose the right carrier for babies.

<http://www.hc-sc.gc.ca/cps-spc/pubs/cons/child-enfant/content-contenu-eng.php#Slings>.

Safer Homes for Children, Safe Kids Canada, 2006.

<http://www.safekidscanada.ca/SKCFForPartners/custom/SaferHomesforChildrenGuideEng.pdf>.

Ontario Injury Prevention Resource Centre: <http://www.oninjuryresources.ca/home>.

Playground Falls – Ontario Injury COMPASS Vol. 4, Issue 4. April 2007.

Ontario Neurotrauma Foundation: <http://www.onf.org>

ThinkFirst: <http://www.thinkfirst.ca/index.aspx>.

ii) Falls in Older Adults

1) Economic Burden of Falls in Older Adults in Ontario

In 1999, unintentional falls cost \$1.9 billion, of which \$927 million was attributed to the direct costs of falls among those 55 years and over. (21) It is estimated that about 40% of falls leading to hospitalization are the result of hip fractures. (1,45) This statistic becomes even more alarming when one considers that the proportion of Ontarians aged 65 and older will nearly double from 13% of the total population in 2004 to 24% in 2031. (46) Falls in older adults can be prevented by recognizing and acting on risk factors such as a history of falling, impairment related to cognition, balance and gait, lack of exercise, low body mass index, the use of multiple medications and hazards in the home. (47) Existing strategies have demonstrated the ability to reduce the incidence of falls among seniors by 20% or more. (48–49)

In 2007–2008: (50)

- Unintentional falls were the second leading cause of hospitalizations (34%).
- Falls were the second leading cause of injury in all age groups except among those aged 20 to 34 years. For this group, motor vehicle collisions (excluding cyclists) were still the number one cause of injuries (57%).

In 2004/05: (51)

- There were over 1.3 million Ontario emergency department visits as a result of an injury. Adults 65 years and older accounted for 11% of these visits (n=146,000).
- Every four minutes at least one senior visits an emergency department with an injury.
- Seniors accounted for 40% of injury hospitalizations.
- Every 20 minutes, at least one senior is hospitalized with an injury.
- Injured seniors occupied more than 1,000 acute care beds in hospitals in Ontario.

A fall is defined as, “Unintentionally coming to rest on the ground, floor or other lower level with or without an injury.” (52)

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).*

a) Situational Assessment

- Identify related local policies, programs and environmental supports being developed or implemented within the community, including a local falls prevention network and/or falls prevention strategy.
- Identify the role of public health in the prevention of falls within this local context, considering all aspects of a comprehensive health promotion approach.
- Identify gaps in programs related to falls and falls risk factors.
- Support partners in assessing their capacity to prevent falls (seek opportunities to build understanding of linkages between issues, partners and programs).

b) Partnerships

Identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

- Individuals and organizations representing older persons such as non-profit foundations, societies for older persons, support groups for those with chronic health problems, caregiver groups, etc.
 - Examples include members of seniors' recreational sports clubs (Tai Chi, Aqua Fit classes, etc.) associations for retired professional persons (retired teachers networks); faith communities; Women's Institute members; seniors centres; adult retirement communities/homes; support groups for persons with chronic disease (e.g., arthritis); clubs for specific ethnic groups and others.
- Researchers from disciplines including epidemiology, behavioural/social sciences, medicine and allied health disciplines.
- Falls prevention experts.
- Educators with skills in the appropriate delivery of information for older adults including those with limited literacy, non-dominant language or representing cultural minorities.
- Public Safety partners (e.g., public transportation, municipal planners, architects, building/ trade/maintenance workers, building managers, those who design public building codes and standards. (53)
- Manufacturers/retailers that create and distribute products/services for older people. (53)

Local Community Partners

- Seniors
- LHINs (Aging at Home Strategy)
- Community accessibility committees
- NGOs, visiting nursing agencies (e.g., VON)
- Long-term care facilities
- Red Cross
- St. John's Ambulance
- Seniors centres and organizations
- Home health care equipment suppliers (Shoppers Home Health)
- Lifeline
- Allied Health practitioners (e.g., occupational therapists, physiotherapists)
- Pharmacists
- Health care service providers (VON, CCAC, LHINs, etc.) working with seniors at high risk of falling
- Family Physicians/Family Health Teams
- Dieticians
- Public health nutritionists
- Nurse Practitioners

- Geriatric Emergency Nurses (GEM RNs)
- Paramedics/EMS
- Local hospitals
- Educational institutions
- Hardware stores

National/Provincial Partners

- Osteoporosis Canada
- Ontario Injury Prevention Resource Centre
- Ontario Seniors' Secretariat
- Canadian Centre for Activity in Aging
- Canadian Diabetes Association
- Specialty geriatric outreach programs
- Canadian Association for Retired Persons (CARP)
- Lead Trauma Hospitals (Appendix C)
- Provincial Trauma Network
- Safe Communities Canada
- Alzheimer's Society
- Arthritis Society
- Community Care Access Centres
- Ontario Neurotrauma Foundation
- VON
- Veterans Affairs Canada
- Researchers

Protective Factors

Behavioural Change:

- Related to a healthy lifestyle (e.g., non-smoking, moderate alcohol consumption, maintaining weight within normal range in mid to older age, age-appropriate level of sport, appropriate level of walking, etc.) promotes healthy aging and independence. (53)

Environmental Modification:

- Home installation of grab bars, railings, slip-resistant surfaces in bathroom, provision of lighting and handrails.
- Age-friendly design in public places. (54)
- Using a handrail.
- Hip protectors. (55)

Risk Factors

There are four main categories of risk factors that increase the risk of a fall. (47)

Biological:

- Advanced age and female gender, physical disability, osteoporosis, stiffness, poor vision, chronic and acute illness, cognitive impairment. (47)
- Concurrent co-morbidities (e.g., dementia, cardiovascular disease, bowel and bladder problems, Parkinson's disease, arthritis, osteoporosis, brain injuries).
- Mobility impairments (e.g., lower limb muscle weakness, poor balance, impaired control of gait and reduced physical fitness).

Behavioural:

- History of a previous fall, fear of falling, lack of exercise, poor footwear, inappropriate clothing, poor nutrition/hydration, excessive alcohol or other substance misuse.
- Attempting activities that exceed physical capabilities (e.g., pruning, snow clearing, reaching to clean top of cupboards, etc). (47)
- Medication – use of
 - Benzodiazepines.
 - Psychotropic medication.
 - Multiple drugs (polypharmacy).
- May be prescribed by different doctors and filled in different pharmacies for someone with one or more health problems. (56)

Environmental Hazards: (47)

- **Home** hazards: loose carpets, poorly lit stairs, cluttered floors, slippery showers, lack of grab bars, narrow uneven stairs, slippery uneven surfaces, poorly fitted handrails, poor lighting, family pets.
- **Community** hazards: pavement cracks, uneven sidewalks, tree roots, slippery footing, obstacles in walkways (bike racks, garbage cans).
- **Institutional** hazards: poorly designed/maintained buildings, poor lighting or contrasts, slippery floors and lack of handrails. (47)

Social and Economical: (47)

- Living alone, lack of social networks, lack of transportation, language barriers, illiteracy, inadequate income, low education, inadequate housing.
- Ethnicity and race.

The following recommended range of activities are evidence-based or are promising programs and policies.

c) Policy (54)

In collaboration with community partners:

- Influence the development, adoption and implementation of a comprehensive provincial falls prevention strategy that includes priorities and targets to support national and regional efforts to reduce fall and related injuries.
- Advocate for policies that support seniors' health and safety such as vision correction, foot care, mobility aids and home care services.
- Advocate for improved access to health services.

Inform and influence the development of policies and promote the implementation of the following:

Built Environment:

In general, policies that promote the factors that determine Age-Friendly Communities. (16)

- Crosswalk speeds (increased time to cross the street).
- Street lighting.
- Encourage the safe use of curbs cuts. <http://www.tfrc.gov/safety/pedbike/pubs/05085/chapt8.htm>.
- Snow removal/salt/sand available.
- Quality of sidewalks.
- Marking hazardous walkways.
- Stairway design: uniform height (unit rise) and depth (unit run) for every step (7 inches high/11 inches deep)
- Signage around seniors' complexes.
- Grab bars and slip-resistant surfaces in the bathroom.
- Appropriately sized handrails on both sides of stairs.
- Lighting at top and bottom of stairs.
- Two-way light switches.
- Comfort-level toilets.
- Flush thresholds between rooms and flooring variations inside and out.
- Walkable communities (link to road safety).

Address the Social Determinants of Health:

- Subsidize home modifications, eye glasses, protective equipment, foot care, transportation issues, etc.
- Advocate for the integration of safety standards that exceed current building codes.
- Assist partners in the development and implementation of falls prevention policy in public places such as seniors' centres, retirement homes, long-term care facilities, hospitals, etc.
- Note that families may not be able to afford a product or correct installation.

Promising Policies:

- Integrate falls prevention into curriculum for health care providers, pharmacists, physicians, personal support workers, nurses and review medications.
- Encourage Community Care Access Centres (CCACs) to fund the time for home visitors to implement falls prevention activities (Personal Support Workers [PSW] to implement the home support exercise program from the Canadian Centre for Activity in Aging).

Programs Should:

- Promote equal access to recreational activities.
- Promote access to physical activity initiatives for workplace and schools (crossover to Chronic Disease prevention).
- Promote eye exams and pharmacy consultations.
- Advocate for home environment assessment and modifications.

d) Program and Social Marketing

Interventions effective for public health in collaboration with community partners include the following:

Single-factor interventions: Those that are most effective among community dwelling older adults include exercise, home hazard assessment and modification and withdrawal of psychotropic drugs. (53) Examples of available programs for community dwelling older adults include *Meds Check* and *Stand Up*.

Multi-factorial risk-factor assessment and management approaches have a high level of success for preventing falls cognitively intact persons. Multi-factorial, comprehensive approaches are more efficient and produce better results than single-factor interventions. (53)

Elements of successful multi-risk factor approaches include a combination of interventions such as:

- Exercise programs.
- Behaviour change.
- Medication review and modification.
- Treatment of contributing health conditions.
- Environmental risk assessment and modification.
- Balance and gait training with appropriate use of assistive devices.
- Managing visual concerns.
- Educating and addressing orthostatic hypotension and other cardiovascular problems. (53)
- Advocate for an evidence-based multi-factorial clinical fall risk assessment screening process for family physicians.
- Advocate that physicians/nurse practitioners have a billable assessment fee as in the Australian model. (57)
- Link with clinical care to expand the reach of healthy and frail seniors (when seniors enter the primary health care system and coordination of homecare services with Community Care Access Centres (CCAC, VON, LHINs, etc.).

Physical Activity:

- Moderate physical activity lowers the risk of falls and fall-related injuries.
- Exercise can improve balance, mobility and reaction time.
- Promoting appropriate physical activities or exercises to improve strength, balance and flexibility is one of the most feasible and cost-effective strategies to prevent falls (Tai Chi, water fitness, etc.). (53)
- Exercise is more effective when engaged in for 10 weeks or longer.
- Group programs have been shown to be less effective than individually prescribed exercises, with the exception of group Tai Chi.
- Exercise programs should be modified for cognitively challenged seniors (e.g., dementia, brain injury, etc.).

Dietary recommendations under review:

- The literature supports that most older adults require calcium and vitamin D supplementations. There is no consensus on what amounts are optimal, however, use of Vitamin D and calcium in long-term care settings is shown to be effective in reducing the fall rates for frail adults.
- Consider fortification (e.g., Vitamin D in milk, the Food Guide recommends older adults take a vitamin supplement).
- Promote access to supplements for those who cannot afford it (nursing homes may not provide the best supplements).
- Promote modification to the drug formulary for access to the most palatable osteoporosis medication.

Medication Review: (11)

- Older people tend to take more medications.
- Many medications interact with alcohol and over-the-counter/herbal medicines.
- Age alters mechanisms for absorbing and metabolizing drugs.
- Failure to take medications as directed impacts the risk of falling.
 - Recommendations include:
 - Use of the lowest effective dose.
 - Decrease chronic use of medications.
 - Supervision and the use of walking aids when taking some medications.
 - Limit multiple medication use.
 - Encourage non-pharmacological approaches.
 - Evidence-based key messages for prevention of postural hypotension.
 - MedCheck: Three or more medications or chronic diseases (best practice).
 - In the absence of electronic health records, seniors should get their medications from one pharmacy (best practice).
 - Knowledge is the best medicine.
 - Rx&D – a medication record and pamphlet including a presentation (also called CareLink) (best practice).
 - Medicine Clean Out: Campaign to get people to take their medication to a pharmacy for disposal (promising practice).
 - Side effects of medication: Use less dangerous alternatives of anti-anxiety medication/sleeping pills to decrease risk of falling.
 - Exercise caution when using new prescription medications (side effects).

Interactions with Alcohol and Other Substances:

- Interactions can occur between medications, illicit drugs and alcohol:
 - medication includes prescription drugs, vitamins, herbal products and over-the-counter, etc. (crossover to substance misuse).
- Keep medication safely out of the reach of others (keeping oxycontin locked up – crossover with child and adolescent health best practice).

Other

- Home safety checklist with senior making modifications/carrying through on recommended changes (removing scatter mats, clutter, pets, stairs, unstable step ladders) – promising practice when part of a multi-factorial plan.
- Health Canada *Safe Living Guide*.
- Use of paint colour for contrast between stair and wall.
- Canada Mortgage and Housing guidelines for home safety.

Evidence-based/Promising Programs and Social Marketing

Stay on your Feet (SOYF) is a multi-strategy falls prevention intervention developed for seniors in the North Coast Region of New South Wales in Australia in the early 1990s. The program addresses eight falls risk factors based on published epidemiological evidence and a range of strategies based on the Ottawa Charter for Health Promotion. SOYF is a best practice, determined by a multi-phase worldwide review process, highlighted in *Preventing Neurotrauma: A Casebook of Evidence-based Practices*. SOYF was also implemented in three Ontario communities (Kingston, Elliot Lake, Grey Bruce) as part of the Ontario Neurotrauma Foundation strategic funding initiative. Several documents, including background, evaluation and implementation advice, can be found at http://www.onf.org/index_prev.html. (55)

Falls Intervention Team (FIT) is a community-based interdisciplinary, multi-factorial falls prevention strategy for frail community-dwelling older adults aged 65 years and over. FIT was developed by three core partners: Baycrest Centre, Toronto Public Health and York Region Community and Health Services Department.

Objectives include:

- To reduce the number and degree of modifiable fall risk factors.
- To increase social participation compared to pre-intervention status.
- To reduce falls compared to pre-intervention status.
- To maintain adherence to a home exercise program.

The Intervention Protocol includes:

- Comprehensive individual assessment.
- Identification and modification of fall risk factors.
- Instruction in the Home Support Exercise Program (HSEP).
- Support for behaviour change.

The intervention is delivered by a public health nurse and a physiotherapist. Participants are assessed at three time points (pre-intervention, post-intervention and at six months post-intervention) using a standardized set of outcome measures.

Assessment measures include:

- InterRAI-CHA.
- Berg Balance Scale.
- Timed Up and Go.
- Activity Specific Balance Confidence Scale.
- Reintegration to Normal Living Index.

Building on the positive results from the FIT Phase 1 and 2 pilot projects, a number of FIT-informed initiatives have resulted including LIFE_KEN_FIT (supportive housing setting), GEM-FIT (ED-community setting) and Sunnybrook-TPH FIT Program (hospital falls prevention clinic – community setting).

Other FIT-informed programs under development include Flemingdon Health Centre Falls Prevention Program, North York General Hospital-TPH FIT Program, University Health Network-Toronto Western Hospital-St. Christopher House Falls Prevention Clinic-TPH FIT Project and several City of Toronto supportive housing sites.

Steady as you Go (SAYGO) from *Capital Health*, Alberta, is a falls prevention program for seniors in the community. Two programs are available depending on senior's ability level. SAYGO #1 is a free 2-part falls prevention program, for older adults who are healthy and living independently in the community and SAYGO #2 is aimed at frail adults. <http://www.capitalhealth.ca/ProgramsAndServices/Supplementary/SteadyAsYouGo>.

A Million Messages for Seniors Falls Prevention is a program that includes a package of resources with information on falls prevention for older adults. Using illustrated characters, key messages about falls prevention are presented to seniors. Information sheets accompany the visual display to provide more detailed information about steps older adults can take to prevent falls. <http://www.capitalhealth.ca/EspeciallyFor/Seniors/MillionMessagesSeniorsFallsPrevention>.

Stand Up! This program was designed in Québec for community groups, such as senior citizen centres, CLSCs and municipal recreation services. It includes a 12-week program with three components (group exercises, exercises at home and discussion sessions on fall prevention). This program offers intensive as clinical interventions while being accessible to a large number of seniors living at home. Training sessions are regularly given by Montréal Public Health. (57) <http://www.santepub-mtl.qc.ca/programmechute/standup.html>

Seniors Fitness Instructors Course (SFIC)/Home Support Exercise Program (HSEP)/Fit for Active Living (GFAL) are research evidence-based programs from the Canadian Centre for Activity in Aging at the University of Western Ontario <http://www.uwo.ca/actage>.

Under the **Long-Term Care Homes Act, 2007** regulations, **Long-Term Care (LTC) homes** are required to have both individual plans and home programs and policies in place to prevent falls. LTC home operators in Ontario are required to:

- Identify and regularly monitor individual risks and needs to prevent falls in each LTC resident's Plan of Care.
- Develop and implement a Falls Prevention Program within their LTC home.
- LTC homes, as members of their community, are expected to work closely with their Public Health Unit on matters such as infection and disease control, and programs such as immunization and falls prevention.

Social Marketing

BC Institute of Technology

Mobility; now you're going places is a four-week program aimed at de-stigmatizing assistive devices. The program provides details on canes, walkers, scooters, grab bars and hip protectors and answers frequently asked questions and provides tips on what to ask a health care provider. The program also provides video clips that use a peer leader as spokesperson (Canadian Actor Don Heron in his role as Charlie Farquharson).

<http://www.bcit.ca/appliedresearch/mobility/seniors>.

e) Key Resources

Canadian Centre for Activity in Aging (CCAA) is a Canadian leader in current research and program development for improved physical ability and healthy aging for older adults. It is a not-for-profit national research and education centre within the Faculty of Health Sciences at the University of Western Ontario.

The British Columbia Injury Research and Prevention Unit (BCIRPU) has a wealth of evidence-based falls prevention programs for a variety of settings ranging from the community to long-term care facilities training for community health workers. It is designed to reduce falls and falls-related injuries among adult clients receiving community home support services. This is an initiative of the British Columbia Injury Research and Prevention Unit.

<http://www.injuryresearch.bc.ca>.

Center for Disease Control and Prevention: National Center for Injury Prevention and Control (CDC) have multiple evidence-based publications about falls prevention including the following:

- **Preventing Falls: What Works A CDC Compendium of Effective Community-based Interventions from Around the World.** http://www.cdc.gov/HomeandRecreationalSafety/images/CDC_Guide-a.pdf.
- **Preventing Falls: How to Develop Community-based Fall Prevention Programs for Older Adults.** This "how-to" guide is designed for community-based organizations who are interested in developing their own effective fall prevention programs. This guide is designed to be a practical and useful tool and it provides guidelines on program planning, development, implementation and evaluation. http://www.cdc.gov/HomeandRecreationalSafety/images/CDC_Guide-a.pdf.
- **Adding Power to Our Voices: Framing Guide for Communicating About Injury** is designed to help organizations involved in injury and violence prevention and response speak with a consistent voice to build the social and political will needed to save lives and reduce injuries. The basis of the Framing Guide is that the collective voice of many injury and violence professionals across several disciplines is much louder than that of an individual or single organization. <http://www.cdc.gov/injury/framingguide.html>.

Smart Moves Toolkit

- Designed by SMARTRISK, with both seniors and their caregivers in mind, the toolkit is a large-type, highly readable booklet divided into four main categories key to preventing falls: bone health, exercise, medication management and home modifications. Included is a pull-out poster with 15 exercises designed to help older adults strengthen their bodies to prevent falls. http://www.smartrisk.ca/about_us/programs_and_services/smart_moves/smart_moves_a_toolkit_to_prevent_falls_in_older_adults.html.

Alberta Centre for Injury Control & Research: <http://www.acicr.ualberta.ca>.

National Social Marketing Centre: <http://www.nsmcentre.org.uk>.

Additional Resources:

World Health Organization WHO: *Falls Prevention in Older Age. Comprehensive Global Report on Falls Prevention in Older Age.* The report includes international and regional perspectives and evidence-based recommendations. The report is based on the background papers prepared by internationally recognized experts. http://www.who.int/ageing/publications/Falls_prevention7March.pdf.

