

# Injury Prevention Guideline, 2018

Population and Public Health Division,  
Ministry of Health and Long-Term Care

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# 1. Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.<sup>1,2</sup> The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

# 2. Purpose

The purpose of this guideline is to provide direction to boards of health on required approaches in developing and implementing a program of public health interventions to support injury prevention in the health unit population.

In doing so, the guideline includes the following components:

- Key public health and content specific frameworks and concepts (see section 4);
- An overview of boards of health roles and responsibilities (see section 5);
- Required approaches (see section 6):
  - Using a public health program planning cycle that supports boards of health to develop and implement a program of public health interventions by integrating all guideline components.
  - Topics that boards of health shall consider when making decisions to develop and implement injury prevention programs of public health intervention.
- Core definitions to support this guideline (see Glossary).

# 3. Reference to the Standards

This section identifies the standards and requirements to which this guideline relates.

## School Health

**Requirement 3.** The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth.

- a) The program of public health interventions shall be informed by:
  - An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
  - Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students:

- A review of other relevant programs and services delivered by the board of health; and
  - Evidence of the effectiveness of the interventions employed.
- b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline, 2018* (or as current); the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Healthy Growth and Development Guideline, 2018* (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); the *School Health Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

### Substance Use and Injury Prevention

**Requirement 2.** The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses risk and protective factors to reduce the burden of preventable injuries and substance use in the health unit population.

- a) The program of public health interventions shall be informed by:
- i. An assessment of the risk and protective factors for, and distribution of, injuries and substance use;
  - ii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors, including LHINs;
  - iii. An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;
  - iv. Consideration of the following topics based on an assessment of local needs:
    - Comprehensive tobacco control\*;
    - Concussions;
    - Falls;
    - Life promotion, suicide risk and prevention;
    - Mental health promotion;
    - Off-road safety;
    - Road safety;
    - Substance use; and
    - Violence.
  - v. Evidence of the effectiveness of the interventions employed.
- b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Mental Health*

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\* Comprehensive tobacco control includes: preventing the initiation of tobacco; promoting quitting among young people and adults; eliminating exposure to environmental tobacco smoke; and identifying and eliminating disparities related to tobacco use and its societal outcomes among different population groups.

*Promotion Guideline, 2018 (or as current); and the Substance Use Prevention and Harm Reduction Guideline, 2018 (or as current).*

## 4. Context

An injury is the physical damage that results when a human body is subjected to energy in amounts that exceed the threshold of physiological tolerance, or from lack of one or more vital elements (e.g. oxygen).<sup>3</sup> The energy could be mechanical, thermal, chemical, or radiant.<sup>3</sup> Injuries are further defined by whether they are intentional or unintentional. Intentional injuries include interpersonal violence (homicide, sexual assault, neglect and abandonment, and other maltreatment), suicide, and collective violence (war).<sup>4</sup> Unintentional injuries represent the majority of injuries, with the precipitating events being predictable and preventable.<sup>5</sup>

Injuries are a serious societal and global public health issue, with important health, social and economic implications. Injuries do not occur by chance (i.e. they are not accidents), but are predictable and preventable. They affect individuals and communities disproportionately, with certain groups experiencing a higher frequency and/or severity of injury compared to others.

The economic burden of injury is substantial. In some cases, injuries result in a larger economic burden than some chronic diseases, such as heart disease and stroke.<sup>6</sup> Direct costs of injury may include health care costs such as sending paramedics to the scene of an injury, the ambulance to the hospital, acute hospital treatment followed by rehabilitation. Some injuries may require a number of surgeries. The patient may be transported by air or ambulance to a trauma centre or a centre with a specialty such as toxicology.<sup>6</sup>

In addition to direct costs to the health care system, injuries also result in indirect costs to the individual, family and community. Indirect costs of injury may include family needing to take time off work and pay for accommodation close to the treatment centre, thus leaving the rest of the family in the care of others. If additional treatment is needed over the years, the family may need to take more time off work, pay for food and accommodation, and pay for caregiving for the rest of the family.<sup>6</sup>

Non-quantifiable costs of injury include emotional trauma, permanent partial or full disability, altered career implications, dramatic changes in future roles in family and society, loss of independent living and the necessity for institutional care.<sup>6</sup>

Injury prevention refers to “ongoing strategies, policies, or programs designed to eliminate or reduce the occurrence and severity of injuries”.<sup>7</sup> In general, public health’s focus is on the prevention of injuries before they occur (i.e., primary prevention), although there may also be a role in applying other levels of prevention for specific types of injuries (e.g., increasing public and providers’ understanding regarding recognition and management of concussions).

## 4.1 Key Public Health Frameworks and Concepts

This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support injury prevention with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

### 4.1.1 The Population Health Promotion Model

This model shows how a population health approach can be implemented through action on the full range of health determinants by means of health promotion strategies.<sup>8</sup> This model centres around three questions:

- “On **WHAT** should we take action?” - Acknowledges action is required across the determinants of health
- “**HOW** should we take action?” - Focuses on the actions in the Ottawa Charter for Health Promotion (below)
- “**WITH WHOM** should we act?” - Affirms that comprehensive action must be taken at multiple levels (e.g. individual, family, community, sector/system; and society) to bring about change.

**Figure 1. The Health Cube**



Source: Public Health Agency of Canada. Population health promotion: an integrated model of population health and health promotion. Ottawa, ON: Government of Canada; 2001. Reproduced with permission.<sup>8</sup>

### 4.1.2 Ottawa Charter for Health Promotion

This framework provides the core strategies for health promotion action when developing and implementing a program of public health interventions to support injury prevention including:

- Building healthy public policy;
- Creating supportive environments;
- Strengthening community action;
- Developing personal skills; and
- Re-orienting health services.<sup>9</sup>

The subsequent Jakarta Declaration reiterated the importance of the core strategies identified in the Ottawa Charter for Health Promotion, and added further emphasis that

comprehensive approaches are the most effective; settings offer practical opportunities for implementation of comprehensive strategies, and participation is essential to the empowerment of individuals and communities in order to sustain efforts.<sup>10</sup>

### 4.1.3 Social-Ecological Model of Health

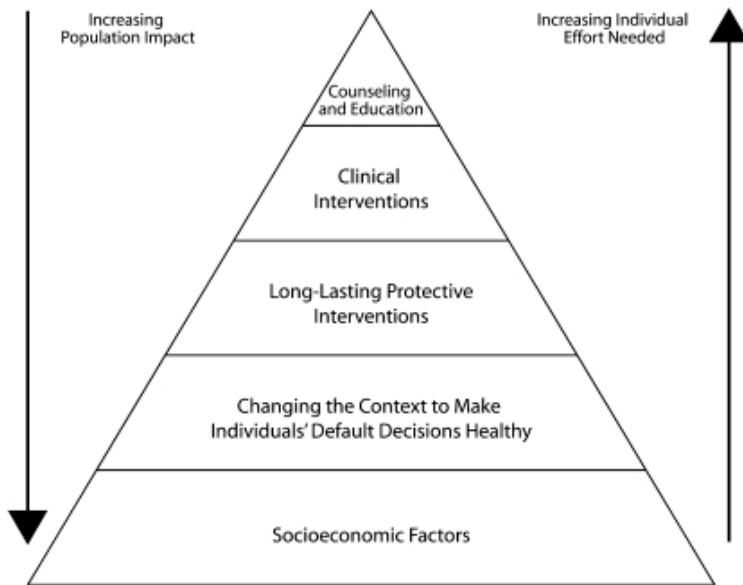
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.<sup>11</sup>

### 4.1.4 Key Public Health Concepts

This section outlines key concepts to inform the development and implementation of a program of public health interventions to support injury prevention.