Sunnybrook Falls Mobility Network: The Falls and Mobility Network was established in 1996 at Sunnybrook Health Sciences Centre to promote collaborative activities and education directed at increasing mobility in older adults while reducing the number of injuries caused by falls. The network shares information through a website, email discussion groups and hosts a yearly research day. http://www.sunnybrook.ca/research/?page=sri_proj_csia_collab_fmn_home.

Prevention of Falls Network Europe (PRoFaNE) is a thematic network with 25 partners focusing on prevention of falls and improvement of postural stability among elderly people. It is comprised of four work packages:

- Taxonomy and Classification.
- Clinical Assessment and Management.
- Assessment of Balance Function.
- Psychological Aspects of Falling.

The aim of the program is to bring together workers from around Europe to focus on a series of tasks required to develop multi-factorial prevention programs aimed at reducing the incidence of falls and fractures in elderly people. <http://www.profane.eu.org/about/about.php>.

Canadian Best Practice Portal on Health Promotion and Chronic Disease Prevention: The Ontario Neurotrauma Foundation (ONF) has partnered with the Public Health Agency of Canada to develop the injury prevention section of the portal. ONF posted their 70 best-practice case studies on the portal in the fall of 2009. <http://cbpp-pcpe.phac-aspc.gc.ca/index-eng.html>.

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a. *Collaborating with and engaging community partners;*
- b. *Mobilizing and promoting access to community resources;*
- c. *Providing skill-building opportunities; and*
- d. *Sharing best practices and evidence for the prevention of injury and substance misuse.*

a) Priority Populations for Preventing Falls in Older Adults

Surveillance data indicates that primary prevention should focus on 50- to 65-year-olds to maintain protective factors (focus for public health) and over 65 years. For women over 65 years, the risk of falls increases exponentially with age and for men over 75 years (women get injured and men die). A distinction needs to be made between seniors at low risk, medium risk and high risk for falls. With low-risk seniors, community-based approaches to seniors falls prevention are the most appropriate approach SOYF whereas with medium- and high-risk seniors, partnerships should be struck with primary care service providers to link the seniors to the appropriate clinical services and supports for prevention of future falls.

b) Crossover Areas

There is a crossover to chronic disease management, child health and physical activity programs.

c) Situational Assessment

The process of involving stakeholders in the process of prevention strategies is essential. (53)

d) Evidence-based/Promising Practice for Capacity Building:

A first step in effective partnership is to gain a mutual understanding of how the problem affects each partner, how each partner will benefit by finding a solution and the steps needed to put the solution in place. The key to success of these efforts is keeping the needs and wishes of the older person in the forefront of all decision-making through direct involvement in the planning, implementing and evaluating of prevention issues. Successful interventions should include policy-makers, researchers, practitioners and stakeholders. (53)

e) Collaborating with and Engaging Community Partners:

- Recognize cultural expectations and older persons' view of aging that falls prevention advice is often perceived as being for "disabled or elderly people."
- Address the perceptual barrier that falls prevention is only for the very old and frail person and not relevant to oneself (PRoFANe working group).
- Integrate positive messaging to dispel the myth among older adults and policy-makers alike that falls are a normal and expected part of aging.
- Evidence indicates that older adults are more likely to engage in falls prevention initiatives if the programs help to maintain functional capabilities, enhance general health, mobility and appearance and be interesting, enjoyable and sociable. (58)
- Emphasize the need for consistent messaging across the health care delivery system.
- Participate in local coalitions and networks related to seniors.
- Engage decision-makers in recognizing the extent and impact of falls and fall-related injuries in older adults.
- Link with primary care and health service providers for seamless support to medium- and high-risk fallers. This also provides a good opportunity to leverage resources and efforts particularly with LHINs (Ontario's *Aging at Home Strategy*).

f) Strategies for Mobilizing and Promoting Access to Community Resources:

People will only change their lifestyles if it is within their ability to do so and they have the resources to implement change (including physical, psychological and social capital resources), the changes are perceived as being of benefit to them and the benefit outweighs the cost or effort in overcoming barriers. (53)

- Promote practical support: improved transportation links for older adults such as mobility buses, easy access to programs (no to low cost) and appropriate supervision and promoting the belief that the intervention is necessary and effective.
- Provide opportunities for older adults to develop and maintain new behaviours by goal setting, planning, self-monitoring and self-reward. (53)
- Integrate suitable falls prevention exercise programs such as Tai Chi, aqua-fit and lower limb strength training into regional Parks and Recreation program offerings.
- Encourage clinicians to conduct health-related fall risk assessments and risk factor reduction for high-risk individuals.
- Encourage older adults to improve uptake of the provincial MedCheck program with a free yearly pharmacist review of medications.
- Promote access to seniors funding programs for seniors' health such as home services, assistive devices and home adaptations.
- Promote access to seniors home support services.
- Engage municipal decision-makers in enhancing supportive environments for seniors (snow removal, sidewalk/street repair, transportation, etc.).

g) Providing Skill-building Opportunities, Sharing Best Practice and Evidence:

Successful interventions require changing the beliefs, attitudes and behaviour of older people themselves, the health and social care professionals who provide services and the wider communities in which older people live. (53)

- The Canadian Falls Prevention Curriculum is available for public health practitioners through SMARTRISK. <http://www.oninjuryresources.ca>.
- The Canadian Centre of Activity and Aging offers a wide variety of programs including Get Fit for Active Living aimed at introducing older adults to exercise, the Seniors Fitness Certification training and the Home Support Exercise Program. <http://www.uwo.ca/actage>.
- The Active Living Coalition for Older Adults offers a strategy for active living into daily life. <http://www.alcoa.ca/e/index.htm>.
- There are provincial opportunities through the Local Health Integrated Network (LHINs) Aging at Home Strategy.
- The Public Health Injury Prevention Managers' Alliance is a vehicle to identify and share best-practice implementation lessons.
- Seniors Health Research Transfer Network (SHRTN) is a province-wide knowledge exchange network that links caregivers with researchers and policy-makers who work together to improve health care for seniors.
- The Health Communication Unit at the University of Toronto can provide generic health promotion and prevention strategies such as program planning, evaluation, social marketing and others.
- Towards Evidence-Informed Practice (TEIP) aims to strengthen the effectiveness of local health promotion and chronic disease prevention initiatives by increasing the use of relevant evidence and creation of practice-based evidence. TEIP features a set of three field-tested and rigorously evaluated Tools and processes for Program Assessment, Program Evidence and Program Evaluation. <http://www.teip.hhrc.net>.

For additional resources, see those listed for Requirement 2.

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- Alcohol and other substances;
- Falls across the lifespan;
- Road and off-road safety; and may include
- Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).

These efforts shall include:

- a. Adapting and or supplementing national and provincial health communications strategies and/or
- b. Developing and implementing regional/local communication strategies.

a) Situational Assessment

- Identify existing federal and provincial partners who have developed communication strategies such as the Ontario Injury Prevention Strategy and Preventing Fall-Related Injuries Among Nova Scotians Strategic Framework. http://www.gov.ns.ca/hpp/publications/falls_strategic_framework.pdf.
- The British Columbia Institute of Technology/Mobility Research Unit, Veterans Affairs, Active Independent Aging: A Community Guide for Falls Prevention and Active Living. <http://www.falls-chutes.com/guide/english/intro/index.html>.
- Identify existing local networks such as the Eastern Region Injury Network, The Southwestern Injury Prevention Network and the Northern Injury Prevention Practitioner Network.
- Identify NGOs whose mandate may link with falls prevention such as Osteoporosis Canada, Active Living Coalition for Older Adults (ALCOA) <http://www.alcoa.ca/e/index.htm>. Canadian Centre for Active Living (CCAA) and Safe Communities Canada.

b) Evidence-based Promising Practice:

- **BC Institute of Technology: Mobility; Now You're Going Places** is a four-week program aimed at de-stigmatizing assistive devices. The program provides details on canes, walkers, scooters, grab bars and hip protectors as well as answers to frequently asked questions and tips on what to ask a health care provider. Video clips are also provided that use a peer leader as spokesperson, Canadian Actor Don Heron in his role as "Charlie Farquharson."
- <http://www.bcit.ca/appliedresearch/mobility/seniors>.

Education is a key strategy for building capacity for falls prevention policy development and implementation.

To be effective, education must be part of a larger strategy for falls prevention that reflects current evidence, adult learning principles and integration of learning to practice. (50)

For individuals at risk, education needs for the prevention of falls includes understanding who is at risk and why and what is know to reduce the risk. Learning needs for **individuals** at risk, understanding that falls are not an inevitable outcome of aging and can be prevented is important, in addition to recognizing the falls risk and how to increase a person's ability to reduce risk. Individuals must identify the supports and services necessary to bring about change. (53)

The BCIT Mobility Campaign includes a mass marketing mail out to rural seniors aimed at de-stigmatizing the use of mobility devices and led by a well-known peer personality <http://www.bcit.ca/appliedresearch/mobility>.

Learning needs for **communities** include knowledge about how to facilitate an effective exchange of information between those at risk and those with solutions for reducing risk that respects cultural and geographic diversity, knowing where to find information on proven prevention strategies, and understanding how to influence policies that impede the ability to reduce identified individual and community falls risk.

Learning needs for **professionals** include knowledge about where to find credible sources of current, proven best practices for assessment and management of falls such as RNAO Best Practice Falls Prevention Guidelines and the Ontario Injury Prevention Centre Catalogue of Injury Prevention Programs.

- An example of national support for professional education is the development of the *Canadian Falls Prevention Curriculum* of which SMARTRISK is the Ontario affiliate.

Multiple Intervention Programming (MIP) is an online tool kit designed for public and community health practitioners responsible for designing and evaluating multiple intervention programs. Public health planners and evaluators often have limited resources multiple issues. The Fall Prevention and the Elderly Program module includes:

- Developing an integrated conceptual framework.
- Socio-ecological determinants of falls among the elderly.
- Assembling the research evidence for the fall prevention project: A socio-ecological assessment of fall prevention.
 - <http://www.miptoolkit.com>.

A best practice example of an effective media campaign is the multi-faceted state wide social marketing strategy developed by the Australian Department of Health to raise awareness about falls among older persons **Stay on Your Feet**. This program was successfully piloted in Ontario by the Ontario Neurotrauma Foundation.

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).*

Legislation Related to Falls Prevention:

- Having a **Falls Prevention Strategy** in place is one of the 31 Required Organizational Practices for any hospital undergoing accreditation after 2008 (Appendix D).

While there is no specific legislation related directly to falls prevention, some aspects of the *Ontario Building Code* and the *Accessibility Act* impact the prevention of falls.

- **Accessibility for Ontarians with Disabilities Act, 2005**

(<http://www.accesson.ca/ado/english/business>). Accessibility Standards for Customer Service: Ontario Regulations 429/07 and 430/07 required that public sector organizations met the customer standards by January 1, 2010.

By January 1, 2012, all other providers of goods or services with at least one employee in Ontario such as private-sector businesses, not-for-profit organizations and those public-sector organizations that are not designated in the standard must meet the legal requirements.

- **Ontario Building Codes** changes as of June 2006 required walls of at least one bathroom in all dwelling units to be reinforced to permit the future installation of a grab bar.
- **Ministry of Transportation** regulations regarding mobility scooters (e.g., persons using personal mobility devices are treated the same way as pedestrians).

a) Situational Assessment

- Potential partners include municipal planners, individual homeowners and retail outlets.

b) Evidence-based/Promising Practice:

Stair Design: While there has been little success in changing the building code around stair safety, much evidence exists to recommend specific design elements to improve safety and reduce the risk of falling. Information can be found through the Community Health Research Unit at the University of Ottawa. Their work includes a guide for stair safety. <http://aix1.uottawa.ca/~nedwards/chru/english/pdf/SafeStairsOct5.pdf>

c) Additional Resources

- The Ontario Injury Prevention Resource Centre for injury prevention practitioners
<http://www.oninjuryresources.ca/home>.

b) On-road Safety

1) Economic Burden of Motor Vehicle Collisions in Ontario

Injuries from motor vehicle collisions cost Ontarians over \$1.1 billion in 1999. (21) Many effective interventions and policies exist that would prevent much of this unnecessary suffering and burden. For example, when used and installed correctly, child restraints in vehicles reduce the risk of death by approximately 70% in infants and 47–54% in toddlers and decrease hospitalizations by 69% in children under five years. (59) Under certain conditions, mass media campaigns were shown to be effective in preventing alcohol-impaired driving, with a 13% reduction in alcohol-related collisions. (60)

Also, the implementation of sobriety checkpoints reduced the proportion of overall collisions and fatal collisions believed to involve alcohol by 10% and 23%, respectively. (61) The Ontario Ministry of Transportation of Ontario has endorsed the national *Road Safety Vision 2010* plan that sets a target of a 30% reduction of road users killed or seriously injured. (62) This vision includes several sub-targets, such as a 95% seat belt wearing rate and proper use of appropriate child restraints by all motor vehicle occupants and a 40% decrease in road users fatally or seriously injured in crashes involving drinking drivers.

In 2007–2008: (CIHI) (30)

- Motor vehicle collisions were responsible for nearly one-half of all major injury hospitalizations at lead trauma hospitals (42%).
- Among the trauma cases, motor vehicle collisions were the leading cause of injuries in all age groups.
- For those aged 20–34 years, motor vehicle collisions (excluding cyclists) were responsible for 57% of injury.
- For all causes of injury, more than half of the cases had blood-alcohol testing. Of those, 29% had a blood-alcohol concentration (BAC) greater than zero and 22% had an alcohol concentration (defined as greater than or equal to 17.4 mmol/L) reflecting the legal positive blood-alcohol limit.

Ontario Ministry of Transportation – Key Road Safety Priorities

- Seat belts/child car safety seats.
- Speeding/aggressive driving.
- Distracted driving and driver fatigue.
- Drinking and driving.
- Young and novice drivers.
- Vulnerable road users: motorcyclists, pedestrians and cyclists.

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current).*

a) Situational Assessment

- Identify related local policies, programs and environmental supports being developed or implemented within the community, including a local road safety network and strategy.
- Identify the role of public health in the prevention of road-related injuries within this local context, considering all aspects of a comprehensive health promotion approach.
- Identify gaps in programs related to road safety.
- Support partners in assessing their capacity to promote road safety (seek opportunities to build understanding of linkages between issues, partners and programs).

b) Partnerships

Identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

Local Community Partners

- Associations (boating, ATV, snowmobile, cycling)
- CAA
- Driver training providers for all drivers including defensive driving programs
- EMS
- Local hospitals
- Fire departments
- LCBO
- The Beer Store outlets
- Licensed establishment owners
- Licensing bureaus
- Marinas
- Police services
- Public works (municipal engineers, snow removal, tree planting, street lighting, sidewalk and road maintenance, planners)
- Regional and municipal councils
- Regional and municipal planners
- Restaurant owners
- Retailers bicycles, boats, snowmobiles, ATVs, car, helmets/protective gear/car seats
- Road Safety coalitions
- School boards and post-secondary institutions
- Trail groups
- Transit authorities (bus and taxi)
- Workplaces

National/Provincial Partners

- Alzheimer’s Societies
- Arrive Alive Drive Sober
- Brain Injury Association
- CAMH
- Canada Safety Council
- Car manufacturers
- Car seat manufacturers/suppliers
- Infant and toddler safety associations
- Insurance Bureau of Canada
- LCBO
- Lead Trauma Hospitals (Appendix C)
- MADD Canada
- NGOs (Safe Kids Canada, SMARTRISK, Safe Communities Canada, ThinkFirst)
- Ontario Early Years Centres
- Ontario Physical and Health Education Association (OPHEA)
- Ontario Seniors’ Secretariat
- OSAID
- Ontario Injury Prevention Resource Centre
- Ontario Ministry of Transportation
- OPP
- Ontario Safety League
- Provincial Trauma Network
- RCMP
- St. John Ambulance
- The Beer Store outlets
- Transport Canada

Protective Factors

- Built environment
- Vehicle safety standards
- Seat belts/child car safety seats
- Airbags
- Helmets

Risk Factors

- Speed/aggressive driving
- Distracted driving
- Driver fatigue
- Drinking and driving/driving under the influence of drugs

c) Policy

Related to Protective Factors

In collaboration with community partners, public health should promote the adoption and implementation of:

- A **local comprehensive road safety strategy** to support national and regional efforts to reduce road injuries. (63)
For example, the Regional Niagara Road Safety Committee (RNRSC).
- **Road designs and plans** that suit the safe road function for all road users, including (64–66):
 - High-speed roadways: restricted access, horizontal and vertical curves of large radius, crashworthy shoulders, median barriers, grade-separated junctions on entry and exit ramps, separated lanes for motorized two wheelers.
 - Rural roads: periodic lanes for overtaking and turning across oncoming traffic, median barriers, lighting at junctions, roundabouts, advisory speed limit signs before sharp bends, regular speed limit signs, rumble strips and removal of roadside hazards such as trees and utility poles.
 - Transitional roads: Signs and other design features to encourage drivers to slow down in good time (rumble strips, speed bumps, visual warnings in pavement and roundabouts).
 - Residential access roads: speed limits no greater than 30 km/h and design features that calm traffic, connectivity of sidewalks for pedestrians and cyclists, roads with speeds over 60 km/h should have separated lanes for cyclists, 50–60 km/h should have marked bicycle lanes and under 40 km/h are shared. (67)
 - Removal of roadside objects or collapsible or cushioning where used to separate traffic.
 - Transport and land use policies: efficient land use, trip-reduction measure, safer transport modes.

Polices that improve vehicle safety standards including WHO and CCMTA:

- Daytime running lights on motor vehicles and motorcycles and high-mounted stoplights in cars.
- Vehicle front shape and stiffness designed to protect pedestrians.
- Passenger compartments that are non-collapsible.
- Intelligent speed adaptation (advisory, voluntary and mandatory).
- Maximum speed limit of vehicles of 120 km/h at the time of manufacturing.
- Electronic stability programs in inclement weather to prevent skidding and loss of control.
- Removing exemptions for the non-use of seat belts and increased number of demerit points for non-use of seat belts and child car seats. (68)

d) Program

Related to Protective Factors

In collaboration with community partners support the implementation of interventions that are effective in increasing **child safety seat** use, including one or more of the following (69):

- Safety seat training/education for parents. For example, Kids that Click and Transport Canada for proper restraint of children.
- Provision of discount coupons.
- Car seat loan program.
- Provision of free booster seats.
- In-store pamphlets.
- Use of local media and social media.

SPEEDING/AGGRESSIVE DRIVING

e) Policy (Speeding/Aggressive Driving)

In collaboration with community partners, inform, influence and promote the development, adoption and implementation of:

- Speed limits that are practical and broadly acceptable with highly publicized and visible enforcement, automated enforcement (red light cameras, photo radar) and penalties. (70)
- Manufacturers' vehicle advertising policies that reflect changes away from the speed culture.
- Electronic signage to promote early detection and warnings to speeding drivers. (68)

f) Program (Speeding/Aggressive Driving)

- Promote built environment modifications to reduce traffic flow and vehicle speed through segregation of high-speed and low-speed road users, or discouraging drivers from entering certain areas, traffic calming and design features that limit the speed of the vehicle itself. (65)

DISTRACTED DRIVING AND DRIVER FATIGUE

g) Policy (Distracted Driving and Driver Fatigue)

In collaboration with community partners, promote the adoption and implementation of:

- Graduated licensing systems with restrictions on number of passengers, night time driving and use of electronics while driving and laws for all drivers restricting cell phone use. (70)
- Ontario Hours of Service Regulation (71) (*Highway Traffic Act*) that provides commercial drivers with more opportunities for rest and restricts the number of hours that a driver can be on-duty.
- Workplace policies for employees to reduce potential driving distractions.
- Investigate the role of automobile insurance in reducing distracted driving.
- Technology industry policies that promote ways to use technology safely via labels, instruction manuals, ratings of distraction potential or training for drivers on how to use specific equipment safely. (72)

DRINKING AND DRIVING

The legal definition of drunk driving is when experienced drivers have a blood-alcohol concentration in excess of 0.05 mg/dl. Rates between 0 and 0.02 mg/dl can reduce the rate of crashes for young or novice drivers by 4–24%. (64)

h) Policy (Drinking and Driving)

In collaboration with community partners, promote the development, adoption and implementation of legislation and policies that address the following (73):

- Blood-alcohol limits to be consistent with the relationship between alcohol and crash involvement (i.e., upper limits of .05 for general driving population).
- Lower blood-alcohol limits for young or inexperienced drivers (0–.02 mg/dl).
- Graduated driver licensing systems prohibiting against drinking and driving.
- Raising the minimum drinking age.
- Random breath testing and sobriety checkpoints provide objective evidence of BAC.
- Alcohol ignition interlocks for repeat drinking and driving offenders (74).

i) Crossover

Effective policies to reduce the rate of impaired driving can be found in the Prevention of Substance Misuse Guidance Document.

j) Program

Develop a multi-strategy approach in collaboration with community partners to address drinking and driving, including the following (70):

- School-based education programs (not riding with someone who has been drinking)
 - Further details can be found in the *Prevention of Substance Misuse* Guidance Document.
- High-quality face-to-face beverage server training. (75)
- Brief clinical interventions and alcohol problem assessment and treatment.
- Mass media campaigns.
- Increasing driver's perception of the risk of being detected is more effective than penalty severity in discouraging alcohol-impaired driving. This can be accomplished through frequent and visible enforcement of laws in addition to mass media campaigns to increase perception of the risk of being caught, reduce public acceptance of drinking and driving and increase acceptance of enforcement. (76)

Drug-Impaired Driving includes prescription medications, over-the-counter medications and herbs and illegal substances. Much less is known about the effects of various drugs on driving ability or the frequency of drug use in or their causal relationship to car crashes due to (77):

- The difficulty of measuring drug use by drivers.
- The vast number of drugs that have the potential to impair driving ability.
- Poly-drug use and the frequent combination of drug use with alcohol.
- The difficulty of determining causality.