- Upstream approach: seeking to address the causes of the causes.<sup>12</sup>
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.<sup>13</sup>
- Strength-based approach: emphasizing strength and asset based assessment and programming.<sup>14</sup>
- Life course approach: recognizing differences in risks and opportunities across the life course including critical periods, as well as the cumulative effect of exposures within and across stages.<sup>15</sup>
- Intersectional approach: Acknowledging that change must take place across a spectrum, from individual supports and services to organizational change; recognizing the unique historical, social and political contexts that an individual will experience based on their individual combination of diversity factors such as race, gender, gender identity, ability or status.<sup>16</sup>
- Population health impact pyramid (Figure 2): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.<sup>17</sup>

**Figure 2. Population Health Impact Pyramid**



Source: Frieden TR. A framework for public health action: the health impact pyramid. *Am J Public Health*. 2010;100(4):590-5. Reproduced with permission.<sup>17</sup>

## 4.2 Key Content-Specific Frameworks and Concepts

This section provides a summary of key content-specific frameworks and key concepts related to injury prevention to inform the development and implementation of a program of public health interventions to support injury prevention.

### 4.2.1 Haddon's Matrix

Haddon's Matrix highlights the causes of an injury event, as well as the associated timeline.<sup>18</sup> Haddon's Matrix can be used to think beyond individual factors that contribute to injury, and toward a multifactoral approach to prevention. Haddon's Matrix also provides a framework to think about prevention efforts.<sup>18</sup> In addition to the matrix, there are the associated ten countermeasures that were designed to understand how prevention efforts can mitigate the causes of injury. The countermeasures can be used to further inform the selection of an intervention.<sup>18</sup>

### 4.2.2 Three E's of Injury Prevention

The Three E's of Injury Prevention, classified injury prevention programming into three categories of intervention: Education, Enforcement, and Engineering.<sup>18</sup> The Three E's can also include: evaluation, economic incentives, and empowerment.<sup>18</sup> The E's can be

used to think about the type of intervention that is being selected and implemented, and is used to recognize that a multi-faceted approach, or interventions that use more than one strategy, can have the greatest impact on injury.<sup>18</sup>

### 4.2.3 Key Content-Specific Concepts

Key concepts when applying these frameworks to practice include:

- Measures of burden (mortality, morbidity) are used to estimate the impact of injury in a population. These measures summarize the risk factors associated with injury, and the disability and/or death that results from an injury occurrence. The impact of injury is also measured in terms of cost including direct and indirect costs to the health care system, productivity, and those that cannot be measured similarly, such as emotional trauma and the impact that injury has on individuals and families.
- Population level health summaries can include PYLL (Preventable Years of Life Lost), QALYs (Quality-Adjusted Life Years) and DALYs (Disability-Adjusted Life Years).

## 5. Roles and Responsibilities

The Standards accommodate variability across the province and require boards of health to apply the Foundational Standards in assessing the needs of their local population and to implement programs of public health interventions that reduce the burden of injury in the health unit population. A flexible approach accommodates greater variability where there is an opportunity to plan programs to decrease health inequities and address the needs of priority populations. Boards of health shall consider all topics listed in the Standards, but can focus public health programs and services on those topics that address identified gaps and will have the greatest impact on improving the health of the local population. Boards of health shall be guided by the principles of Need; Impact; Capacity; and Partnership, Collaboration, and Engagement.

### 5.1 Program Standards, Protocols and Guidelines

The Substance Use and Injury Prevention Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses risk and protective factors to reduce the burden of preventable injuries and substance use in the health unit population. The program of public health interventions shall be informed by:

- An assessment of the risk and protective factors for, and distribution of, injuries and substance use;
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors, including LHINs (Local Health Integration Networks);
- An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;



- Consideration of the following topics based on an assessment of local needs:
  - Comprehensive tobacco control;
  - Concussions;
  - Falls;
  - Life promotion, suicide risk and prevention;
  - Mental health promotion;
  - Off-road safety;
  - Road safety;
  - Substance use; and
  - Violence.
- Evidence of the effectiveness of the interventions employed.

Injury prevention is also impacted by other Program Standards including, but not limited to:

- Healthy Environments Standard,
- Healthy Growth and Development Standard,
- Safe Water Standard,
- School Health Standard, and
- Chronic Disease Prevention and Well-Being Standard.

There are linkages to injury prevention in other guidelines and protocols, including:

- *Healthy Growth and Development Guideline, 2018, (or as current),*
- *Mental Health Promotion Guideline, 2018, (or as current),*
- *Substance Use Prevention and Harm Reduction Guideline, 2018, (or as current),*
- *Recreational Water Protocol, 2018, (or as current), and*
- *Operational Approaches for Recreational Water Guideline, 2018, (or as current).*

## 5.2 Foundational Standards

The Foundational Standards inform all areas of board of health planning and programming as they underlie a comprehensive public health approach. There are three Foundational Standards that have implications for the Substance Use and Injury Prevention Standard.

- Population Health Assessment Standard
  - Public health practice responds effectively to current and evolving conditions, and contributes to the public's health and well-being with programs and services that are informed by the population's health status, including social determinants of health and health inequities.
- Health Equity Standard
  - Public health practice results in decreased health inequities such that everyone has equal opportunities for optimal health and can attain their full health potential without disadvantage due to social position or other socially determined circumstances.

- Effective Public Health Practice Standard
  - Public health practice is transparent, responsive to current and emerging evidence, and emphasizes continuous quality improvement.

## 6. Required Approaches

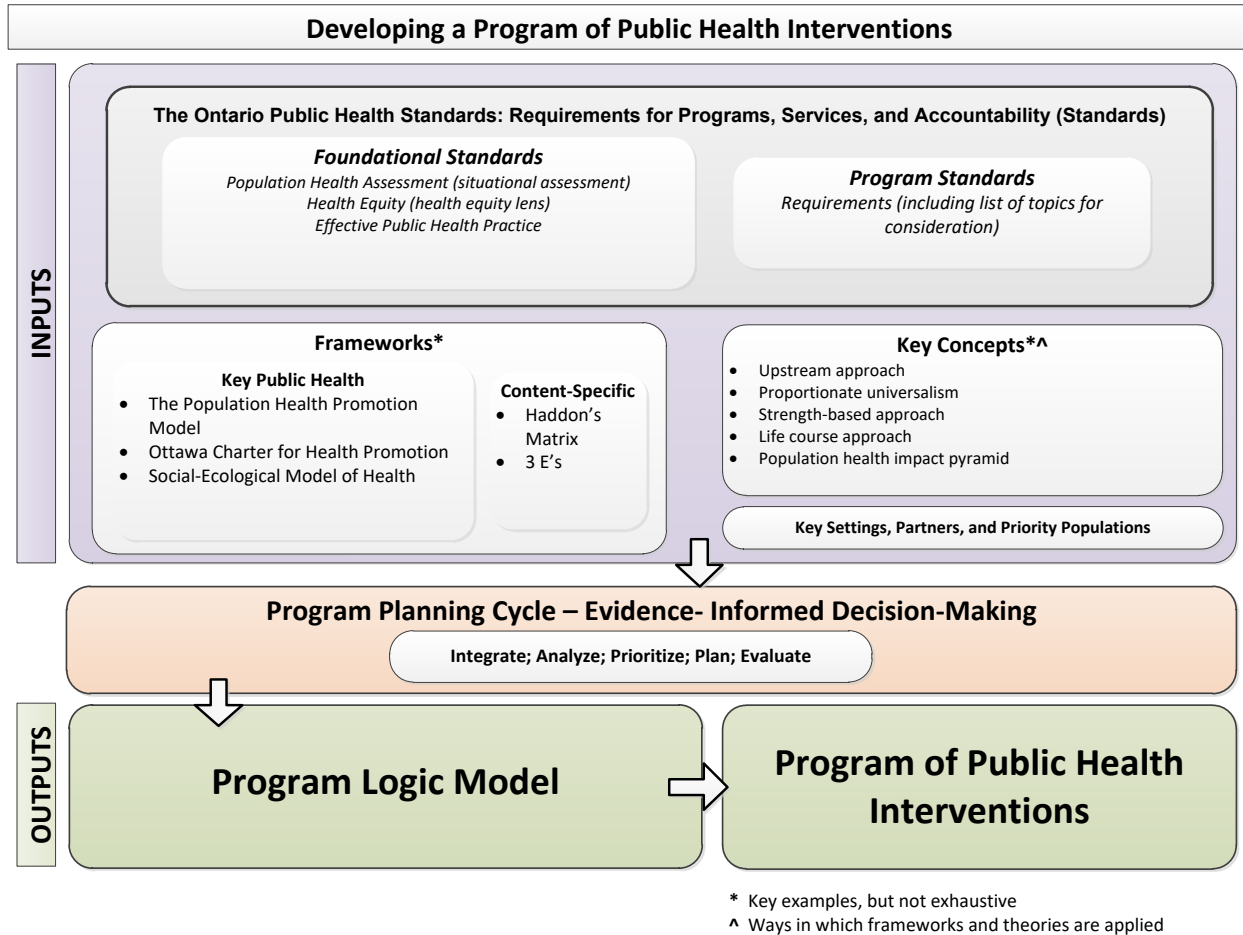
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support injury prevention in the health unit population.