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a) *Collaborating with and engaging community partners;*
- b) *Mobilizing and promoting access to community resources;*
- c) *Providing skill-building opportunities; and*
- d) *Sharing best practices and evidence for the prevention of injury and substance misuse.*

SENIORS

a) Situational Assessment

The need to balance public safety with the individual “right to drive” involves addressing a number of societal realities and attitudes. (78) These include:

- A limited public-transportation infrastructure, especially in rural and remote communities.
- More seniors “aging in place” in the suburbs, where amenities are not close at hand.
- Smaller families with dispersed children so that many seniors do not have family support to monitor their driving ability or help with transportation.
- Seniors being more active – volunteering and working longer to support their increased life expectancy or providing child care for grandchildren.
- The attitude that a driver’s licence represents freedom, independence and mobility.
- A sense of identity, belonging and status attached to the ability to drive.
- An implied connection between having a driver’s licence and being mentally and physically fit.
- The fact that people with cognitive impairments may lack the ability to self-assess and physicians are reluctant participants in the screening process, even in jurisdictions with mandatory reporting.
- The fact that in some communities it is difficult for people to access a family physician.
- Canadian jurisdictions that depend upon self-declaration by drivers as the major screening tool for those under 75 years.
- A lack of validated off-road screening tests.
- Low awareness in the driving public of the effect of aging on driver fitness.

Risk Factors (79)

- Reduced vision – especially at night.
- Difficulty judging distance and speed.
- Limited movement and range of motion.
- Slower reaction time.
- Difficulty focusing attention for long periods of time.
- Easily distracted.
- More time needed to understand what is seen and heard.
- More use of prescription and/or over-the-counter drugs that may impair driving ability.

b) Policy

In collaboration with community partners, promote the adoption and implementation of the following (78):

- Policies that improve road design, land use and community planning.
- Vehicle manufacturing policies for seat adjustment, steering wheels, safety belts and mirrors.
- Clearer reporting guidelines for physicians (more emphasis on collaborative approach including governments, private and community organizations and families) that address:
 - Mobility options; 5A test (affordable, available, accessible, acceptable, adaptable).
 - Conditional licensing and assessment of drivers throughout the licence lifecycle.
 - Valid and reliable screening and assessment methods.

c) Program

In collaboration with community partners, promote programs and research that address senior drivers, such as:

- **MTO's Safe Driving for Seniors** program addresses licensing, testing and senior drivers in collisions programs: <http://www.mto.gov.on.ca/english/pubs/seniors-guide>.
- **Candrive** (<http://www.candrive.ca/en/about-candrive.html>) is a national research project developing clinical decision-making tools for physicians to identify at-risk drivers.

YOUNG AND NOVICE DRIVERS

a) Situational Assessment (Young and Novice Drivers)

During the 2005–2006 fiscal year, motor vehicle collisions were the leading cause of hospital admissions among Ontario youth aged 15 to 24 years and were also the leading cause of emergency room visits for youth aged 15 to 24, after unintentional falls. Canadian drivers aged 16–19 are 15 times more likely to be fatally injured in a collision than 45- to 54-year-olds and three times more likely than drivers aged 75 and over. Road traffic injuries are the leading cause of death globally among 15- to 19-year-olds and the second leading cause in 10- to 14-year-olds and 20- to 24-year-olds. Male drivers are three times more likely to die in motor vehicle collisions than females. (80)

Risk Factors (10)

- Risk taking, sensation seeking particularly among males.
- Peer influence.
- Environmental factors such as media.
- Community norms and public and institutional policies.
- Inexperience.
- Gender – young males are more likely to both speed and drink and drive, not use seat belts or helmets and drive more than their female counterparts. (81)
- Brain development – the prefrontal cortex that governs judgment, decision-making, reasoning and impulse control does not fully mature until the age of 20 or 25.

b) Policy (Young and Novice Drivers)

In collaboration with community partners, inform, influence and promote the development, adoption and implementation of graduated licensing systems that include (81–83):

- A learner stage that requires an older entry age of at least 16 years.
- A learner period that lasts more than six months.
- A requirement for certified driving practice.
- An intermediate stage that includes a night restriction that begins relatively early such as 9 or 10 pm (84) and a prohibition on teen passengers when a novice driver is unsupervised.
- Police and parents playing a more active role in ensuring teen compliance.
- Complementary measures such as driver's education and parental management since crashes occur at times or under conditions not addressed by graduated licensing.

c) Program (Young and Novice Drivers)

Evidence-based Promising Practice

Sunnybrook Health Sciences Centre offers an injury prevention program specifically for teens called P.A.R.T.Y. (Prevent Alcohol and Risk Related Trauma in Youth). This program is supported by evidence-based research that demonstrates a protective resiliency factor and has been licensed in more than 80 locations in Canada, the United States, Australia, Japan and Brazil. Among other areas of risk and youth, this program provides information to teens on risks related to driving including the affects of alcohol and drugs, texting and driving, distractions, drowsiness, seat belt use and speeding. <http://www.partyprogram.com/home.aspx>.

VULNERABLE ROAD USERS

A) PEDESTRIANS

a) Situational Assessment (Child risk factors)

- Physical development: The head, chest and abdomen are still in a growth state; smaller, softer, sensory facilities are under-developed; there is inadequate ability to synthesize information from peripheral fields of vision and the auditory sense.
- Cognitive: Although visual processes are fully developed, a full integration of visual signals into a meaningful context is not in place until 10–12 years. (80)
- Socio-economic status: Children living in low SES areas will choose routes to avoid social risks, typically have higher traffic volumes and fewer safe places to play.
- Parental knowledge, attitudes and behaviours: There tends to be an acceptance that injuries are part of growing up; however, the best predictor of parental involvement is a strong concern about safety of the environment and a sense of neighbourhood solidarity or connectivity.
- Environment: There is a higher risk of injury where there are high traffic volumes, high density of parked cars, high speed limits, limited safe play choices and low-income urban areas.
- Drivers: High speeding behaviour.

b) Policy

- In collaboration with community partners, inform, influence and promote the development, adoption and implementation of polices and bylaws that address:
 - Reduced speed limits in addition to lower speed limit signage.
 - Speed cameras and fines.
 - Roadside warning signs.
 - Walkability and long-term plans such as the International Walking Charter.
 - Road design (narrow streets, visual cues: sideline trees, refuge island, curb extension).
- In collaboration with community partners, develop and implement a comprehensive pedestrian safety strategy (Safe Kids Canada Community Guide for Pedestrian Safety).

c) Program

In collaboration with community partners, promote the community implementation of best and promising practices programs, such as:

- TD Think First for Kids. (85)
- Risk Watch.
- Injury Free Coalition for Kids.
- Safe Play Every Day and EB Monkey.

MOTORCYCLISTS

a) Situational Assessment (Motorcyclists)

In 2007–2008: (CIHI)

- Eleven per cent (n = 204) of the 1,849 motor vehicle traffic and non-traffic injury cases in 2007–2008 were motorcycle drivers or passengers.
- One hundred and ninety motorcycle drivers and 14 motorcycle passengers were injured.

2005 MTO Ontario Road Safety Annual Report (ORSAR)

In 2005:

- There were 145,194 motorcycles registered in Ontario.
- The number of fatalities involving motorcyclists increased by 27, from 47 in 2004 to 74 in 2005; the number of injuries among motorcyclists also rose from 1,404 in 2004 to 1,568.
 - Sixty-eight motorcycle drivers were killed and 1,206 injured.
 - Six motorcycle passengers were killed and 362 injured.
- Two hundred and twenty motorcycle injuries were classified as major injuries.

Risk Factors

- Relevant risk factors related to motorcycle injuries, but not limited to, were being an unlicensed driver, under 25 years of age, alcohol use, helmet not worn (fatalities), driver error, other error, single vehicle collisions, weekend and day/night (ORSAR, 2005).

b) Policy

In collaboration with community partners, inform, influence and promote the development, adoption and implementation of rider education and licensing policies (86) such as the Program Administration, Rider Education and Licensing Framework and helmet legislation for motorcycle riders. (87)

BICYCLISTS: See On-Road Safety, Cycling Section

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

These efforts shall include:

- a) Adapting and/or supplementing national and provincial health communication strategies; and/or*
- b) Developing and implementing regional/local communication strategies.*

a) Situational Assessment

- Identify existing international, national and provincial partners who have developed or are developing communication strategies to reduce on-road injuries.
- Identify existing local networks (Eastern Region Injury Network, Southwest Injury Prevention Network, Northern Injury Prevention Practitioner Network, Ontario Injury Prevention Practitioner Network and Injury Prevention Managers' Alliance).

b) Program and Social Marketing

In collaboration with community partners, deliver a comprehensive communication plan to increase public awareness and address key messages related to protective factors, risk factors and priority populations, such as the following:

Think and Drive, a communication and social marketing campaign is one part of the overall RNRSC road safety strategy. The goal of Think and Drive is to raise awareness about the road safety problem in Niagara, to educate drivers about how they can make a difference and to influence their driving attitudes and behaviours.

Seat Belts/Child Car Safety Restraints

Seat Belts

Safe and Proper Seat Belt Use – including:

- A properly worn seat belt greatly increases the chances of surviving a motor vehicle collision.
- No doubling up – only one person per seat belt.
- A typical seat belt assembly consists of a lap and shoulder belt. The shoulder belt should be worn closely against the body and over the shoulder and across the chest, never under the arm. The lap belt should be firm against the body and low across the hips.

Child Car Safety Restraints

- Safe and proper use of child safety restraints includes keeping children in the rear seat (the “KID ZONE”), check the child’s position throughout the journey and ensure the appropriate child restraint for children including special needs children.

Airbags

Children leaning on a side airbag or not properly restrained out of the path of a deployed side airbag are at risk of serious injury. Guidelines for restraining children are:

- Children 12 years and under are safest in the back seat away from front airbags.
- Never put a rear-facing car seat, forward-facing car seat or booster seat in the front seat when there is an airbag.
- Children at least 13 years old riding in the front seat should sit up straight and not lean against the car’s door. Keep the space between a child and the door free of objects, like toys, blankets and pillows. In a crash, children could be hurt when the airbag is deployed. (88)
- Adults and older children who have outgrown the booster seat should be buckled in using the seat belt and, if in the front, move the seat as far back as possible to give the airbag as much room as possible in which to inflate. (89)

Speeding And Aggressive Driving

- Wipe off 5 Victoria is an Australian anti-speeding mass media campaign aimed to encourage behaviour change by informing drivers that a 5 km/h reduction in speed reduces crash risk.

Distracted Driving And Driver Fatigue

- Raise public awareness of distracted driving and steps they can take to reduce risk
- Target high-risk groups with specific messages including young and senior drivers.
- Deliver distraction prevention strategies through driver education classes, employers and licensing agencies. (72)

Impaired Driving

- **Arrive Alive:** Public awareness campaign to reduce impaired driving.
- **Trouble in Paradise:** Campaign designed to increase awareness of legal and financial implications of drinking and recreational vehicle use.
- Peel Health Department – **Don’t Drive High:** Interactive information/education for youth regarding marijuana in general and the risks of driving high.
- Road Safety Education curriculum resources distributed in fall 2009 to schools across Ontario.

Senior Driver

- Hold ongoing training programs and provide incentives; reaching drivers at the right time with appropriate information on their limitations (78) MTO Safe Driving for Seniors. (90) <http://www.mto.gov.on.ca/english/pubs/seniors-guide/part7.shtml>.
- Educate physicians on mature driver issues.

Young and Novice Drivers

- **Young and New Driver Resource Centre** serves as a comprehensive source of information about young and new driver safety. It is designed for researchers, practitioners, young and new drivers and parents.

Pedestrian (91)

- Teach children repetitively through guided practice, by parent/caregiver and community partners focusing on three important skills that are typically not acquired until between 9 and 11 years; decide on and use a safe crossing route, realistically assessing a vehicle's speed and judging safe gaps in traffic. (92)
- Preliminary research with 10- and 11-year-old children provides strong evidence that talking on a cell phone while crossing a street increases a child's risk of being struck by a vehicle by up to one-third. (93) Teach children not to use their cell phones, MP3 players or text while crossing streets and to give their full attention to the environment around them.
- Encourage and promote use of new Road Safety Education curriculum resources (provided to schools across Ontario in fall 2009).

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

Support existing legislation that addresses seat belts and child car safety seats in terms of encouraging legislation enforcement that requires the use of seat belts for all passengers in a vehicle, including child passenger restraint systems, booster seats and rear-seating position for children.

<http://www.fiafoundation.org/commissionforglobalroadsafety>.

Seat belts

MTO seat belt law summary

Bill 148, *Highway Traffic Amendment Act (Seat Belts)*, 2006

Child Booster Seats and Child Restraints

Summary of Bill 73 – An Act to Enhance the Safety of Children and Youth on Ontario's Roads

Speeding and aggressive driving

Bill 203 – Safer Roads for a Safer Ontario Act that targets drinking drivers and street racers

Distracted driving

- Keep Your Eyes on the Road October 28 release.
- About the *Countering Distracted Driving and Promoting Green Transportation Act*, 2008 October 28 backgrounder.
- Eyes on the Road – Hands on the Wheel, April 22 release.
- Bill 118 *Countering Distracted Driving and Promoting Green Transportation Act*, 2009.

Impaired Driving

<http://www.mto.gov.on.ca/english/safety/impaired/index.shtml>.

Summary of impaired driving penalties, including fact sheets on BAC and the new roadside licence suspensions for warn range.

Consequences for Driving with a 0.05 to 0.08 "Warn Range" Blood-Alcohol Concentration (94)

First Time

- Three-day licence suspension
- One-hundred-and-fifty-dollar administrative monetary penalty

Second Time (within five years)

- Seven-day licence suspension
- Mandatory alcohol education program
- One-hundred-and-fifty-dollar administrative monetary penalty

Third Time (within five years)

- Thirty-day licence suspension
- Mandatory alcohol treatment program
- Six-month ignition interlock licence condition
- One-hundred-and-fifty-dollar administrative monetary penalty

Subsequent infractions (within five years)

- Thirty-day licence suspension
- Mandatory alcohol treatment program
- Six-month ignition interlock licence condition
- Mandatory medical evaluation
- One-hundred-and-fifty-dollar administrative monetary penalty

Young and Novice Drivers

Bill 126, *Road Safety Act*, 2009

Driver's Handbook Online

Bill 169, *Transportation Statute Law Amendment Act*, 2005

This legislation is aimed at drivers who speed in construction zones and fail to stop or yield the right of way to pedestrians at crossings and is designed to protect children and seniors.

Senior Drivers

<http://www.mto.gov.on.ca/english/pubs/seniors-guide>.

Bill 169, *Transportation Statute Law Amendment Act*, 2005

This legislation is aimed at drivers who speed in construction zones and fail to stop or yield the right of way to pedestrians at crossings and is designed to protect children and seniors.

Legislation

Highway Traffic Act

Service Ontario e-Laws – searchable by subject

Bill 203 *Safer Roads for a Safer Ontario Act*

Bill 73 *An Act to Enhance the Safety of Children and Youth on Ontario's Roads*

Bill 148 *Highway Traffic Amendment Act (Seat Belts), 2006*

Bill 169 *Transportation Statute Law Amendment Act, 2005*

Bill 118 *Countering Distracted Driving and Promoting Green Transportation Act, 2009*

Bill 126 *Road Safety Act, 2009*

Transport Canada Vehicle Safety Standards

a) Key Resources

Transport Canada. (2009) <http://www.mto.gov.on.ca/english/faq/safety-test.shtml#restraints1>.

Safe Kids Canada. (2009) Kids that Click. <http://www.safekidscanada.ca/SKCFForParents/custom/ENKidsthatClick.pdf>.

Ministry of Transportation (2009) <http://www.mto.gov.on.ca/english/safety/seatbelt.shtml>.

Candrive: Driving Research for older adults (2009) <http://www.candrive.ca/en/about-candrive.html>.

Young and New Driver Resource Centre <http://yndrc.tirf.ca/default.php>

International Charter for Walking <http://www.walk21.com/charter/default.asp>.

Safe Kids Canada Community Guide for Pedestrian Safety <http://www.safekidscanada.ca/SKCFForPartners/custom/PEDestrianGuide05.pdf>.

Evidence-based Interventions in Injury Prevention – Public Health Agency of Canada <http://www.cbpp-pcpe.phac-aspc.gc.ca/intervention/find>.

Arrive alive <http://www.arrivealive.org>.

National Social Marketing Centre <http://www.nsmcentre.org.uk>.

Alberta Centre for Injury Control & Research <http://www.acicr.ualberta.ca>.

British Columbia Injury Research and Prevention Unit <http://www.injuryresearch.bc.ca>.

CYCLING

In 1995, approximately 30% of Ontarians used bicycles recreationally and less than 1% in competition. (95) Cycling ranked second to motor vehicle incidents with respect to non-fatal transport-related injuries, accounting for 15% of hospitalizations, 21% of emergency room visits, 17% of cases of permanent partial disability and 16% of permanent total disability in 2004. (19)

1) Economic Burden of Physical Activity in Ontario

Cycling incidents account for a significant portion of the injury costs arising from transport incidents – \$0.44 billion or 12% of total costs. (19) Bicycles, in particular, are identified as one of the top three most frequent products that result in injuries to children and youth between 5 and 19 years. (34)

While some studies support the assumption that exercise is associated with reductions in chronic disease risk (96), results of other cost/benefit analysis show that the costs associated with participation in sports and exercise due to injury of those less than 44 years exceed the estimated cost avoidance from disease prevention. (97,98)

Additionally, under the incidence approach, prevention costs are actually investments, (\$1 invested in bicycle helmets averts \$29 in injury costs) and unmanaged injury risks are incremental costs. (19)

In 2007–2008, Cycling accounted for the following: (CIHI) (30)

- Ten per cent (n = 435) of the major trauma cases that were injured while involved in a sports or recreational activity.
- Eight per cent of cases (n = 54) for Ontarians younger than 20 years.
- Forty-eight per cent (n = 70) of cycling incidents in Ontarians younger than 35 years and 1.8% (n=16) among those 20–34 years.
- Three per cent (n = 145) of all cases and 2% (n = 12) of all in-hospital deaths. For these cases:
 - The mean age was 36 years.
 - Eighty per cent were male (n=86).
 - The mean Injury Severity Score was 24.
 - The mean length of stay was 12 days.
- The most common sports and recreational injuries documented (25%, n = 109).
- Eighty per cent of injured cyclists were male (n=86).

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

a) Situational Assessment

- Identify related local policies, programs and environmental supports being developed or implemented within the community, including local cycling committees and trails/urban planning strategies.
- Identify the role of public health in the prevention of cycling injuries within this local context, considering all aspects of a comprehensive health promotion approach.
- Identify gaps in programs related to cycling injuries.
- Support partners in assessing their capacity to promote road safety (seek opportunities to build understanding of linkages between issues, partners and programs).
- Support community groups, such as local walking and cycling groups, to increase support for walking trails, to map out existing walking trails and to conduct workshops on cycling safety to address local needs.

b) Partnerships

Use surveillance data to identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

Local Community Partners

- After-school programs
- Cycling user groups
- Boards of education
- Community health centres
- Community sport and recreation associations and clubs
- Cycling committees
- Cycling retailers
- Elementary schools
- Local hospitals
- LHINs (Local Health Integration Networks)
- Local safety councils
- Municipal and regional planning departments
- Municipal parks and recreation departments
- Physicians and other health care professionals
- Police departments
- Safety councils
- Safety villages
- Trail committees
- Workplaces

National/Provincial Partners

- Aboriginal organizations
- BC Injury Prevention and Research Unit
- Canadian Cycling Association
- Ontario Cycling Association
- Ontario Ministry of Health Promotion
- Ontario Ministry of Transportation
- Ontario Neurotrauma Foundation
- Ontario Physical and Health Education Association
- Lead Trauma Hospitals (Appendix C)
- Provincial Trauma Network
- Ontario Provincial Police
- SMARTRISK
- Safe Communities Canada
- Safe Kids Canada
- Thinkfirst Foundation of Canada

c) Policy

In collaboration with community partners (local cycling committee), influence evidence-informed cycling safety strategies such as the following:

- Advocate for the development, adoption and support the implementation of a local cycling strategy.