### 6.1 Public Health Program Planning Cycle

Boards of health shall use a public health program planning cycle to support evidence-informed decision-making related to the development and implementation of a program of public health interventions to support injury prevention in the health unit population (Figure 3). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the Substance Use and Injury Prevention Standard and related Program Standards (see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2), and;
- Key settings, partners, and priority populations, which may vary by injury prevention topic and local context; and
- Key injury prevention topics, based on an assessment of local need (see section 6.2).

**Figure 3. Developing a program of public health interventions using a program planning cycle.**



## 6.2 Topics for Consideration

Boards of health shall consider the following topics when developing and implementing a program of public health intervention to support injury prevention based on an assessment of local need.

- **Concussions**

Concussions are injuries to the brain and represent a serious health issue with both short term and long term effects.<sup>18</sup> Common mechanisms of concussion include participation in sport and recreation activity, falls and motor vehicle collisions.<sup>18</sup> Signs and symptoms of concussion vary and include cognitive, sleep, physical or behavioural changes.<sup>19</sup> Repeated concussions are of particular concern given the significant impact they can have on an individual, across the lifespan.<sup>18</sup>

- **Falls**

Falls are a significant health issue in Canada representing the leading cause of injury-related hospitalizations in older adults and children under the age of 14 years, and the leading cost of all injury in Canada.<sup>20-22</sup> The most common injury type associated with falls in older adults is fractures, followed by sprains or strains. These injuries can lead to significant disability including the potential for institutionalization in long-term care settings.<sup>20</sup> Falls in children are of particular concern, as serious injury to the head may result, with potential long-term outcomes.<sup>18</sup>

- **Life promotion, suicide risk and prevention**

Suicide is a significant public health issue with deep and devastating effects on individuals, families, and communities. Understanding suicide is complex - it involves a wide range of factors including social, cultural, biological, psychological, spiritual, economic, and other factors, as well as the physical environments where people live, learn, work and play.<sup>23</sup>

- **Mental health promotion**

Physical and mental health are determinants and consequences of each other. Positive mental health is critical to the maintenance of good physical health and in recovery from physical illness and injury. Conversely, mental health and its determinants can be improved in association with changes in social and physical environments.<sup>24</sup> Promoting mental and physical health holistically and simultaneously is essential to efforts to reduce health inequities and improve and protect the health and well-being of the population.