Examples include:

Ottawa Cycling Plan 2008:

http://www.ottawa.ca/residents/onthemove/cycling/ottawa_cycling_plan_en.html.

Hamilton 'Shifting Gears':

<http://www.myhamilton.ca/myhamilton/cityandgovernment/citydepartments/publicworks/trafficengineeringandoperations/cycling>.

Niagara Bikeway Master Plan

<http://www.niagararegion.ca/government/initiatives/pdf/01-Chapter1-Introduction.pdf>.

Towards Great Regional Streets: (York Region Planning)

<http://www.york.ca/NR/>

Safe And Supportive Environments

A recommended strategy to prevent obesity and increase levels of physical activity should focus on creating communities that are safe and support physical activity. This includes improving access to outdoor recreational facilities, increasing infrastructure support for cycling and walking and improving pedestrian and traffic safety in areas where people might be physically active. (99)

There are also relevant recommendations under the Ministry of Health Promotion's Ontario Trails Strategy, such as developing:

- Trails with natural (hiking, cross-country skiing) or treated surfaces (bicycle greenways/paths/lanes).
- On-road bicycle routes.
- Walkways, boardwalks and sidewalks.
- Trails located on transportation and utility corridors.
- Trails that are integrated with public transit services. (100)

Evidence-informed practice suggests that a comprehensive approach to prevent cycling injuries entails the above policies and supports implemented in conjunction with the following community programs/services:

- Identify linkages and foster collaboration and communication among community partners.
- Facilitate active and meaningful inclusion of priority populations into policy and program development, implementation and evaluation.

The Ministry of Transportation oversees a Transportation Demand Management Municipal Grant Program: *A program to encourage cycling, walking, transit and trip reduction*. Transportation Demand Management is a key part of transportation planning. For more information contact your local transportation planner or planning department and/or, visit <http://www.mto.gov.on.ca>

Shifting Gears – Peterborough Moves is an annual month-long event that challenges employees who work in Peterborough to walk, cycle, carpool, bus or telecommute to work. The event is a partnership between the City of Peterborough, Peterborough County-City Health Unit, Transport Canada and Peterborough Green Up, a non-profit community-based environmental organization. The partnership model between various sectors working to increase active transportation in the community is one component of this program's success. For more information on the event, visit <http://www.peterboroughmoves.com>.

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a) *Collaborating with and engaging community partners;*
- b) *Mobilizing and promoting access to community resources;*
- c) *Providing skill building opportunities; and*
- d) *Sharing best practices and evidence for the prevention of injury and substance misuse.*

a) Situational Assessment

Using local surveillance data, identify the factors associated with increased incidence of cycling injury (risk factors) in the community to determine priority populations such as the following: (95)

Cyclists who:

- Are male (3.5 times more injuries than female).
- Do not wear a helmet.
- Are under 20 years.
- Ride in unsafe environments (loose gravel).
- Have a history of psychiatric illness.
- Have consumed alcohol (8% of cyclists treated in hospital).
- Participate in competitive BMX, stunts and mountain biking.

Identify local gaps in programs and services that enhance protective factors to promote safety from injury, such as (95):

- Wearing a helmet.
- Wearing brightly coloured clothing while cycling.
- Attaching reflective or lighting materials on bicycles.
- Wearing protective eyewear.
- Ensuring bicycles are in good working order.
- Avoiding areas where there is motor vehicle traffic for children under ten years.
- Using designated cycling areas, if available.
- Encouraging educational programs for children.

b) Policy

Public health should work local cycling committees and clubs to address priority population specific policies, such as the following:

- Advocate for increased injury surveillance data in collaboration with community partners (injury and incident reporting).
- Advocate for safer cycling environments in municipal planning.
- Support workplaces to adopt and implement bike-to-work initiatives.
- Advocate for schools and community organizations to adopt active transportation policies.
- Advocate for boards of education to adopt and implement cycling safety into their curriculum.
- Advocate for community organizations to adopt and implement cycling safety education and strategies for priority populations.

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

These efforts shall include:

- a) Adapting and/or supplementing national and provincial health communication strategies; and/or*
- b) Developing and implementing regional/local communication strategies.*

a) Situational Assessment

It is a promising best practice to deliver education programs for children to be safer riders. (95) Programs such as CAN-BIKE are available for cyclists of all ages and skill level.

b) Policy

Develop guidelines for cycling injury prevention messaging to address priority populations in conjunction with a comprehensive injury prevention strategy so that communication campaigns are not promoted in isolation.

c) Program and Social Marketing

Ontario Safe Sport Helmet Initiative: Funded by the Ministry of Health Promotion, ThinkFirst worked with public health units and community sports and recreation partners to implement this initiative across the province. The purpose of the Ontario Safe Sport Helmet initiative was to raise awareness of the importance of wearing a helmet as well as to provide helmets to children and youth across the province. Digital copies of the helmet fitting cards and campaign posters are available at http://www.mhp.gov.on.ca/english/injury_prevention/default.asp.

Niagara Kids CAN Bike Pilot Project: A five-day camp-style program in July 2008 that combined cycling instruction, road riding practice, leadership training and other summer camp activities such as swimming. The desired outcome of the pilot project was to increase the capacity of children between the ages of 9 and 12 to engage in safe cycling as transportation and recreation.

“Kids on Wheels” Campaign: A cycling safety campaign focusing on use of cycling helmets and children and proper fitting. The campaign was comprised of a national media campaign and retail program along with community initiatives. For an evaluation of the campaign, please see <http://www.injuryresearch.bc.ca/Publications/Reports/Safe%20Kids%20Evaluation%20Final%20Version%20Oct%2025%5B1%5D.pdf>

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

Current Ontario Legislation for Cycling

Research has demonstrated that helmets are effective in preventing head injury because 75% of cycling-related fatalities involve head injuries.

- Bicycle helmet legislation in Ontario is contained within the *Highway Traffic Act (HTA) Ontario Highway Traffic Act* s.104 (2.1).
- Anyone under the age of 18 years is required to wear an approved bicycle helmet when travelling on a public road. The fine for not wearing a helmet is \$75.00 (\$60 + \$5 court cost + \$10 victim fine surcharge).
- Cyclists 18 years and older, while not required by law to wear a helmet, are encouraged to do so for their own safety.
- Bicycle helmets approved for use in Ontario contain one or more stickers of the following organizations:
 - Canadian Standards Association: CAN/CSA D113.2-M89
 - Snell Memorial Foundation: Snell B90, Snell B90S, or Snell N94
 - American National Standard Institute: ANSI Z90.4-1984
 - American Society For Testing and Materials: ASTM F1447-94
 - British Standards Institute: BS6863:1989
 - Standards Association of Australia: AS2063.2-1990
- New bicycle helmets in Canada should provide either the CSA or the CPSC standard. The CPSC standard is comparable to the CSA standard. Helmets with British or Australian standards are not widely available in the Canadian market but are safe to use. (101)
- Studies have found a positive effect of bicycle helmet laws for increasing helmet use and reducing head injuries in the target population compared to controls (either jurisdictions without helmet laws or non-target populations). (102,103)
- **Anyone** operating an electric bicycle **must** wear an approved bicycle helmet at all times.

a) Key Resources

Ontario Ministry of Transportation

Questions and Answers on Bike Helmets

<http://www.mto.gov.on.ca/english/faq/safety-test.shtml#BicycleHelmets1>.

Ontario's Guide to Safe Cycling

<http://www.mto.gov.on.ca/english/pubs/cycling-guide/index.shtml>.

Young Cyclist's Guide

<http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.shtml>.

Cochrane Injuries Group

<http://www.cochrane.org/reviews/en/ab003985.html>.

Safe Kids Canada

Got Wheels? Get a Helmet! <http://www.safekidscanada.ca/SKCFForParents/custom/GotWheelsGetAHelmetColour.pdf>

Ride Safe Sheet

<http://www.safekidscanada.ca/SKCforPartners/custom/RideSafeEnglish.pdf>.

Bike Carriers (for carrying a child on your bicycle)

<http://www.safekidscanada.ca/SKCFForParents/section.asp?s=Safety+Information+by+Topic&SID=10774&ss=Wheeled+Activities&ssID=11341&sss=Bike+Carriers+and+Trailers&ssID=14487>.

World Health Organization

Have Fun, Be Safe! (Companion to the World Report on Child Injury Prevention 2008)

http://www.unicef.org/publications/index_46790.html.

Examples of Sport and Recreation Injury Prevention

Canada

<http://www.injuryresearch.bc.ca/categorypages.aspx?catid=1&subcatid=39&catname=Injury%20Topics&subcatname=Sports,%20Recreation%20and%20Leisure%20Injuries>.

New Zealand

Accident Compensation Corporation (ACC)

Additional Resources

BC Injury Research and Prevention Unit: Sport and Recreation Injury Prevention Strategies – Cycling

OPHA Cyclist Injury Prevention Resource

Canadian Cancer Society, Manitoba Division: Effective Bicycle Helmet Promotion Intervention (2008)

Ontario Injury Prevention Resource Centre: Sport and Recreation Injuries, November 2008

ThinkFirst

<http://www.thinkfirst.ca>.

CAN-BIKE Training Program

<http://www.canadian-cycling.com/cca/education/canbike.shtml>.

Canadian Cycling Association

<http://www.canadian-cycling.com/cca/home.shtml>.

Ontario Ministry of Transportation

<http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.shtml>.

BikeSense (The British Columbia Bicycle Operator's Manual) – the Greater Victoria Cycling Coalition
<http://www.bikesense.bc.ca>.

Road Safety Learning Resources – Manitoba Public Insurance
http://www.mpi.mb.ca/english/rd_safety/learningresources/rslearningresourcesforschools.html.

Bicycle Safety teaching resources – Saskatchewan Institute for the Prevention of Handicaps
http://www.preventioninstitute.sk.ca/home/Program_Areas/Childhood_Injury_Prevention/Bicycle_Safety.

OPHEA: Road and Off-Road Safety Lesson Plans (K–Grade 12). <http://www.ontarioroadsafety.ca>.

National Social Marketing Centre <http://www.nsmcentre.org.uk>.

Link for Kids

Public Health Agency of Canada
<http://www.phac-aspc.gc.ca/dca-dea/injury/en/route-eng.php>.

b) Off-Road Safety

i) All-Terrain Vehicles (ATVs)

1) ATV Injuries in Canada

In Canada, approximately 850,000 Canadians owned an ATV in 2004 according to the Canadian Safety Council. (104)
For transport related injuries, ATVs and snowmobiles are nationally responsible for the following: (19)

- Thirteen per cent of hospitalizations.
- Seven per cent of emergency room visits.
- Twelve per cent of cases of permanent partial disability.
- Eleven per cent of permanent total disability.
- Direct costs of ATV and snowmobile injuries in Canada are \$185 million and indirect costs are \$196 million for a total cost of \$381 million.

2) ATV Injuries in Ontario (105)

On average, more than 15 people each day are seen in Ontario emergency departments for injuries related to ATVs.

- In the 2005/06 fiscal year, there were 5,584 Emergency Department (ED) visits (47.1/100,000) and 579 (4.8/100,000) hospitalizations for ATV related injuries.
- Of those hospitalized, 78% were discharged home, 10% were discharged home with support services and approximately 1% died in the ED.
- The majority of those presenting at the ED or being hospitalized were ATV drivers.
- The most common injuries for ED visits and hospitalizations were those to the lower limbs (knee, lower leg, ankle and foot).
 - Lower leg fracture was the most common injury for ED visits and hospitalizations followed by fracture of the shoulder and upper arm.
- The highest overall rates of ATV injuries were reported in Northern Ontario.

- Males represented 80% of ED visits and 83% of hospitalizations for ATV injuries.
 - Males and females 10–24 years represented the highest number and rate of ED visits and hospitalizations for ATV injuries.
 - Males 15–19 years had the highest number of ED visits (935) and hospitalizations (87) for all age groups and for both males and females – more than three times that of females.

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

Definition of an All-Terrain Vehicle (ATV)

“ATVs are generally defined as three- or four-wheeled motorized vehicles (although newer models may have up to six wheels), with large, low-pressure tires designed for a single operator riding in off-road terrain.” (106) Note: There are also ATVs on the market engineered, designed and manufactured to accommodate a driver and one passenger and the Canadian Institute of Health Information’s (CIHI) definition includes both snowmobiles and other off-road vehicles.

a) Situational Assessment

- ATVs are used in Canada as a means of off-road transportation for forestry, farming and recreational purposes. (106)
- Since being introduced in the North American market in the early 1970s, the recreational use of ATVs has grown significantly. (95)
- These vehicles weigh up to 500 lbs and can reach speeds of up to 105 km (65 mph). ATVs for two riders can weigh up to 800 lbs. (95)
- Operating an ATV safely requires adult skills and judgment. (22)
- Use of ATVs by those under 16 years can result in serious injury and death. (107)
- Increased popularity of ATVs has resulted in increased ATV-related injury rates.
- Riding an ATV is not comparable to riding a bike, motorcycle or driving a car. It requires the ability to shift your weight in a co-ordinated response to terrain changes. (108)
- For ATV-related injuries identify:
 - International/national/provincial policies, programs and legislation, being developed or implemented to prevent ATV-related injuries.
 - Gaps in policies/programs/legislation for preventing ATV-related injuries
 - Provincial/local ATV stakeholders and organizations.
 - Role of public health in the prevention of ATV-related injuries within the local context, considering all aspects of a comprehensive health promotion approach.
- Support partners in assessing their collective capacity to prevent ATV-related injuries (seek opportunities to build understanding of linkages between issues, partners and programs).

b) Partnerships

Identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to:

Local Community Partners

- Youth
- Youth volunteers
- Parents
- Schools/school boards
- Police
- Municipal planners including trail planners
- Parents
- NGOs
- Recreational partners
- Paramedics/EMS
- ATV distributors
- Family physicians
- Local ATV clubs
- Local hospitals/Emergency room physicians
- Researchers
- Educational institutions
- Agricultural groups (such as local 4-H clubs)
- Injury prevention practitioners
- Fire departments

National/Provincial Partners

- Canada Safety Council
- Canadian Off-Highway Vehicle Distributors Council
- Ontario Federation of All-Terrain Vehicles
 - <http://www.ofatv.org>
- Ministry of Transportation (MTO)
 - <http://www.mto.gov.on.ca>
 - MTO Regional Planners (Appendix E)
- ATV Ontario
- ATV Manufacturers
- Police
- Tourism industry
- Canadian Paediatric Society
- NGOs (Safe Communities, Safe Kids Canada, SMARTRISK, ThinkFirst, etc.)
- Lead Trauma Hospitals (Appendix C)
- Provincial Trauma Network

- MADD Canada
- Ontario Federation of All Terrain Vehicle Clubs
- 4-H Club ATV Program
- Municipal planners

Protective Factors

- Wearing a helmet and eye protection has been shown to be effective in reducing head injuries in ATV-related incidents (CSA, DOT/Federal Motor Vehicle Safety Standard, Snell or American National Standards Institute). (108,109)
- Wearing protective clothing significantly reduces the chance of being injured when falling from an ATV or in an ATV incident (boots, gloves, long pants and chest protector).
- Riding within skill level.

Risk Factors

- Child less than 16 years old due to inadequate physical size and strength
- Child's immature motor and cognitive development
- Driver error due to poor judgment and loss of control
- Inexperience
- Risk-taking behaviour
- Riding alone
- Driver use patterns (recreational versus non-recreational use (110))
- Engine size (110)
- Driving under the influence of alcohol or other drugs
- Riding double on an ATV designed for one person (driver)
- Not wearing protective gear
- Three-wheeled ATVs are much less stable when driven than four wheeled ATVs and the likelihood of serious injury in users is increased. The sale of new three-wheeled ATVs has been voluntarily banned in Canada but it is legal to sell, trade, register and insure them
- Not wearing a helmet
- Wearing an industrial hard hat (used for occupation-related activities such as forestry) (108) or a hockey helmet
- ATV power
- ATV weight
- Speeding, especially on hills and curves, leading to rollovers
- Crossing ice surfaces
- Riding on pavement is extremely dangerous because they are designed for trail use
- Riding on or along roads increases the chance of colliding with other vehicles
- Not wearing protective gear (108)
- Untrained operator
- Unsupervised riding by children
- Colliding with an object such as a tree, rock, other vehicle, etc.
- Riding up and down steep hills (rollovers)

c) Policy

The following recommended ATV policies are based on evidence-based position statements:

- Canadian Paediatric Society <http://www.cps.ca/english/statements/IP/IP04-01.htm>
- Safe Kids Canada/Worldwide <http://www.safekidscanada.ca/safekidsCanada>
- Canadian Association of Paediatric Surgeons [http://www.caps.ca/docs/CAPS_position_statement_on_ATVs\[2\].pdf](http://www.caps.ca/docs/CAPS_position_statement_on_ATVs[2].pdf)
- American Academy of Paediatrics <http://www.aappolicy.aappublications.org/cgi/reprint/pediatrics;105/6/1352.pdf>
- Ontario Medical Association <http://www1.oma.org/Health/All-Terrainvehicles.pdf>

These policies are to reduce ATV-related injury in Canada:

- Children younger than 16 years should not operate ATVs (22,109,111)
- Children should never ride as passengers on ATVs unless the manufacturer specifies a passenger is allowed (22,109,111,112)
- ATV drivers should always wear a government-approved helmet (109,111) such as a helmet meeting CSA, DOT/Federal Motor vehicle Safety Standard, Snell or American National Standards Institute, motorcycle helmet standards
- ATV drivers should not operate the vehicle at night or under the influence of alcohol or other drugs (109,112)
- ATV drivers should complete an approved training course, such as the Canadian Safety Council's ATV Rider Course (109,111)
- Improve pre-hospital care (112)
- Provinces and Territories should harmonize off-road vehicle legislation (22,109,111)
- Three-wheeled ATVs should be banned [resale] (109,112)
- ATV manufacturers consider potential improvements in vehicle design (111)
- Develop and maintain trails to keep surface smooth (112)
- Require a driver's licence to operate an ATV (112)
- Do not use after sunset or before sunrise (112)

The American Academy of Paediatrics (AAP) recommends (112):

- Education (public, individual patient and parent) about the hazards of all ATVs should continue (Besides benefiting the riders, it may increase public demand for greater regulation; helmet laws and limitation on use by children).
- During anticipatory guidance, families should be asked, either by direct questioning or intake survey, about the kinds of recreational activities in which they engage. Just as those who have a swimming pool merit special counselling, so do families who engage in off-road vehicle use. The following points should be emphasized:
 - Off-road vehicles are particularly dangerous for children younger than 16 years who may have immature judgment and motor skills. Children who are not licensed to drive a car should not be allowed to operate off-road vehicles.
 - Injuries frequently occur to passengers; therefore, riding double should not be permitted.
 - All riders should wear helmets, eye protection and protective reflective clothing. Appropriate helmets are those designed for motorcycle (not bicycle) uses and should include safety visors/face shields for eye protection.
 - Parents should never permit the street use of off-road vehicles and night time riding should not be allowed.
 - Flags, reflectors and lights should be used to make vehicles more visible.
 - ATVs have a roll bar to prevent the driver from being crushed by the weight of the vehicle in the event of a rollover.

- Headlights that automatically turn on when the engine is started should be routinely installed on all ATVs to improve visibility by other vehicles.
- Speed governors (devices that limit maximum speed) should be installed on ATVs used by inexperienced operators.
- Efforts should be made to design ATVs so that they cannot carry passengers.

All of the above proposed modifications should be thoroughly evaluated before use and monitored after the introduction.

The following recommended range of activities is based on evidence informed/promising practices and policies.

d) Programs

In collaboration with community partners:

- Inform and influence the development and adoption of a comprehensive ATV provincial training program.
- Recognize the various ATV stakeholders and organizations when initiating a community-based safety effort such as the non-profit sector, private sector, manufacturers, researchers, federal public land managers, special interest groups (medical professionals, health associations, schools, injury prevention organizations, ATV recreational organizations, ATV industry representatives, health practitioners, informal youth groups, Consumer Product Safety Commission, youth and adult volunteers. (113)
- Support the implementation of local training efforts to reduce ATV-related injury.

4-H ATV Safety Program (108)

This program originated in Alaska to address safety with local youth and offers a range of activities to increase ATV safety awareness among youth in addition to educational materials. Goals of the program are to educate preteens, teens and adults riding ATVs about safe operating/riding techniques and practices; to help pre-teens and teens increase their critical thinking and other life skills and to enhance their abilities to assess risk and solve problems; to educate parents and other caregivers to protect young operators/riders through supervision and monitoring; and to help communities address issues related to the safe use of ATVs. (114)

The program is based on four essential elements for positive youth development programs (belonging, mastery, independence and generosity). An initial meeting is held with various stakeholders to discuss respective issues to achieve a common solution. The program has been expanded to four regional workshops attended by teams from 36 states for training in teaching techniques, stages of youth development and community action strategies. Participants are provided with "Fit Guidelines" to assist youth to choose an appropriate size of ATV and "Safety Tips for the ATV Rider" from the Specialty Vehicle Institute of America (SVIA).

The program has been expanded nationwide in collaboration with stakeholders to reduce ATV-related injuries and deaths based on community grant program from National 4-H Council and includes hands-on instructors who are trained volunteers and a leadership guide.

e) Social Marketing

Research has demonstrated that a combination of education, engineering, evaluation and enforcement of legislation are required to reduce the rate of injury. (1) Focus group findings in one study indicated that adult and youth ATV riders felt that parents were the key to promoting safe ATV riding by youth; graphic portrayal of serious medical consequences of inappropriate use were preferred by youth. (115)

Although graphic fear-based campaigns have been a popular approach to address road safety issues, research findings on the effectiveness of fear appeals are mixed and inconsistent. (116) A number of studies show an unintended negative effect in which participants deny, trivialize, or ridicule the message.

(source: http://www.swov.nl/rapport/Factsheets/UK/FS_Fear_appeals.pdf)

The “social norming” approach has emerged as an alternative to scare tactics. Social norm theory holds that much of people’s behaviour is influenced by their perceptions of what is “normal” or “typical.” The goal is to realign perceptions with reality by informing people that most of their peers are acting in a positive or healthy way. To date, road safety applications of the social norms approach include campaigns on seat belts, drinking and driving, commercial vehicles and licence knowledge tests.

In recent years, MTO has been transitioning to the use of positive messaging in its road safety marketing campaigns. New and emerging Internet-based technologies and applications that make up “web 2.0” are changing the way that citizens interact with businesses and governments around the globe. Social media technologies (interactive websites, blogs, video sharing, etc) must be engaged if the goal is to market effectively to the technologically savvy, community minded “Net Generation” that has literally grown up on the Internet. (117) To stay relevant, marketing and communications experts in Canada and globally agree that social media simply must be embraced.

Key Messages

- Children under 16 years of age should not ride an adult-size ATV.
- More research is needed to determine if children would be protected by riding less powerful ATVs with smaller sized engines.
- Children should ride an ATV only under adult supervision
- The risk of significant injury to a child is at least six fold higher when riding an ATV compared to riding in a conventional motor vehicle. (109)
- ATV drivers 15 years old were nearly four times as likely to be injured as drivers 16 and older. (110)
- Males were involved in 75–85% of ATV crashes leading to injury. (111)
- Multiple system injuries are common. ATV trauma is a significant threat to children in ATV crashes. (113)

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a. Collaborating with and engaging community partners;*
- b. Mobilizing and promoting access to community resources;*
- c. Providing skill-building opportunities and;*
- d. Sharing best practices and evidence for the prevention of injury and substance misuse.*

a) Priority Populations for All-Terrain Vehicle Injuries

- Children under 16 years.
- Males 20–24 years (account for 41% of ATV-related injuries). (106)
- Parents of children under 16 years who ride ATVs.
- Aboriginal groups.
- Residents of rural and northern Ontario.
- Children of farmers.

b) Crossover Areas

- Child Health and Active Living programs.

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

These efforts shall include:

- Adapting and/or supplementing national and provincial health communications strategies and/or*
- Developing and implementing regional/local communication strategies.*
 - Identify existing international, national and provincial partners who have developed or are developing communication strategies to reduce ATV-related injuries such as: Nova Scotia; Safe Kids Canada; CSA; Prevent it.ca; Ontario Injury Prevention Strategy; British Columbia; Canada Safety Council and Ministry of Transportation.
 - Identify and collaborate with:
 - Existing local networks (Eastern Region Injury Network, Southwest Injury Prevention Network, Northern Injury Prevention Practitioner Network, Ontario Injury Prevention Practitioner Network and Injury Prevention Managers' Alliance)
 - ATV stakeholders and organizations

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

a) ATV Legislation in Ontario – (Highway Traffic Act and Off-Road Vehicles Act)

- ATV legislation is the responsibility of the *Ontario Ministry of Transportation*.
- Drivers must be a minimum of 16 years and hold a valid G2/M2 driver's licence or greater to drive an ATV on the shoulder of some provincial highways (*Highway Traffic Act*) and municipal roads where a municipal bylaw permits the use of ATVs on its roads (few exemptions include farmers and miners).
- Municipalities may determine where and when ATVs are allowed on *municipal* roads. ATVs are prohibited on municipal roads if the municipality does not have a bylaw to permit their use.
- Drivers must be at least 12 years to drive an ATV off-road unless supervised by an adult or operating a vehicle on vehicle owner's property.
- Helmet use is mandatory on and off-road (*Highway Traffic Act; Off-Road Vehicles Act*) unless driving the ATV on land owned/rented/leased by the owner of the vehicle.
- Individuals must have a valid driver's licence to drive on or across a highway (*Off-Road Vehicles Act*).
- An ATV must be registered and insured unless it is being operated on the vehicle owner's property.
- *Off-Road Vehicles Act* http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o04_e.htm

b) Evidence-based/Promising Practice (22)

- Promote harmonization of ATV legislation in Canada including the following:
 - Minimum operator age.
 - Restriction of passengers to the number for which the vehicle was designed.
 - Compulsory helmet use with no exemptions.
 - Mandatory training, licensing and registration.
 - Banning the use of three-wheeled ATVs (109); including new and used and recall with a refund for owners. (112)
- Restrict children under the age of 16 years from operating any type of ATV, regardless of its size or the power of its engine.
- Require use of appropriate helmets.
- Require mandatory safety training for all those operating ATVs.

Nova Scotia: Experiences 50% Reduction in ATV-Related Injury Post-Legislation:

The government of Nova Scotia amended their *Off-Highway Vehicles (OHV) Act* to restrict youth under the age of 14 years from operating ATVs except on a Closed Course [currently no Closed Courses]. The year after the law came into effect, IWK Health Centre in Halifax saw a 50% reduction in ATV-related injuries for youth under the age of 14 years, while ATV-related injuries to youth 14–15 years had not changed significantly, suggesting that the law should be expanded to protect children up to age 16.

PEI and New Brunswick have also amended their respective *Off-Road Vehicles (ORV) Acts* to restrict children under the age of 14 years from operating ATVs.

Additional Legislative Considerations

Registration and Licensing

- Licensing should be a requirement to operate ATV.
- ORV Clubs and Associations have a role in education.
- ATV training programs should include the following:
 - Theory and practice.
 - “Hands on” training.
 - Classroom sessions.
 - Field tested.
 - A certificate upon completion of the program.
- Existing ORV riders should be grandfathered if they complete a training course and are currently registered in their province of residence.
- Demerit points should be levied similar to cars and boats for drinking and driving
- Impoundment of vehicles driving 50 km or over.
- Police/conservation officers should have the authority to implement fines, demerit points and impound vehicles.
- Graduated fines should be issued.
- Adult supervision should be written into legislation (similar to Nova Scotia).
- Encourage the operation-appropriate machines for 14- to 15 year-olds (70–90 cc ATV).
- Ensure that ATVs meet Safety Standards of the *Federal Motor Vehicle Safety Act* (MVSA) and National Safety Mark.
- Apply a speed limit for off-road use (suggested speed limit is 20 km/h or less depending on trail condition).

Nova Scotia Task Force Report

After eight more months of public consultations (for a grand total of 15) and after having received over 2,500 written submissions in the largest public consultation process in Voluntary Planning’s history, the Task Force released its Final Report on November 2, 2004 (Final Report of the Voluntary Planning Off-highway Vehicle Task Force).

Key Recommendations from the Task Force Report

- Develop a network of designated trails and areas (on public and private lands with permission) for the recreational use of off-highway vehicle users. Limit off-highway vehicle activity on public land to this network unless otherwise authorized by Department of Natural Resources issued permits.
- Prohibit off-highway vehicle use by the public in existing protected wilderness areas. Allow three years for designated Snowmobilers Association of Nova Scotia (SANS) trails that are currently authorized through ministerial discretion to be phased out and replaced with alternate routes outside the affected protected wilderness area.
- Amend legislation to prohibit off-highway vehicles from the following sensitive ecosystems, unless otherwise specifically allowed within the designated trail network: a) barrens-coastal and plateau b) beaches (marine and fresh water) and dunes c) bogs and marshes d) brooks, streams and rivers e) other sensitive ecosystems as defined by the Department of Environment and Labour.
- Require all off-highway vehicle operators to complete an accredited off-highway vehicle training course.
- Prohibit children under the age of 14 from operating off-highway vehicles, on public or private land, except when activities are conducted on closed courses under the auspices of an accredited organization.

- Amend legislation to require that off-highway vehicle drivers (individually or through a recognized club or association) acquire written permission from landowners.
- Establish and fund a permanent Integrated Enforcement Task Force of at least 12 additional full-time positions exclusively dedicated to the enforcement of off-highway vehicle laws and regulations.

c) Key Resources

4-H Club Website

<http://www.atv-youth.org>

Canadian Off-Highway Vehicle Distributors Council

<http://www.cohv.ca>

Canadian Paediatric Society "All-terrain vehicles: safety tips for families"

<http://www.caringforkids.cps.ca/keepkidssafe/ATV.htm>

Canadian Safety Council

<http://www.safety-council.org>

Centers for Disease Control and Prevention: National Centre for Injury Prevention and Control (CDC)

<http://www.cdc.gov/safekid>.

Government of Nova Scotia

Final Report of the Voluntary Planning Off-highway Vehicle Task Force

ATV Ontario

<http://www.atvontario.com>.

Ontario Injury Prevention Resource Centre

<http://www.oninjuryresources.ca>

Safe Kids Canada Web Resources

<http://www.safekidscanada.ca/Public Policy and Advocacy/All-Terrain Vehicles>

Children's Hospital of Eastern Ontario (CHEO) ATV Fact Sheet

http://www.cheo.on.ca/english/9600_08_04.shtml.

OPHEA: Road and Off-Road Safety Lesson Plans (K–Grade 12). <http://www.ontarioroadsafety.ca>.

Ontario Federation of All Terrain Vehicle Clubs

<http://www.ofatv.org/safety/youthrider>.

Alberta Centre for Injury Control & Research <http://www.acicr.ualberta.ca>.

British Columbia Injury Research and Prevention Unit <http://www.injuryresearch.bc.ca>.

National Social Marketing Centre <http://www.nsmcentre.org.uk>.

ii) Snowmobiles

1) Snowmobile Injuries in Canada

In Canada, there are more than 660,000 registered snowmobiles that cover over 1.65 billion kilometres of trails during the snowmobiling season. (118) The majority of snowmobile injuries take place on private property and those under 20 years are the most likely to sustain serious injury (orthopaedic injury and head injury). Most injuries (34%) occur in February and alcohol was reported to be a factor in 49% of admissions for severe trauma cases in 2003–2004. Ninety-one percent of those injured were driving. Those 15–19 years comprised 19% of those treated in Ontario emergency departments followed by 13% aged 35–39 years. (119)

2) Snowmobile Injuries in Ontario

On average, each week, over 40 people visit an emergency department for injuries from snowmobiling in Ontario. In 2005/06, there were 2,096 Emergency Department (ED) visits and 268 hospitalizations for snowmobiling-related injuries and 5% were admitted as inpatients to critical care/operating rooms. Northern Ontario experienced the highest rate of ED and hospitalizations. Males represented the vast majority of these cases (75% ED visits and 84% of hospitalizations):

- Males aged 15–19 years represented the highest number and rate of ED visits
- Males aged 30–34 years had the highest number and rates of hospitalizations (120)

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

a) Situational Assessment

Ontario's snowmobile trail system is the largest in the world with over 40,000 km of trails. Ontario and the Ontario Federation of Snowmobile Clubs (OFSC) work together to encourage snowmobilers to ride with a Snowmobile Trail Permit on OFSC-prescribed trails that are maintained and marked for improved safety. Head injuries remain the leading cause of mortality and serious morbidity from collisions or overturning involving snowmobiles. (121) Children's lack of strength and skill required to operate a snowmobile can make it challenging to do so safely. (121)

For snowmobile-related injuries identify:

- International/national/provincial policies, programs, legislation, being developed or implemented to prevent snowmobile-related injuries
- Gaps in policies/programs/legislation for preventing snowmobile-related injuries
- National/provincial/local snowmobile stakeholders and organizations
- The role of public health in the prevention of snowmobile-related injuries within the local context, considering all aspects of a comprehensive health promotion approach

Support partners in assessing their capacity to prevent snowmobile-related injuries and identify collectively what can be done in local jurisdictions (seek opportunities to build understanding of linkages between issues, partners and programs).

b) Partnerships

Identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

Local Community Partners

- Youth
- Youth volunteers
- Parents
- Police
- Schools
- Municipal planners including trail planners
- Parents
- NGOs
- Recreational partners
- Paramedics/EMS
- Snowmobile distributors
- Family physicians
- Paramedics/EMS
- Emergency room physicians
- Local hospitals
- Researchers
- Educational institutions
- Local snowmobile clubs
- Injury prevention practitioners
- Fire departments
- Insurance companies

National/Provincial Partners

- Ontario Federation of Snowmobile Clubs
- International Snowmobile Manufacturers Association (ISMA)
- Canadian Council of Snowmobile Organizations (CCSO)
- Ministry of Transportation (MTO) Regional Planners

- Snowmobile manufacturers
- Tourism industry
- NGOs (Safe Communities, Safe Kids Canada, SMARTRISK, Think First, etc.)
- Lead Trauma Hospitals (Appendix C)
- Provincial Trauma Network
- Local hospitals
- Insurance companies

Protective Factors

- Check weather conditions before leaving home.
- Check with authorities to ensure frozen bodies of water are safe for travel (according to the Canadian Red Cross, ice must be at least 25 centimetres or 10 inches thick).
- Avoid travelling on unmarked frozen lakes and rivers.
- Wear a buoyant snowmobile suit if travelling on frozen bodies of water.
- Carry ice picks to improve chance of survival if ice breakthrough happens and make sure that ice picks are accessible.
- Decrease speed at night.
- Respect speed limits posted on trails and roadways (speed limit on a trail is generally 50 km/h unless otherwise indicated).
- Always wear an approved helmet, whether a driver or a passenger.
- Plan route and ensure all areas are designated as safe for snowmobile travel – ride on a groomed, established trail network.
- Inform a responsible person of route and planned return time. (4)
- Always ride with a friend – never ride alone.
- Carry a map, compass or GPS unit, extra socks and mittens, boot liners, flares and extra fuel.
- Wear appropriate protective equipment including a properly fitted certified helmet and layers of warm clothing.
- Pack a first aid and survival kit, tool kit, as well as adequate food and water.
- Make sure the snowmobile has adequate fuel and ensure safety features are all working properly (brake system, etc). Conduct a pre-ride inspection before leaving.
- Ensure headlights and tail lights are working and are free of snow.
- Reduce speed when necessary (e.g., unfamiliar areas, crossing roadways and railways, at night, etc.). (122)
- Taking a snowmobile driver training course.
- Wear reflective clothing when riding at night.
- Always carry a cell phone.
- Ride within ability and according to conditions.

Risk Factors

- Riding under the influence of alcohol or other substances (alcohol affects judgment and increases the risk of fatigue and hypothermia)
- Driving at excessive speeds, often in excess of 50 km/h
- Riding on public roadways or highways
- Riding on unfamiliar terrain
- Riding on ice
- Riding after dark

- Not wearing protective equipment
- Riding alone
- Carrying more than one passenger
- Carrying passengers younger than six years (121)
- Inexperience
- Railway crossings
- Riding off groomed, established trail networks

c) Policy

The following is a compilation of snowmobile policy recommendations by the Canadian Paediatric Society (<http://www.cps.ca>) American Academy of Paediatrics (<http://www.aap.org>) and Safe Kids Canada (<http://www.safekidscanada.ca>). These policy recommendations provide an opportunity for public health to work with their national, provincial and local safety partners to prevent snowmobile-related injuries.

Snowmobilers Under 16 Years

- Children younger than 16 years should not operate a snowmobile. (22,95,123,124)
- Snowmobile ads should not be targeted to young adolescents/depict adolescents driving them. (124)
- Children should not ride as passengers (22); if they do so, child passengers should not be under six years. (6)

Snowmobilers 16 Years and Older

- A graduated licensing program should be implemented. (6–124)
- Newly licensed operators should be restricted to snowmobiling during daylight hours on groomed trails only (6–8) away from roads/waterways/railroads/pedestrians. (124)
- There should be zero tolerance for alcohol. (121,8)
- A learner's permit for operators should be required by taking a state-sanctioned course. (121)
- All snowmobilers should avoid alcohol or drugs before/during snowmobiling and adults should reinforce this message. (95,124)
- Check weather report before heading out; know signs of hypothermia. (124)
- Speed limiting governor to limit the maximum speed for those newly licensed. (121,124)
- Wear insulated protective clothing. (95,124)
- Carry a first-aid kit and survival kit that includes flares and a cellular phone. (124)
- Travel in groups. (95,124)
- Avoid ice. (95,121)
- Carry one passenger/number of passengers for which the vehicle is designed. (7,95)
- Keep headlights and tail lights on at all times. (121)
- Snowmobiles should not be used to tow anyone on a tube, tire, sled, saucer or skis. (95,121)
- Snowmobiles should be well maintained; caution should be used when fuelling and loading snowmobiles on truck. (121)

Manufacturers (121)

- Need to incorporate mechanical enhancements (seating/handlebar designs to improve rider comfort and safety and decrease hand-arm vibration to minimize white finger syndrome/numbness.
- Attenuate sound levels of snowmobiles; improve headlight luminance; add a rear-view mirror and GPS to all snowmobiles.

- Improve braking, steering, stability of snowmobiles.
- Improve helmet design to decrease visor fogging/improve hearing protection.
- Consider building in a radio for communication/weather monitoring.

The following recommended range of activities is based on evidence informed/promising practices and policies.

d) Programs

In collaboration with community partners

- Recognize the various snowmobile stakeholders and organizations when initiating a community-based safety effort including non-profit sector, private sector, manufacturers, researchers, federal public land managers, special interest groups (medical professionals, health associations, schools, injury prevention organizations, Ontario Federation of Snowmobile Clubs (OFSC), recreational organizations, snowmobile industry representatives, health practitioners, non-formal youth groups, Consumer Product Safety Commission, youth and adult volunteers.

Training

- Evidence of effectiveness of operator safety certification is lacking at this time. (121)
- Support the implementation and evaluation of local and provincial training efforts to reduce snowmobile-related injury.

e) Social Marketing

- Research has demonstrated that a combination of education, engineering, evaluation and enforcement of legislation are required to reduce the rate of injury. (21,125)
- MTO provides funding and guidance to community and regional road safety groups to assist in the development of public education campaigns and materials for distribution in the snowmobile community (posters, brochures, media campaigns and Snowmobile Safety Kits [kits contain information about ice conditions and safe-riding practices, a distress whistle, ice picks, compass and trail map and other safety materials]).

Key Messages

- Snowmobiling is associated with the highest rate of serious injury of any popular winter sport in Canada. (121)
- Human factors are the cause of almost all snowmobiling injuries.
- Children lack required strength and skills to operate a snowmobile safely. (95,121)
- Snowmobiling in remote areas contributes to the outcome from injury sustained while snowmobiling. (119)

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- Collaborating with and engaging community partners;*
- Mobilizing and promoting access to community resources;*
- Providing skill-building opportunities; and*
- Sharing best practices and evidence for the prevention of injury and substance misuse.*

a) Priority Populations

- Children under 16 years.
- Adult males under 30 years.
- Parents of children under 16 years who ride snowmobiles.

b) Crossover Areas

- Child Health and Physical Activity programs.

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

These efforts shall include:

- Adapting and/ or supplementing national and provincial health communications strategies; and /or*
- Developing and implementing regional/local communication strategies.*
 - *Identify existing international, national and provincial partners who have developed or are developing communication strategies to reduce snowmobile-related injuries such as the Ontario Federation of Snowmobile Clubs and Ministry of Transportation.*
 - *Identify existing local networks (Eastern Region Injury Network, Southwest Injury Prevention Network, Northern Injury Prevention Practitioner Network and Ontario Injury Prevention Practitioner Network).*
 - *Identify snowmobile stakeholders and organizations.*

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

Snowmobile Legislation in Ontario – (Motorized Snow Vehicles Act)

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90m44_e.htm#BK1.