- **Off-road safety**

Off-road vehicles can include all-terrain vehicles, snowmobiles, dirt bikes, motocross bikes, amphibious vehicles, quad bikes and other similar vehicles. They are motorized vehicles used for both recreation and transportation purposes in Canada. Off-road vehicles represent an increasing mechanism for injury and fatality in Canadians, particularly in pediatric populations in remote areas of Canada, including Indigenous communities.<sup>25</sup>

- **Road safety**

Injuries caused by motor vehicle collisions (MVCs) remain a significant public health problem in Canada. Injuries from transport related incidents are a leading cause of overall injury costs in Canada, second only to falls.<sup>22</sup> The number of road deaths and injuries remain high with MVCs representing the leading cause of injury-related death in 0 – 24 year olds in Canada.<sup>26</sup>

- **Substance Use**

The use of tobacco, alcohol, cannabis, opioids, illicit and other substances are key public health concerns. Substance use occurs on a spectrum ranging from abstinence to having a substance use disorder. Public health interventions to reduce the health burdens associated with substance use can be targeted across the spectrum. Substance-related health risks and harms such as cognitive impairment, intentional

and unintentional injury, violence, motor vehicle collisions, among others directly affect individuals, communities, roadways and neighbourhoods.<sup>27-29</sup> Driving while under the influence of substances is harmful to individual and community safety.

- **Violence**

The World Health Organization identifies three main classifications of violence, including self-directed violence, interpersonal violence, and collective violence.<sup>30</sup> Types of violence include child abuse and bullying, youth violence, intimate partner violence, workplace violence, sexual violence, gender-based violence, violence against women, and elder abuse. Violence is an important public health issue with far reaching consequences for both mental and physical health. It contributes to suicide, substance use problems, depression, anxiety, and other psychological harms.<sup>31,32</sup>

## Glossary

**Comprehensive health promotion approach** combines multiple strategies and addresses the full range of health determinants to enable people to increase control over, and to improve, their physical, mental and social well-being.

**Disability-Adjusted Life Year (DALY)** is a population-based measure of the burden of disease and injury expressed in terms of hypothetical healthy life years that are lost as a result of specified diseases and injuries.<sup>6</sup>

**Health promotion:** is defined by the World Health Organization as “the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions”.<sup>33</sup> Health promotion strategies include: 1 - build healthy public policy; 2- create supportive environments; 3- strengthen community action; 4- develop personal skills; and 5- re-orient health services. It involves the population as a whole in the context of their everyday lives rather than focusing on people at risk for specific diseases and is directed toward action on the determinants or causes of health.<sup>34</sup>

**Population health** is the health of the population, measured by health status indicators. Population health is influenced by physical, biological, behavioural, social, cultural, economic, and other factors. The term is also used to refer to the prevailing health level of the population, or a specified subset of the population, or the level to which the population aspires. Population health describes the state of health, and public health is the range of practices, procedures, methods, institutions, and disciplines required to achieve it.<sup>35</sup> The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

**Potential Years of Life Lost (PYLL)** is a measure of the relative impact of various diseases and lethal forces on society. PYLL highlights the loss to society as a result of youthful or early deaths. It is the sum of the average years a person or group would have lived had they not died prematurely, calculated using an average life expectancy of 75 years.<sup>6</sup>

**Program of public health interventions** includes the suite of programs, services, and other interventions undertaken by a board of health to fulfill the requirements and contribute to achieving the goals and program outcomes outlined in the Standards.

**Protective factors** are individual or environmental characteristics, conditions, or behaviors that reduce the effects of stressful life events. These factors also increase an individual's ability to avoid risks, and promote social and emotional competence to thrive in all aspects of life.<sup>36</sup>

**Risk factors** are any attributes, characteristics or exposures of an individual that increase the likelihood of developing a disease or injury.<sup>37</sup>

**Social determinants of health** are the interrelated social, political and economic factors that create the conditions in which people live, learn, work and play. The intersection of the social determinants of health causes these conditions to shift and change over time across the life span, impacting the health of individuals, groups and communities in different ways.<sup>38</sup>

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