This legislation is the responsibility of the *Ontario Ministry of Transportation* and is enforced by the Ontario Provincial Police (OPP), municipal police and STOP (Snowmobile Trail Officer Patrol-volunteers who are sworn special constables by the OPP). Drivers must be at least 12 years and possess a valid Motorized Snow Vehicle Operator's Licence (MSVOL) to operate a snowmobile on a trail. Drivers must be at least 16 years and possess a valid driver's licence or MSVOL to drive along or cross a highway (that includes a municipal road). In addition:

- The speed limit on trails is generally 50 km/h.
- The speed limit on highways (including municipal roads) with a posted speed limit over 50 km/h, is 50 km/h.
- Municipalities may set lower speed limits for highways and roads under its jurisdiction by means of a bylaw.
- Municipalities may set higher speed limits for trails under its jurisdiction by means of a bylaw.
- Snowmobiles operating on a prescribed trail must display a valid trail permit.
- Lights are required at night, during inclement weather or insufficient light conditions.
- Helmets are required for drivers and passengers unless the snowmobile is operated on the vehicle owner's property.
- Snowmobiles must be registered and insured unless being operated on the vehicle owner's property.
- To successfully obtain an MSVOL, individuals must complete a driver training course consisting of six hours of instruction and receive at least 80% on a final written test.

a) Evidence-based/Promising Practice (22)

- Promote harmonization of snowmobile legislation in Canada, including:
 - Minimum operator age.
 - Restriction of passengers to the number for which the vehicle was designed.
 - Compulsory helmet use with no exemptions.
 - Mandatory training, licensing and registration.

Additional Legislative Considerations (95)

- Graduated licensing be introduced for snowmobilers
- Minimum operator age of 16 years because of the strength and stamina required to operate a snowmobile safely
- Demerit points similar to cars and boats for drinking and driving
- Impoundment of vehicles driving 50 km or over

b) Key Resources

Canadian Council of Snowmobile Organizations

<http://www.ccsso-ccom.ca>.

Ministry of Transportation (MTO)

<http://www.mto.gov.on.ca>.

MTO Regional Planners (Appendix E)

Ontario Federation of Snowmobile Clubs

<http://www.ofsc.on.ca>.

International Snowmobile Manufacturers' Association (ISMA)
<http://www.snowmobile.org>.

Canadian Council of Snowmobile Organizations (CCSO)
<http://www.ccsso-ccom.ca>.

Ontario's Safe Snowmobiling web page (MTO)

British Columbia Injury Research and Prevention Unit (BCRIPU)
<http://www.injuryresearch.bc.ca>.

Alberta Centre for Injury Control & Research (ACICR)
<http://www.acicr.ualberta.ca>.

Centre for Disease: National Centre for Injury Prevention and Control (CDC)
<http://www.cdc.gov/injury/framingguide.html>.

Ontario Injury Prevention Resource Centre for injury practitioners <http://www.oninjuryresources.ca/home>.

Additional Resources:

National Social Marketing Centre
<http://www.nsmcentre.org.uk>.

Other Areas of Public Health Importance

Other areas of public health importance related to prevention of injuries and substance misuse may include violence, suicide, burns, drowning, farm injuries, poisonings, scalds, suffocation, sport and recreation and playground safety.

The timelines for this Guidance Document precluded inclusion of all the additional injury prevention topics listed in this section of the *Prevention of Injury and Substance Misuse* program standard. Suicide prevention was chosen due to the burden of suicide in Ontario and to provide an opportunity to identify the unique role of public health.

d) Suicide Prevention

Suicidal behaviour is an important and preventable public health problem in Canada. Stats Canada 2004 identified suicide as the leading cause of all injury-related deaths, accounting for one quarter of all such deaths. In Ontario, between the years 2000–2004, suicide was attributed to 4,794 deaths for ages ten and over, with the highest rate being among the adult population. (126) These statistics, however, may be under-represented due to the fact that suicides are not classified under the age of 10. Under-reporting may occur as cases may be identified as undetermined intent due to insufficient evidence. (127)

1) Economic Burden of Suicide and Self-Inflicted Injury in Ontario

Suicide and self-inflicted injury cost Ontarians \$886 million in 1999. Poisonings alone accounted for over 50% of these costs at \$458 million. A number of interventions have been developed to prevent suicides and some programs have been shown to have positive effects. For example, in the United Kingdom, limitations on package sizes of acetaminophen have been found to decrease mortality rates for this type of poisoning by nearly 40%. (128)

In 2007–2008: (CIHI)

- Suicide was the fourth leading cause of major injury in Ontario. (30)
- The definition of suicide excludes poisonings and thereby significantly underestimates the actual number of suicides.
- The mean age of Ontarians who died by suicide was 36 years, the median was 34.
- The largest number (42%, n=53) of cases occurred among the 35-to-64 age group and the 20-to-34 age group (42%, n=53).
- Although only 126 cases were admitted to lead trauma hospitals due to suicide and self-inflicted injury (excluding poisoning), this accounted for 3% of cases and 7% (n=37) of all injury deaths.
- Males represented 66% (n=83) of self-inflicted injuries admitted to lead trauma hospitals.
- The mean length of stay for suicide and self-inflicted injury (excluding poisoning) was 22 days (median=15 days).

Requirement 2

The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs and the creation or enhancement of safe and supportive environments that address the following:

- *Alcohol and other substances;*
- *Falls across the lifespan;*
- *Road and off-road safety; and may include*
- *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*

a) Situational Assessment

- Identify related local policies, programs and environmental supports being developed or implemented within the community, including a local suicide prevention network and strategy.
- Identify the role of public health in the prevention of suicide within this local context, considering all aspects of a comprehensive health promotion approach.
- Identify gaps in programs related to suicide prevention.

b) Partnerships

Using surveillance data identify and foster collaborative partnerships with local, provincial and national community partners, such as, but not limited to the following:

- Aboriginal organizations
- Addictions services (including alcohol, drugs and gambling)
- After-school programs
- AIDS Network
- Bereavement networks
- Boards of education
- Canadian Association for Suicide Prevention (CASP)
- Canadian Coalition for Senior's Mental Health (CCSMH)
- Canadian Mental Health Association (CMHA)
- Centre for Addiction and Mental Health (CAMH)
- Children and adult mental health agencies
- Children's Aid Society (CAS, CCAS, FACS)
- Crisis services
- Community health centres
- Culturally specific organizations
- Distress centres
- Faith-based organizations
- Food banks
- Hospitals
- John Howard Society/Elizabeth Fry Society
- LGBTQ organizations
- LHINs (Local Health Integration Networks), Family Health Teams and Family Health Action Team
- Neighbourhood Action Teams (NAT)
- Neighbourhood Action Partners (NAP)
- Ontario Network for Suicide Prevention
- Physicians and other health care professionals
- Policing organizations
- Safe Communities Canada and/or local
- Schizophrenia Society of Ontario
- Senior organizations
- Settlement integration services for refugees and immigrants
- Suicide Prevention Network (local)
- Shelters
- Workplaces
- Youth engagement: YMCA, YWCA, recreation centres, youth council, Youth Net

c) Policy

In collaboration with community partners (local suicide prevention network), public health should influence evidence-informed suicide prevention strategies (129,130), such as:

- Advocate for the adoption and implementation of The Canadian Association for Suicide Prevention (CASP) Blueprint for a *Canadian National Suicide Prevention Strategy (2004)* by the federal government.
- Advocate for the development, adoption and support the implementation of a provincial suicide prevention strategy. Examples include Alberta, Manitoba – Framework for Suicide Prevention, Nova Scotia and Nunavut – Annirusuktugut: A Suicide Intervention and Prevention Strategy for the Government of Nunavut.
- Advocate for the development, adoption and support the implementation of a local suicide prevention strategy. For example, Waterloo (http://www.wrspc.ca/pdf/Suicide_Prevention_Strategy_Final_Report_April_2006.pdf) and Niagara (<http://www.cmhaniagara.ca/assets/docs/NSPCStrategyFinal.pdf>).

d) Program and Social Marketing

Evidence-informed practice suggests that a comprehensive approach to prevent suicides entails the above policies and supports (in addition to means restriction) be implemented in conjunction with the following community programs/services (131–134):

- Identify linkages and foster collaboration and communication among community partners.
- Facilitate active and meaningful inclusion of priority populations into policy and program development, implementation and evaluation.
- Support community partners to de-stigmatize mental illness and suicide in health care settings and in the community by:
 - Raising awareness (Great-West Life Centre for Mental Health in the Workplace – Helping Raise Awareness and Reduce Stigma and TAMI (Talking About Mental Illness))
 - Facilitating communication opportunities (Youth Net – bilingual)
 - Promoting mental health literacy (Canadian Alliance on Mental Illness and Mental Health: Mental Health Literacy in Canada)
 - Providing media with guidelines and training (Suicide Prevention Resource Center: Guide to engaging the media in suicide prevention, WHO – Preventing suicide – a resource for media professionals, CMHA-Suicide-responsible media reporting guidelines)
- Promote the accessibility of ongoing training for health practitioners to access for suicide, depression, local community resources, referral process and follow-up care (WHO: Preventing Suicide a Resource for General Physicians and WHO: Preventing Suicide a Resource for Primary Health Care Workers).
- Promote the accessibility of local gatekeeper training opportunities in order to increase the community's capacity to identify and refer individuals at risk of suicide. Evaluated Gatekeeper Programs include the following:
 - ASIST (Applied Suicide Intervention Skills Training) – all ages
 - MHFA (Mental Health First Aid) – youth, adult and instructor training

Requirement 3

The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:

- a) Collaborating with and engaging community partners;
- b) Mobilizing and promoting access to community resources;
- c) Providing skill building opportunities; and
- d) Sharing best practices and evidence for the prevention of injury and substance misuse.

a) Situational Assessment

Suicide is a complex problem for which there is no single cause and no single reason. It results from an interaction of biological, genetic, psychological, social, cultural and environmental factors. Using local surveillance data identify the factors associated with increased incidence of suicide (risk factors) in your community to determine priority populations (135,137), such as the following:

- Aboriginal people
- Access to means
- Age: youth (15–30 years)/elderly (above 65 years)
- Alcohol and other substance misuse
- Exposure to suicidal behaviour
- History of suicide attempt
- History of trauma/abuse
- Mental illness (90% of persons who died by suicide had a diagnosable mental illness)
- Long-term physical illness
- Marital status (widowed, divorced, single)
- Migration resulting in loss of family and community connection
- Personality traits (hopelessness, neuroticism, extroversion, impulsivity, aggression, anger, irritability, hostility, anxiety, low problem-solving skills)
- Poverty
- Relationship breakdown
- Sex – male (the mortality rate due to suicide among men is four times the rate among women)
- Sexual orientation
- Unemployment – associated with recent loss but greater risk for long-term unemployment

Identify local gaps in programs and services that enhance protective factors to promote resiliency against suicidal behaviour, such as (135,136):

- Access to housing, health care, supports and mental health service
- Confidence in oneself and one's own situation and achievements
- Family relationships (good relationships with and support from family members; early attachment with parent)
- Good social skills
- Help-seeking behaviours when difficulties arise, in schoolwork
- Hopefulness, reasons for living and optimism
- Marriage and partnership
- Meaningful employment
- Perceptions of positive health
- Problem-solving skills

- Religious faith and spiritual participation
- Self-control of behaviour, thoughts and emotion
- Social relationships and social connectedness/integration (positive school experiences; connectedness with peers, staff and other adults; support from relevant people; participation in sports, church associations, clubs and other activities)

b) Policy

Public health should participate in developing, implementing and maintaining a local suicide prevention network. The document *LIFE: A framework for prevention of suicide in Australia* provides detailed population health-based strategies to increase community capacity and foster improved communication related to suicide prevention. Public health should also engage priority populations (youth, seniors and Aboriginal people) as part of this network process. Their inclusion should be active and meaningful to ensure cultural appropriateness and acceptance of network outcomes. (133)

In addition, public health should work with their local suicide prevention network to address priority population specific policies, such as the following:

- Advocate for appropriate means restrictions based on local surveillance data in collaboration with community partners (safe gun storage, restrict access to jumping sites, medication packaging, ED prescription restriction, education, etc.). (a,d) (137–138)
- Advocate for suicide prevention policies in accordance with Accreditation Canada's Required Organizational Practices within hospital settings using patient risk assessment for suicide prevention-related services. (a,b,d)
- Support workplaces to adopt and implement suicide intervention policies. An example of a workplace suicide intervention policy is the Great-West Life Centre for Mental Health in the Workplace. (a,b,c,d)
- Support workplaces to adopt and implement policies that address violence in the workplace, such as Great-West Life Centre for Mental Health – Addressing Workplace Violence. (a,b,c,d)
- Advocate for schools and community organizations to adopt and implement suicide intervention policies. (a,b,c,d)
- Advocate for boards of education to adopt and implement mental health and violence prevention curriculum. For example, CMHA: Mental Health and High School Curriculum Guide and Grade 9 Healthy Relationships. (a,b,c,d)
- Advocate for primary care mental health interventions among older adults. For example, CCSMH National Guidelines for Seniors' Mental Health: the Assessment of Suicide Risk and Prevention of Suicide and RNAO Assessment and Care of Adults at Risk for Suicidal Ideation and Behaviour.
- Advocate for community organizations to adopt and implement suicide intervention policies and strategies for priority populations such as Manitoba – Youth Suicide Prevention Strategy, Health Canada: Acting on what we know: Preventing Youth Suicide in First Nations and Aboriginal Youth: A manual of promising suicide prevention strategies. (a,d)
- Advocate for improved billing access to psychologists and social workers (OHIP coverage).

c) Program and Social Marketing

- Reorient community partners to recognize suicide prevention best practices, means restriction, health practitioner training and gatekeeper training (see Requirement 2, Programs). (d)
- Reorient community partners to identify the connections between suicide and risk-taking behaviours, alcohol and other substance misuse, relationship violence and mental illness. (d)
- Promote knowledge of and access to referral systems, community programs and services (home visiting agencies, housing, employment, mental health support, counselling for relationships, stress, life skills, etc.), resources, faith-based supports and sports and recreational activities among community partners and priority populations. For example, Halton-Youth Services Card and Youth Net Ottawa (a,b) and CAMH: Girls Talk (promising practice).
- Integrate local/provincial, national crisis intervention lines into applicable communication plans and resources to promote access to suicide prevention services. (b)
- Apply the principles of asset-based community development. (a,b)
- Enhance protective factors within the community in collaboration with community partners by supporting the adoption and implementation of skill-building opportunities (c,d):
- ASIST (139,140) (Applied Suicide Intervention Skills Training) – all ages
- MHFA (Mental Health First Aid) – youth, adult and instructor training

d) Crossovers

Child Health – HBHC; Mental Health Promotion within the School Setting – see School Health Guidance Document.

Requirement 4

The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:

These efforts shall include:

- a) Adapting and/or supplementing national and provincial health communication strategies; and/or*
- b) Developing and implementing or regional/local communication strategies.*

a) Situational Assessment

It is a promising best practice to deliver communication strategies that promote mental health and mental health literacy. Public health should identify local communication strategies currently being used within the community and determine where these strategies emphasize mental health promotion and apply principles of audience segmentation where priority populations are targeted with messages that involve the stakeholder in the development process. (130–134)

b) Policy

- Identify, adopt and implement integration of mental health promotion messages into other public health areas, such as healthy living, substance misuse prevention, family health, school health, sexual health and workplace health – stress reduction, etc. For Example, CMHA – Take control of your health. Take care of your mind. Practice Mind + Body Fitness.
- Develop guidelines for suicide prevention messaging to address priority populations in conjunction with a comprehensive suicide prevention strategy so that communication campaigns are not promoted in isolation.

c) Program and Social Marketing

- Reorient boards of health and community partners to identify suicide prevention as a public health issue. (LivingWorks: suicideTALK)
- Promote mental health through various communication channels:
 - <http://www.YOOmagazine.net> from IWK Health Centre is an interactive health magazine for schools, youth and parents
 - <http://www.mindyourmind.ca> is a site for youth by youth, where they can get information, resources and the tools to help manage stress, crisis and mental health problems
 - CMHA Mental Health and High School curriculum educates about mental health and mental illness via curriculum
 - Youth Net is a regional mental health promotion and intervention program run by youth, for youth
 - Honouring Life Network: project of the National Aboriginal Health Organization that offers culturally relevant information and resources on suicide prevention to help Aboriginal people
 - Canadian Coalition for Seniors' Mental Health: Resources and Publications
<http://www.ccsmh.ca/en/projects/suicide.cfm> and
Suicide Prevention Among Older Adults: A Guide for Family Members
http://www.ccsmh.ca/pdf/ccsmh_suicideBooklet.pdf

Requirement 5

The board of health shall use a comprehensive health promotion approach in collaboration with community partners, including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:

- *Alcohol and other substances;*
 - *Falls across the lifespan;*
 - *Road and off-road safety; and may include*
 - *Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol 2008 (or as current).*
-
- Support implementation of Safe School Committees as legislated within *Safe Schools Act Bill 212*.
 - Support the creation of legislation to limit over-the-counter acetaminophen sales to help decrease the incidence of overdose cases.

a) Key Resources

National Suicide Prevention Strategies examples:

- **New Zealand**
[http://www.moh.govt.nz/moh.nsf/pagesmh/4904/\\$File/suicide-prevention-strategy-2006-2016.pdf](http://www.moh.govt.nz/moh.nsf/pagesmh/4904/$File/suicide-prevention-strategy-2006-2016.pdf)
- **Scotland**
Scotland – Choose Life A National Strategy and Action Plan to Prevent Suicide in Scotland
- **United States of America**
US National Suicide Prevention Strategy

Additional Resources

- Centre for Suicide Prevention Canada, information, training and research <http://www.suicideinfo.ca/> including SIEC Alert, a quarterly quick reference guide to the newest resources in the field of suicide prevention <http://www.suicideinfo.ca/csp/go.aspx?tabid=23>
- International Association for Suicide Prevention <http://www.iasp.info/index.php>
- Life Lifeline (Australian) http://www.lifeline.org.au/find_help/suicide_prevention/suicide_prevention_links_andresources/4
- Living is For Everyone (Australian) <http://www.livingisforeveryone.com.au/LIFE-Resources.html> including 24 Fact Sheets: <http://www.livingisforeveryone.com.au/LIFE-Fact-Sheets.html>
- Thrive Canada: <http://www.thrivecanada.ca/ecart/item.asp?catid=24>
- Thrive Canada: Pass It On Book: Ready-to-Use Handouts for Asset Builders, introduction to Developmental Assets; ideas for individuals and groups; tools for community initiatives

Section 4. General Injury Prevention Resources

Patton, Michael Quinn, (2008) *Utilization-Focused Evaluation: 4th Revised edition*. Sage Publications, Inc.

Arnold J. (1991) *Internal Evaluation: Building Organizations from Within*. Sage Publications, Inc.

Kirckpatrick, Donald. (2006) *Evaluating Training Programs: The Four Levels, 3rd Edition*. Berrett-Koehler Publishers, Inc.

Dillman, Don. (2008) *Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method*. Wiley

a) Toolkit: A Program Evaluation Toolkit

(<http://aix1.uottawa.ca/~nedwards/chru/english/resources.html>)

Published in 1997 by the Public Health Research, Education and Development Program of the Ottawa-Carleton Health Department. This toolkit provides a clear introduction to the entire process of conducting an internal evaluation. The accompanying MS-Word Templates are an invaluable resource for evaluation work. One of the best descriptions of the process of developing a program logic model. Available in both French and English. The cost is \$30.00 within Canada, \$40.00 outside Canada. Ottawa Public Health Surveillance Emerging Issues, Education and Research Division 495 Richmond Road, 2nd Floor West, Ottawa, ON, Canada K2K 4A4 Tel: (613) 724-4122 ext 23677 Fax: (613) 724-4152 Email: toolkit@ottawa.ca

b) Evaluation Checklists

(<http://www.wmich.edu/evalctr/checklists>)

This site at the Evaluation Centre of the University of Western Michigan provides refereed checklists taken from the literature and from the years of professional experience of the expert contributors. The checklists are useful for designing, budgeting, contracting, staffing, managing and assessing evaluations of programs, personnel and students collecting, analyzing and reporting evaluation information; and determining merit, worth and significance.

Nine-Step Approach to Evaluating Health Promotions Programs

(<http://www.thcu.ca/infoandresources/evaluation.htm>)

Produced by The Health Communication Unit (THCU) at the Centre for Health Promotion, University of Toronto – one of 15 provincial resource centres funded by the Ontario Ministry of Health and Long-Term Care. They offer a number of valuable print resources on evaluation that are designed to accompany a series of workshops they offer on evaluation topics.

The Guiding Principles for Program Evaluation in Ontario Health Units

(http://www.city.ottawa.on.ca/residents/funding/toolkit/guiding_principles_en.pdf)

A framework for strengthening the evaluation of public health programs. The Principles outline when, how and why evaluations should be conducted and who should be involved. Evaluation activities in Ontario health units should be based on the ideals represented in the Principles.

Injury Prevention Program Evaluation Manual

(<http://www.injuryresearch.bc.ca>)

A comprehensive manual produced by the BCIRPU in 2001. The manual takes the reader step-by-step, through the design and implementation process of an evaluation. It provides definitions for commonly used evaluation terms and concepts and provides useful examples, worksheets and exercises.

c) Training Needs

Ongoing training needs will be identified with the implementation of the new OPHS. National conferences (Canadian Injury Prevention and Safety Promotion Conference, National Safe Communities Conference), Safe Kids Canada's annual Safe Kids Week and national teleconferences (ACICR, BCIRPU and Ontario Injury Prevention Resource Centre) assist in updating injury prevention professional development. Workshops are also available (through the Ontario Injury Prevention Resource Centre and The Health Communication Unit).

Internal health unit professional development support for staff increases practice skills and helps to ensure professional standards for the implementation of the OPHS. For example, the Community Health Nursing Standards work assist in increasing health unit staff capacity.

The use of information technology (IT) as a public health communications strategy is evolving. The use of health unit websites and the Internet by individuals and groups is now a mainstream activity. Health unit capacity to reach priority populations is increasing. Ongoing IT education, software availability and activity development are emerging areas of staff training required to implement the OPHS. For example, the Public Health Agency of Canada's Skills Enhancement For Public Health – Applied Epidemiology: Injuries module available at http://www.phac-aspc.gc.ca/sehs-acss/module_description-eng.php. Health unit websites should become more interactive, provide reliable links and be constantly updated to keep pace with the information available and the new generation of Internet users.

Section 5.

a) Key Linkages to Other OPHS and Government Strategies and Programs

- Healthy School Framework: Ministry of Education to influence curriculum development
- Ensure connection with Ministry of Transportation re: road and off-road safety related legislation/policy
- Ontario Osteoporosis Strategy (MHP)
- Aging At Home Strategy (MOHLTC via LHINs)
- Influence the development of the Mental Health and Addictions Strategy (MOHLTC)
- See Appendix A for crossover to other OPHS

b) The Ontario Government's Role

The role of the provincial government is primarily in the area of policy development. Provincial policies that support injury prevention outcomes (falls prevention, road and off-road safety, etc.), in turn, assist the work of boards of health to achieve the societal outcomes for the OPHS. Provincial strategies (Ontario's Injury Prevention Strategy, Nova Scotia Injury Prevention Strategy, Alberta Injury Control Strategy, Injury Free Manitoba) are examples of further jurisdictional injury prevention policy development.

Government opportunities to implement injury prevention legislation also support the work of local health units (Ontario's Bill 118, *The Countering Distracted Driving and Promoting Green Transportation Act*, 2009).

The provincial government has a role in communicating injury prevention issues, influencing and supporting federal government efforts to prevent injury and promote safety.

A key role for the government is integration of injury prevention efforts across ministries – Ministry of Health Promotion, Ministry of Health and Long-Term Care, Ministry of Children and Youth Services, Ministry of Education, Ministry of Labour, etc. Provincial support of injury prevention indicator selection and provincial data collection is a further role for the Ontario government.

The Ministry of Health Promotion has a leadership role in the implementation of the OPHS it administers. Supporting the Public Health Injury Prevention Managers' Alliance provides the opportunity to both collaborate and align efforts to reach the injury prevention requirements in the Prevention of Injury and Substance Misuse Program Standard.

The Public Health Injury Prevention Managers' Alliance is a critical communication link between provincial public health units and the Ministry of Health Promotion (MHP). The aim of the network is to foster collaboration within public health to promote injury prevention through leadership and collaboration. The goals of the IP Alliance are consistent with the OPHS injury prevention requirements of the Prevention of Injury and Substance Misuse Prevention Program and Foundational Standards. Alignment and integration of MHP and network efforts assists in achieving the injury prevention societal outcomes for the Prevention of Injury and Substance Misuse Program Standard.

Regional networks for injury prevention program management and staff also afford the opportunity for advocacy, project partnerships, resource sharing and further collaboration on injury prevention program issues and activities.

Administration of the OPHS website by the Ministry of Health and Long-Term Care and development of the OPHS Performance Measures in collaboration with MHP will assist Public Health Units in their efforts to implement and measure their efforts to meet the OPHS.

Ensuring the “evergreen” process for the Guidance Documents is also a vital role for government in sustaining effective injury prevention program guidance.

Online list-serves can also provide further support from colleagues (Ontario Injury Prevention Resource Centre).

Section 6. Conclusion

This Guidance Document is one of a series that have been prepared by the Ontario Ministry of Health Promotion to provide guidance to boards of health as they implement health promotion programs and services that fall under the 2008 Ontario Public Health Standards (OPHS). This Guidance Document has provided background information specific to injury prevention, including its significance and burden.

In addition, this Guidance Document has provided information about situational assessments for each OPHS Requirement relevant to injury prevention and included related information about policies, program/social marketing, evaluation and monitoring issues and the social determinants of health. It has also suggested policy direction and strategies for consideration, and examined evidence and rationale.

Achieving overall health goals and societal outcomes will depend on the efforts of boards of health working together with many other community partners such as non-governmental organizations, local and municipal governments, government-funded agencies and the private sector. By working in partnership towards a common set of requirements, Ontario can better accomplish its health goals by reaching for higher standards and adequately measuring the processes involved.

The health of individuals and communities in Ontario is significantly influenced by complex interactions between social and economic factors, the physical environment and individual behaviours and conditions. Addressing the determinants of health and reducing health inequities will also ensure that boards of health are successful in their efforts.

Appendix A: Linkages between Prevention of Injury Requirements and Others

List of Acronyms

CH – Child Health

CTC – Comprehensive Tobacco Control

FS – Food Safety

HEHWPA – Healthy Eating, Healthy Weights and Physical Activity

HHPM – Health Hazard Prevention and Management

IDPC – Infectious Diseases Prevention and Control

PHEP – Public Health Emergency and Preparedness

PI – Prevention of Injury

PSM – Prevention of Substance Misuse (including alcohol)

R – Requirement

RH – Reproductive Health

RPC – Rabies Prevention and Control

SH – School Health

SHSTIBI – Sexual Health, Sexually Transmitted Infections, and Blood-borne Infections (including HIV)

SW – Safe Water

TPC – Tuberculosis Prevention and Control

VPD – Vaccine Preventable Diseases

The key subjects for the linkages are as follows:

1) Surveillance 2) Community Partners 3) Priority populations and 4) Public Education and Social Marketing

CATEGORY	OPHS REQUIREMENT	HEHWPA	CH	RH	PSM	CTC	SH	IDPC	RPC	SHSTIBI	TPC	VPD	FS	SW	HHPM	PHEP
Assessment & Surveillance	<p>1. The board of health shall conduct epidemiological analysis of surveillance data, including monitoring of trends over time, emerging trends, and priority populations, in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current) in the areas of:</p> <ul style="list-style-type: none"> ▪ Alcohol and other substances; ▪ Falls across the lifespan; ▪ Road and off-road safety; and ▪ Other areas of public health importance for the prevention of injuries. 	R1	R1 R3	R1	R1			R1 R2 R3	R3 R4	R1 R2 R3	R2 R3	R1 R2	R1 R2	R2 R3 R4 R5	R1 R2	

CATEGORY	OPHS REQUIREMENT	HEHWPA	CH	RH	PSM	CTC	SH	IDPC	RPC	SHSTIBI	TPC	VPD	FS	SW	HHPM	PHEP
Health Promotion and Policy Development	<p>2. The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and programs, and the creation or enhancement of safe and supportive environments that address the following:</p> <ul style="list-style-type: none"> ▪ Alcohol and other substances; ▪ Falls across the lifespan; ▪ Road and off-road safety; and may include ▪ Other areas of public health importance for the prevention of injuries as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current) 	R3 R7	R4	R2 R3a	R2 R3 R7	R4 R5 R6	R5a R6	R4 R5 R6	R5a R6	R3 R4	R4	R3	R4	R4	R4	R3
	<p>3. The board of health shall use a comprehensive health promotion approach to increase the capacity of priority populations to prevent injury and substance misuse by:</p> <ol style="list-style-type: none"> a. Collaborating with and engaging community partners b. Mobilizing and promoting access to community resources c. Providing skill-building opportunities; and d. Sharing best practices and evidence for the prevention of injury and substance misuse 	R8	R8	R6	R3 R9			R6	R5a R7 R11	R4						
	<p>4. The board of health shall increase public awareness of the prevention of injury and substance misuse in the following areas:</p> <ul style="list-style-type: none"> ▪ Alcohol and other substances; ▪ Falls across the lifespan; ▪ Road and off-road safety; and may include ▪ Other areas of public health importance for the prevention of injuries, as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current)... <p>These efforts shall include:</p> <ol style="list-style-type: none"> a. Adapting and/or supplementing national and provincial health communications strategies; and/or b. Developing and implementing regional/local communications strategies. 	R11	R5	R3 R4 R5	R3 R4 R5 R6 R11	R4 R5 R6	R4	R5	R4	R5 R7 R12	R5	R3	R7 R12	R3	R5	

CATEGORY	OPHS REQUIREMENT	HEHWPA	CH	RH	PSM	CTC	SH	IDPC	RPC	SHSTIBI	TPC	VPD	FS	SW	HHPM	PHEP	
Health Protection	<p>5. The board of health shall use a comprehensive health promotion approach in collaboration with community partners including enforcement agencies, to increase public awareness of and adoption of behaviours that are in accordance with current legislation related to the prevention of injury and substance misuse in the following areas:</p> <ul style="list-style-type: none"> ▪ Alcohol and other substances; ▪ Falls across the lifespan; ▪ Road and off-road safety; and ▪ Other areas of public health importance for the prevention of injuries as identified by local surveillance in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current). 							R14									

Appendix B: Ontario's Injury Prevention Strategy



Ontario's Injury Prevention Strategy



PRINCIPLES

Shared Responsibility & Government Leadership:

Government leadership, and partnerships and alliances across sectors are required to address our shared responsibility for injury prevention.

Evidence-based:

Ongoing assessment, surveillance, research and evaluation must be undertaken to support the development of effective programs, policies and practices.

Integrated Practices:

Leverage, link and integrate the efforts of individuals, communities, organizations and governments to reduce the burden of injury across settings.

Recognize Diversity:

Engage leaders to design relevant, culturally appropriate approaches to address the varied needs of Ontario's diverse communities.

Appendix C: List of Ontario Lead Trauma Hospitals

Hamilton Health Sciences Corporation, Hamilton (2 sites)

Kingston General Hospital, Kingston

London Health Science Centre, London (2 sites)

The Ottawa Hospital, Ottawa (2 sites)

Children's Hospital of Eastern Ontario, Ottawa

St. Joseph's Health Centre (formerly Sudbury General Hospital), Sudbury

Thunder Bay Regional Hospital, McKellar Campus, Thunder Bay

Hospital for Sick Children, Toronto

St. Michael's Hospital, Toronto

Sunnybrook and Women's College Health Science Centre, Toronto

Hotel Dieu Grace Hospital, Windsor

Appendix D: Required Organizational Practices, Accreditation Canada

REQUIRED ORGANIZATIONAL PRACTICES

Our objective of guiding our clients toward safe and quality health care is strengthened by the Required Organizational Practices listed below.

ROPs that will come into effect in 2011 are indicated with a ★.

SAFETY CULTURE

- Adverse events disclosure
- Adverse events reporting
- Client safety as a strategic priority
- Client safety quarterly reports
- Client safety–related prospective analysis

COMMUNICATION

- Client and family role in safety
- Dangerous abbreviations
- Information transfer
- Medication reconciliation at admission
- Medication reconciliation at referral or transfer
- Surgical checklist ★
- Two client identifiers
- Verification processes for high-risk activities

MEDICATION USE

- Concentrated electrolytes
- Drug concentrations
- Heparin safety
- Infusion pumps training
- Narcotics safety

WORKLIFE/WORKFORCE

- Client safety plan
- Client safety: roles and responsibilities
- Client safety: education and training
- Preventive maintenance program
- Workplace violence ★ prevention

INFECTION CONTROL

- Hand-hygiene audit
- Hand-hygiene education and training
- Infection control guidelines
- Infection rates
- Influenza vaccine
- Pneumococcal vaccine
- Sterilization processes

RISK ASSESSMENT

- Falls prevention strategy
- Home safety risk assessment ★
- Pressure ulcer prevention
- Suicide prevention
- Venous thromboembolism (VTE) prophylaxis ★



ACCREDITATION CANADA
AGRÈMENT CANADA

*Driving Quality Health Services
Force motrice de la qualité des services de santé*

[www.accreditation.ca](http://www accreditation.ca)

© Accreditation Canada 2010
02/2010

*reprinted with permission

Appendix E: Ontario Ministry of Transportation Regional Planner Contact List

Northern Region

Jeff Griffith
Ministry of Transportation
447 McKeown Ave. Suite 301
North Bay, ON PIB 9S9
(705) 497-5453
Fax: (705) 497-6886

Southwestern Region

John Warkentin
Ministry of Transportation
659 Exeter Road
London, ON N6E 1L3
(519) 873-4420
Fax: (519) 873-4332

Central Region (West)

Natalie Zeitoun
Ministry of Transportation
Rm. 212, Bldg. A
1201 Wilson Avenue
Toronto, ON M3M 1J8
(416) 235-4808
Fax: (416) 235-5129

Northwestern Region

Tom Marinis
Ministry of Transportation
615 South James Street
Thunder Bay, ON P7E 6P6
(807) 473-2198
Fax: (807) 473-2133

Eastern Region

Paul Allore
Ministry of Transportation
1355 Counter Street
Kingston, ON K7L 5A3
(613) 545-4608
Fax: (613) 545-4632

Central Region (East)

Elaine Dimitroff
Ministry of Transportation
Rm. 212, Bldg. A
1201 Wilson Avenue
Toronto, ON M3M 1J8
(416) 235-4866
Fax: (416) 235-5129

References

1. D’Cunha, CO. 2002 Chief Medical Officer of Health report. Injury: predictable and preventable. Toronto (ON): Queen’s Printer for Ontario; 2002.
2. Laflamme L, Sethi D, Burrows S, Hasselberg M, Racioppi F, Apfel F. Addressing the socioeconomic safety divide: a policy briefing. Rome (Italy): World Health Organization; 2009.
3. Edwards P, Roberts I, Green J, Lutchmun S. Deaths from injury in children and employment status in family: an analysis of trends in class specific death rates. *Br Med J* 2006 Jul 15;333(7559):119–22.
4. Faelker T, Pickett W, Brison RJ. Socioeconomic differences in childhood injury: a population based epidemiologic study in Ontario, Canada. *Inj Prev* 2000;6:206–208. In: D’Cunha, CO. 2002 Chief Medical Officer of Health report. Injury: predictable and preventable. Toronto (ON): Queen’s Printer for Ontario; 2002.
5. Health Canada. For the safety of Canadian children and youth—from injury data to preventive measures. Ottawa (ON): Minister of Public Works and Government Services; 1997.
6. Macpherson A, Kitchen L, Murthy T, Macarthur C, Parkin P. Does bicycle helmet legislation for children remain effective 5 years post legislation? In: Abstracts. Presentation at the 6th World Conference on Injury Prevention and Control; 2002 May 12-15; Montreal, Quebec. Montreal: Les Presses de L’Université de Montréal; 2002, p. 1376.
7. MacPherson A, Roberts I, Pless I. Children’s exposure to traffic and pedestrian injuries. *Am J Public Health* 1998 Dec; 88(12):1840–3.
8. Canadian Council on Social Development. The progress of Canada’s children. Ottawa (ON): Canadian Council on Social Development; 2001.
9. McDonald R. Injury control and indigenous populations in Canada: implications for a First Nations injury control framework. Presentation at the 6th World Conference on Injury Prevention and Control; 2002 May 12–15; Montreal, Quebec; 2002.
10. Peden M, Oyegbite K, Ozanne-Smith J, Hyder AA, Branche C, Rahman AKMF et al, editors. World report on child injury prevention. Geneva (Switzerland): World Health Organization; 2008.
Available from: http://whqlibdoc.who.int/publications/2008/9789241563574_eng.pdf
11. Blake A, Morgan K, Bendall MJ, Dallosso H, Ebrahim SBJ, Arie THD et al. Falls by elderly people at home: prevalence and associated factors. *Age Ageing* 1988 Nov;17(6):365–72.
12. Prudham D, Evans J. Factors associated with falls in the elderly: a community study. *Age Ageing* 1981 Aug;10(3):141–6.

13. Campbell AJ, Reinken J, Allan BC, Martinez GS. Falls in old age: a study of frequency and related clinical factors. *Age Ageing* 1981 Nov;10(4):264–70.
14. Tinetti ME, Speechley M, Ginter SF. Risk factors for falls among elderly persons living in the community. *New Engl J Med* 1988 Dec;319(26):1701–7.
15. Downton JH, Andrews K. Prevalence, characteristics and factors associated with falls among the elderly living at home. *Aging (Milano)* 1991 Sept;3(3):219–28.
16. Stalenhoef PA, Diederiks JP, Knottnerus JA, Kester AD, Crebolder HF. A risk model for the prediction of recurrent falls in community dwelling elderly: a prospective cohort study. *J Clinical Epidemiol* 2002 Nov;55(11):1088–94.
17. Tinetti ME. Factors associated with serious injury during falls by ambulatory nursing home residents. *J Am Geriatr Soc* 1987 Jul;35(7):644–8.
18. Leitch, KK. Reaching for the top: a report by the advisor on healthy children and youth. Ottawa (ON): Health Canada; 2007.
19. SMARTRISK. The economic burden of injury in Canada. Toronto (ON): SMARTRISK; 2009.
20. National Scientific Advisory Committee. Listening for direction on injury: final report. Available from: http://www.injurypreventionstrategy.ca/news/2004-08-19_LFDIfinal.html
21. SMARTRISK. The economic burden of injury in Ontario. Toronto (ON): SMARTRISK; 2006.
22. SafeKids Canada. Child & youth unintentional injury: 10 years in review 1994–2003. Available from: http://www.mhp.gov.on.ca/english/injury_prevention/skc_injuries.pdf
23. SMARTRISK. Ending Canada’s invisible epidemic: a strategy for injury prevention. Toronto (ON): SMARTRISK; 2005.
24. Manitoba Health Living. Strategy Injury free Manitoba. A provincial injury prevention strategy. Available from: http://www.manitoba.ca/healthyliving/docs/injury/injury_free.pdf
25. Northwest Territories Health and Social Services. A culture of safety: NWT injury prevention strategy 2007-2012 implementation plan. Northwest Territories: Northwest Territories Government; 2007.
26. Nova Scotia Health Promotion and Emergency Health Services. Nova Scotia injury prevention strategy: report and recommendations. Available from: <http://www.gov.ns.ca/health/ehs/trauma/pubs/IPS%20Report%20and%20Recommendations.pdf>
27. Ministry of Health Promotion. Ontario’s injury prevention strategy. Working together for a safer, healthier Ontario. Toronto (ON): Ministry of Health Promotion; 2007.

28. Alberta Injury Control Alliance. Alberta injury control strategy.
Available from: <http://www.albertainjurycontrol.com/documents/AlbertaInjuryControlStrategyFINAL10-05.pdf>
29. Babor T, Caetano R, Casswell S, Edwards N, Giesbrecht K, Graham J et al. Alcohol: no ordinary commodity. Research and public policy. New York (NY): Oxford University Press, 2003.
30. Canadian Institute for Health Information. Ontario trauma registry report. Major injury in Ontario, 2007–2008. Ottawa (ON): Canadian Institute for Health Information; 2009.
31. SafeKids Canada. Safer homes for children: a guide for communities.
Available from: <http://www.safekidscanada.ca/SKCFForPartners/custom/SaferHomesforChildrenGuideEng.pdf>
32. Canadian Paediatric Society. Preventing playground injuries. *Paediatr Child Health* 2002;7(4):255–6.
33. Canadian Paediatric Society. Trampoline use in homes and playgrounds. *Paediatr Child Health* 2007;12(6):501–5.
34. Public Health Agency of Canada. Child and youth injury in review. 2009 ed. Spotlight on consumer product safety. Ottawa (ON): Her Majesty the Queen in Right of Canada; 2009.
35. Ward L. Evidence to action: preventing falls for children and youth.
Available from: http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/workshops/pism_skc_falls_prevention_linda_ward.pdf
36. Ontario Injury Prevention Resource Centre. Falls across the lifespan: evidence-based practice synthesis document. Toronto (ON): Queen's Printer for Ontario; 2008.
37. Khambalia A, Josshi P, Brussoni M, Raina P, Morrongiello B, Macarthur C. Risk factors for unintentional injuries due to falls in children aged 0–6 years: a systematic review. *Inj Prev* 2006 Dec;12(6):378–81.
38. University of Guelph. Child Development Research Unit: recently completed projects.
Available from: http://www.uoguelph.ca/~cdru/#_A_few_of
39. New York City Department of Health. Children can't fly: a New York department of health initiative. A window falls prevention program.
Available from: <http://www.oninjuryresources.ca/BestPractices/ChildrenWindowFalls.htm>
40. Kendrick D, Barlow J, Hampshire A, Polnay L, Stewart-Brown S. Parenting interventions for the prevention of unintentional injuries in childhood. *Cochrane Database of Systematic Reviews* 2007;4.
41. Kendrick D, Coupland C, Mulvaney M, Simpson J, Smith S, Sutton A, et al. Home safety education and provision of safety equipment for injury prevention. *Cochrane Database of Systematic Reviews* 2007;1.

42. City of Toronto. Injury prevention. Available from: <http://www.toronto.ca/health/injuryprevention/5to9/index.htm>
43. The Regional Municipality of Niagara. EB monkey safety house.
Available from: http://www.niagararegion.ca/living/health_wellness/EBMonkey/default.aspx
44. Alberta Health Services. A million messages.
Available from: http://www.capitalhealth.ca/YourHealth/Campaigns/Kidsafe/A_Million_Messages.htm
45. Papadimitropoulos EA, Coyte PC, Josse MB, Greenwood CE. Current and projected rates of hip fracture in Canada. *CMAJ* 1997;157(10):1357–63.
46. Ontario Ministry of Finance. Ontario population projections 2004–2031. Ottawa (ON): Ontario Ministry of Finance, 2004.
47. Kendall P, Peck S, Scott V. Prevention of falls and injuries among the elderly: a special report from the office of the provincial health officer. Victoria (BC): B.C. Ministry of Health Planning, 2004.
48. Kempton A, Van Beurden E, Sladden T, Garner E, Beard J. Older people can stay on their feet: final results of a community based falls prevention programme. *Health Promotion International* 2000;15(1):27–33.
49. Tinetti ME, Baker DI, McAvay G, Claus EB, Garrett P, Gottschalk M et al. A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *New Engl J Med* 1994;331(13):821–7.
50. Canadian Institute for Health Information. Major injury in Ontario. Ontario trauma registry. Ottawa (ON): Canadian Institute for Health Information; 2008.
51. Ontario Injury Prevention Resource Centre. Injuries among seniors in Ontario: a descriptive analysis of emergency department and hospitalization data. Toronto (ON): Ontario Injury Prevention Resource Centre, 2007.
52. Scott V, Lockhart S, Gallagher E, Smith D, Asselin G, Belton K, et al. Canadian falls prevention curriculum. Vancouver (BC): British Columbia Injury Research & Prevention Unit; 2007.
53. Scott V. World Health Organization report: prevention of falls in older age. Falls prevention: policy, research & practice Geneva (Switzerland): World Health Organization; 2007.
54. World Health Organization. Global report on falls prevention in older age. Geneva: (Switzerland): World Health Organization; 2007.
55. Public Health Agency of Canada. Report on seniors' falls in Canada. Ottawa (ON): Public Health Agency of Canada, Division of Aging and Seniors; 2005.
56. Robitaille Y, Laforest S, Fournier M, Gauvin L, Parisien M, Corriveau H et al. Moving forward in fall prevention: an intervention to improve balance among older adults in real-world settings. *AJPH* 2005;95(11):2049–56.

57. Ontario Injury Prevention Resource Centre. About the Canadian falls prevention curriculum.
Available from: http://www.oninjuryresources.ca/cfpc/about_the_canadian_falls_preve.html#more
58. Yardley L, Bishop FL, Beyer N, Hauer K, Kempen GI, Piot-Ziegler C et al. Older people's views of falls. Prevention intervention in six European countries. *Gerontologist*. 2006;46(5):650–60
59. Zaza S, Sleet DA, Thompson RS, Sosin DM, Bolen JC. Task force on community preventive services. Reviews of evidence regarding interventions to increase use of child safety seats. *Am J Prev Med* 2001;21(Supp 1):31–47.
60. Elder RW, Shults RA, Sleet DA, Nichols JL, Thompson RS, Rajab W et al. Effectiveness of mass media campaigns in preventing alcohol impaired driving. *Am J Prev Med* 2004;27(1):57–65.
61. Shults RA, Elder RW, Sleet DA, Nichols JL, Alao MO, Carande-Kulis VG et al. Reviews of evidence regarding interventions to reduce alcohol-impaired driving. *Am J Prev Med* 2001;21(4 Suppl 1):68–88.
62. Ontario Ministry of Transportation. Ontario road safety annual report 2005. Toronto (ON): Ministry of Transportation, 2005.
63. World Health Organization. WHO global status report on road safety. 2009.
Available from: http://www.who.int/violence_injury_prevention/road_safety_status/report/conclusions_en.pdf
64. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, Jarawan E et al, editors. World report on road traffic injury prevention. 2004. Available from: <http://whqlibdoc.who.int/publications/2004/9241562609.pdf>
65. Mohan D, Tiwani G, Khyesi M, Nafukhol FM. Road traffic injury prevention training manual. World Health Organization. 2006. Available from: http://whqlibdoc.who.int/publications/2006/9241546751_eng.pdf
66. Bunn F, Collier T, Frost C, Ker K, Roberts IG, Wentz R. Area-wide traffic calming for preventing traffic related injuries. *Cochrane Database of Systematic Reviews*. 2009;3.
Available from: <http://www.cochrane.org/reviews/en/ab003110.html>
67. Daniel K, Perotta K. Creating walkable and transit supportive communities in Halton. Unpublished document. 2009.
68. Johnson M, Howard E. Road safety vision 2010. Canadian Council of Motor Transport Administrators.
Available from: http://www.ccmta.ca/english/pdf/rsv2010_midtermreport_final.pdf
69. Canadian Cancer Society, Manitoba Division Knowledge Exchange Network. Effective child safety seat promotion interventions.
Available from: http://www.cancer.ca/manitoba/prevention/mbknowledge%20exchange%20network/~/_media/CCS/Manitoba/Files%20List/English%20files%20heading/pdf%20not%20in%20publications%20section/KEN%20-%20Safety%20-%20Car%20seat.ashx

70. U.S. Department of Transportation, National Highway Traffic Safety Administration. Countermeasures that work. A highway safety countermeasure guide for state highway safety offices. 4th ed.
Available from: <http://www.nhtsa.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811081.pdf>
71. Government of Ontario. Service Ontario e-laws Ontario hours of service regulation. Highway Traffic Act.
Available from: www.e-laws.gov.on.ca
72. Hedlund J, Simpson HM, Meyhew DR. Proceedings and Recommendations of the International Conference on Distracted Driving; 2005 Oct 2–5; Toronto, Canada.
Available from: <http://www.distracteddriving.ca/english/documents/ENGLISHDDProceedingsandRecommendations.pdf>
73. Global Road Safety Partnership. Drinking and driving: a road safety manual for decision-makers and practitioners. Geneva (Switzerland): Global Road Safety Partnership, 2007.
Available from: http://whqlibdoc.who.int/publications/2007/9782940395002_eng.pdf
74. Willis C, Lybrand S, Bellamy N. Alcohol ignition interlock programmes for reducing drink driving recidivism. Cochrane Database of Systematic Reviews 2004;3.
Available from: <http://www.cochrane.org/reviews/en/ab004168.html>
75. Centres for Disease Control and Prevention. Reducing alcohol-impaired driving: multicomponent interventions with community mobilization. Available from: <http://www.thecommunityguide.org/mvoi/AID/multicomponent.html>
76. Global Road Safety Partnership. Drinking and driving: a safety manual for decision makers and practitioners. Geneva (Switzerland): Global Road Safety Partnership; 2007.
Available from: http://whqlibdoc.who.int/publications/2007/9782940395002_eng.pdf
77. Simpson H, Singhal D, Vanlaar W, Mayhew D. The road safety monitor. Drugs and driving. Ottawa (ON): Traffic Injury Research Foundation, 2006.
Available from: http://www.tirf.ca/publications/PDF_publications/RSM_Drugs_and_Driving_2005.pdf
78. Canadian Council of Motor Transport Administrators, Aging Driver Task Force. Aging Driver Strategy. Ottawa (ON): Canadian Council of Motor Transport Administrators; 2007.
Available from: <http://www.ccmta.ca/english/committees/rsrp/agingdriver/agingdriver-strategy.cfm>
79. Ontario Ministry of Transportation. Senior driver: driving safety cycle.
Available from: <http://www.mto.gov.on.ca/english/pubs/cycle.shtml>
80. Emery P, Mayhew D, Simpson H. Youth and road crashes. Magnitude, characteristics and trends. Ottawa (ON): Traffic Injury Research Foundation; 2008.
Available from: http://www.tirf.ca/publications/PDF_publications/YouthandRoadCrashes_MagnitudeCharacteristicsandTrends.pdf

81. Toroyan T, Peden M, editors. Youth and road safety. Geneva (Switzerland): World Health Organization. 2007.
Available from: http://whqlibdoc.who.int/publications/2007/9241595116_eng.pdf
82. Hartling L, Wiebe N, Russell KF, Petruk J, Spinola C, Klassen TP. Graduated driver licensing for reducing motor vehicle crashes among young drivers. *Cochrane Database of Systematic Reviews* 2009;3.
Available from: <http://www.cochrane.org/reviews/en/ab003300.html>
83. Mayhew DR, Simpson HM, Singhal D, Desmond K. Reducing the crash risk for young drivers. Ottawa (ON): Traffic Injury Research Foundation. 2007.
Available from: <http://www.aaafoundation.org/pdf/ReducingTeenCrashes.pdf>
84. McCartt AT, Teoh ER, Fields M, Braitman KA, Hellinga LA. Graduated licensing laws and fatal crashes of teenage drivers: a national study. Arlington (VA): Insurance Institute for Highway Safety; 2009.
Available from: <http://www.iihs.org/research/topics/pdf/r1122.pdf>
85. Public Health Agency of Canada. Injury prevention.
Available from: <http://www.cbpp-pcpe.phac-aspc.gc.ca/topic/hp-pdls/8/page/1>
86. Baer J, Baldi S, Cook A. Promising practices in motorcycle rider. Education and licensing. U.S. Department of Transportation, National Highway Traffic Safety Administration; 2005.
Available from: <http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/MotorcycleRider/pages/contents.html>
87. Liu BC, Ivers R, Norton R, Boufous S, Blows S, Lo SK. Helmets for preventing injury in motorcycle riders. *Cochrane Database of Systematic Reviews* 2009;3.
Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004333/frame.html>
88. Safe Kids Canada. Air bags.
Available from: <http://www.safekidscanada.ca/SKCFForParents/section.asp?s=Safety+Information+by+Topic&slD=10774&ss=Child+Passenger+Safety&ssID=11330&sss=Air%2Dbags&sssID=21024>
89. Transport Canada. Safety issues for Canadians: air bags.
Available from: <http://www.tc.gc.ca/roadsafety/tp/tp2436/cl9601/menu.htm>
90. Ontario Ministry of Transportation. Other information sources for seniors.
Available from: <http://www.mto.gov.on.ca/english/pubs/seniors-guide/part7.shtml>
91. Duperrex OJM, Roberts IG, Bunn F. Safety education of pedestrians for injury prevention. *Cochrane Database of Systematic Reviews* 2009;3.
Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001531/frame.html>
92. Safe Kids Canada. Child pedestrian injuries report 2007-2008.
Available from: http://www.safekidscanada.ca/SKCFForParents/custom/Ped_Injury_Report.pdf

93. Stavrinou D, Byington KW, Schwebel DC. Effect of cell phone distraction on pediatric pedestrian injury risk. *Pediatrics* 2009 Feb;123(2):e179–85.
94. Ontario Ministry of Transportation. Impaired driving. Available from: <http://www.ontario.ca/drivesober>
95. Tator CH, editor. Catastrophic injuries in sports and recreation. Causes and prevention. A Canadian study. Toronto (ON): University of Toronto Press; 2008.
96. Wannamethee SG, Shaper AG, Walker M. Changes in physical activity, mortality, and incidence of coronary heart disease in older men. *The Lancet* 1998;531:1603–8.
97. Nicholl JP, Coleman P, Brazier JE. Health and healthcare costs and benefits of exercise. *Pharmacoeconomics* 1994 Feb;5(2):109–22.
98. Coleman P. I'll take the health benefits of exercise without the risks please. *The Lancet* 1998;352:492.
99. Centers for Disease Control and Prevention. Recommended community strategies and measurements to prevent obesity in the United States. Available from: <http://www.cdc.gov/mmwr/PDF/rr/rr5807.pdf>
100. Ministry of Health Promotion. Ontario trails strategy. Toronto (ON): Queen's Printer for Ontario; 2005.
101. Safe Kids Canada. Available from: <http://www.safekidscanada.ca/safekidsCanada>
102. Macpherson A, Spinks A. Bicycle helmet legislation for the uptake of helmet use and prevention of head injuries. *Cochrane Database of Systematic Reviews* 2007;2.
103. Safe Kids Canada. SickKids scientists confirm Ontario's bike helmet law saves lives. Available from: http://www.safekidscanada.ca/SKCFForParents/custom/SickKids_BikeHelmetLaws.pdf
104. Canadian Safety Council. The all-terrain vehicle boom. Available from: <http://www.safety-council.org>
105. Ontario Injury Prevention Resource Centre. All-terrain vehicle injuries. Ontario injury COMPASS. An analysis of injury issues in Ontario 2008 Jul;5(7). Available from: http://www.oninjuryresources.ca/downloads/Compass/2009/2008-07-01Compass-ATVInjuries*.pdf
106. Canadian Institute for Health Information. National trauma registry analysis in brief: ATV injury hospitalizations in Canada, 2004–2005. Toronto (ON): Canadian Institute for Health Information; 2007.
107. Helmkamp JD, Furbee PM, Coben JH, Tadros A. All-terrain vehicle-related hospitalizations in the United States, 2000–2004. *Am J Prev Med* 2008;34(1):39–45.
108. Volpe R, Lewko J. The prevention of severe injury in sport and recreation activities: an Ontario neurotrauma foundation review of best practice. Toronto (ON): University of Toronto; 2008.

109. Trauma Committee, Canadian Association of Pediatric Surgeons. Canadian association of pediatric surgeons' position statement on the use of all-terrain vehicles by children and youth. *J Pediatr Surg* 2008;43(5):938–9.
110. Rodgers GB, Adler P. Risk factors for all-terrain vehicle injuries: a national case control study. *Am J Epidemiol* 2001;153(11):1112–8.
111. The Canadian Paediatric Society Injury Prevention Committee. Preventing injuries from all-terrain vehicles. *Paediatr Child Health* 2004;9(5):337–40.
112. American Academy of Pediatrics Committee on Injury and Poison Prevention. All-terrain vehicle injury prevention: two-, three- and four wheeled unlicensed motor vehicles. *Pediatrics* 2000;105(6):1352–4.
113. Halbert S, personal communication, July 25, 2008. In: Volpe R, Lewko J. The prevention of severe injury in sport and recreation activities: an Ontario neurotrauma foundation review of best practice. Toronto (ON): University of Toronto; 2008.
114. 4-H ATV Safety. Available from: <http://www.atv-youth.org>.
115. Aitken ME, Graham CJ, Killingsworth JB, Mullins SH, Parnell DN, Dick RM. All terrain vehicle injury in children: strategies for prevention. *Inj Prev* 2004;10:303–7.
116. Lewis I, Watson B, Tay R, White KM. The role of fear appeals in improving driver safety: a review of effectiveness of fear-arousing (threat) appeals in road safety advertising. *International Journal of Behavioural Consultation and Therapy* 2007;3(2): 203–22.
117. Tapscott, D. Grown up digital: how the net generation is changing your world. Toronto (ON): McGraw Hill; 2008.
118. Canadian Council of Snowmobile Organizations. Snowmobile safety. Available from: <http://www.ccsso-ccom.ca/index.htm>
119. Canadian Institute for Health Information. Most snowmobile-related injuries occur in February. Available from: http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_25jan2006_e
120. Ontario Injury Prevention Resource Centre. Snowmobiling injuries. Ontario injury COMPASS: an analysis of injury issues in Ontario 2008 Dec;5(12). Available from: <http://www.oninjuryresources.ca/2008-12-01Compass.pdf>
121. Canadian Red Cross. Red Cross urges snowmobile safety this winter. Available from: <http://www.redcross.ca/article.asp?id=20696&tid=083>
122. Transport Canada. Safe snowmobiling. Available from: <http://www.tc.gc.ca/roadsafety/tp/tp2436/rs200001/menu.htm>
123. Canadian Paediatric Society. Recommendations for snowmobile safety. *Paediatr Child Health* 2004;9(9):639–42.

124. American Academy of Pediatrics. Snowmobiling hazards. *Pediatrics* 2000;106(5): 1142-4.
125. Bass JL, Christoffel KK, Widome M, Scheidt P, Stanwick R, Robers K. Childhood injury prevention counselling in primary care settings: a critical review of the literature. *Pediatrics* 1993;92:544–50.
126. Ontario Ministry of Health and Long-Term Care. Vital statistics, IntelliHEALTH ONTARIO data.
Available from: <https://www.intellihealth.moh.gov.on.ca/frontpage>
127. Office of the Chief Coroner. Report of the paediatric death review committee and deaths under five committee. Toronto (ON): Province of Ontario; 2009.
128. Morgan O, Griffiths C, Majeed A. Impact of paracetamol pack size restrictions on poisoning from paracetamol in England and Wales: an observational study. *J Public Health* 2005;27:19–24.
129. The Standing Senate Committee on Social Affairs, Science and Technology. Out of the shadows at last: highlights and recommendations.
Available from: <http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/soci-e/rep-e/rep02may06high-e.htm>
130. World Health Organization. Promoting mental health: concepts, emerging evidence, practice summary report.
Available from: http://www.who.int/mental_health/evidence/en/promoting_mhh.pdf
131. Beautrais A, Fergusson D, Coggan C, Collings C, Doughty C, Ellis P et al. Effective strategies for suicide prevention in New Zealand: a review of the evidence. *N Z Med J* 2007 Mar;120(1251).
132. Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A et al. Suicide prevention strategies: a systematic review. *JAMA* 2005;294(16):2064–74.
133. Australian Government Department of Health and Ageing. Living is for everyone. A framework for prevention of suicide in Australia.
Available from: http://www.livingisforeveryone.com.au/ignitionSuite/uploads/docs/LIFE_framework-web.pdf
134. Isaac M, Elias B, Katz LY, Belik S, Deane FP, Enns MW et al. Gatekeeper training as a preventative intervention for suicide: a systematic review. *Can J Psychiatry* 2009 Apr; 54(4):260–8.
135. World Health Organization. Self-directed violence.
Available from: http://www.who.int/violence_injury_prevention/violence/global_campaign/en/selfdirectedviolfacts.pdf
136. Leitner M, Barr W, Hobby, L. Effectiveness of interventions to prevent suicide and suicidal behaviour: a systematic review. Available from: <http://www.scotland.gov.uk/Resource/Doc/209331/0055420.pdf>
137. Hawton, K. Restricting access to methods of suicide: rational and evaluation of this approach to suicide prevention. *Crisis* 2007;28(Suppl 1): 4–9.

138. Skegg K, Herbison P. Effect of restricting access to a suicide jumping site. *Australian and New Zealand Journal of Psychiatry* 2009;43(6):498–502.
139. Griesbach D, Russell, P, Dolev R, Lardner C. The use and impact of applied suicide intervention skills training (ASIST) in Scotland: a literature review and evaluation. *Research findings* 2008; 63.
Executive Summary available from: <http://www.scotland.gov.uk/Resource/Doc/223478/0060181.pdf> and
full report available from <http://www.scotland.gov.uk/Resource/Doc/223967/0060485.pdf>
140. Guttormsen T, Hoifodt TS, Brukeland, O. Applied suicide intervention – an evaluation. *Tidsskr Nor Laegeforen* 2003 Aug;123(16):2284–6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/14508556>
141. Canadian Institute for Health Information. Improving the health of Canadians: exploring positive mental health. Available from: http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_39_E&cw_topic=39&cw_rel=AR_322_E