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April 25, 2018

MEMORANDUM

TO: **Medical Officers of Health, CEOs, and Board Chairs**

RE: Ontario Public Health Standards: Requirements for Programs, Services, and Accountability

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Dear Colleagues,

Further to the previous memos (December 29, 2017, February 5, 2018, March 20, 2018 and April 13, 2018) which included the release of the official Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards), we are now releasing a fifth installment with 4 additional guidelines.

The Standards and incorporated protocols and guidelines 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.

The following official guidelines are attached:

- Chronic Disease Prevention Guideline, 2018
- Healthy Growth and Development, 2018
- Injury Prevention Guideline, 2018 and
- Management of Potential Rabies Exposures Guideline, 2018

While they are dated effective as of January 1, 2018 to coincide with the effective date of the Standards, the ministry's expectation is that implementation of requirements outlined in the protocols and guidelines begins as of the date of release, or, at the beginning of the next school year for those programs and services delivered in schools.

The remaining incorporated guidelines will be released shortly. Please see Appendix 1 for a summary of protocols and guidelines including those released previously, the one released today, and those anticipated in the coming weeks. As previously communicated, it is expected that boards of health will continue to operate business as usual until the remaining new guidelines have been released. The ministry will continue to work with all our health unit partners to support you as you implement the new Standards, protocols, and guidelines.

As mentioned in the last memo, the Ministry's website for the Standards and related documents in English and French is up and running. Documents are being added as quickly as possible. Please access the website using one of the following links:
In English at:
http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/default.aspx;
In French at:
http://www.health.gov.on.ca/fr/pro/programs/publichealth/oph_standards/default.aspx

Thank you all for your continued support and collaboration. If you have any questions, please do not hesitate to contact the ministry by e-mail at PHTransformation@ontario.ca.

Sincerely,

Original signed by

Roselle Martino
Assistant Deputy Minister
Population and Public Health Division

c: Dr. David Williams, Chief Medical Officer of Health
Jackie Wood, Director, Planning and Performance Branch
Nina Arron, Director, Disease Prevention Policy and Programs Branch
Liz Walker, Director, Accountability and Liaison Branch
Laura Pisko, Director, Health Protection Policy and Programs Branch
Dianne Alexander, Director, Healthy Living Policy and Programs Branch
Clint Shingler, Director, Health System Emergency Management Branch

Appendix 1: Summary of Protocols and Guidelines with Release Dates

Document	Release Date or Anticipated Release Date
Child Visual Health and Vision Screening Protocol	March 20, 2018
Electronic Cigarettes Protocol	December 29, 2017
Food Safety Protocol	February 5, 2018
Health Hazard Response Protocol	February 5, 2018
Healthy Babies, Healthy Children Program Protocol	January 3, 2018
Immunization for Children in Schools and Licensed Child Care Settings Protocol	February 5, 2018
Infection Prevention and Control Complaints Protocol	February 5, 2018
Infection Prevention and Control Disclosure Protocol	February 5, 2018
Infection Prevention and Control Protocol	February 5, 2018
Infectious Diseases Protocol	February 5, 2018
Institutional/Facility Outbreak Management Protocol	March 20, 2018
Menu Labelling Protocol	December 29, 2017
Oral Health Protocol	March 20, 2018
Population Health Assessment and Surveillance Protocol	December 29, 2017
Qualifications for Public Health Professionals Protocol	February 5, 2018
Rabies Prevention and Control Protocol	February 5, 2018
Recreational Water Protocol	February 5, 2018
Safe Drinking Water and Fluoride Monitoring Protocol	February 5, 2018
Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol	December 29, 2017
Tanning Beds Protocol	December 29, 2017
Tobacco Protocol	December 29, 2017
Tuberculosis Prevention and Control Protocol	February 5, 2018
Vaccine Storage and Handling Protocol	December 29, 2017
Board of Health and Local Health Integration Network Engagement Guideline	December 29, 2017
Chronic Disease Prevention Guideline	April 23, 2018

Document	Release Date or Anticipated Release Date
Guidelines for Emergency Management	April/May 2018
Health Equity Guideline	March 20, 2018
Healthy Environments and Climate Change Guideline	March 20, 2018
Healthy Growth and Development Guideline	April 23, 2018
Injury Prevention Guideline	April 23, 2018
Management of Avian Chlamydiosis in Birds Guideline	April/May 2018
Management of Avian Influenza or Novel Influenza in Birds or Animals Guideline	April/May 2018
Management of Echinococcus Multilocularis Infections in Animals Guideline	April/May 2018
Management of Potential Rabies Exposures Guideline	April 23, 2018
Mental Health Promotion Guideline	March 20, 2018
Operational Approaches for Food Safety Guideline	March 20,2018
Operational Approaches for Recreational Water Guideline	February 5, 2018
Relationship with Indigenous Communities Guideline	April/May 2018
School Health Guideline	April 13, 2018
Small Drinking Water Systems Risk Assessment Guideline	February 5, 2018
Substance Use Prevention and Harm Reduction Guideline	December 29, 2017
Tuberculosis Program Guideline	April/May 2018

Ministry of Health and Long-Term Care

Chronic Disease Prevention Guideline, 2018

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

Effective: January 1, 2018 or upon date of release

Ontario

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.[1,2] 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 chronic disease 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 chronic disease 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.

Chronic Disease Prevention and Well-Being

Requirement 2. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses chronic disease risk and protective factors to reduce the burden of illness from chronic diseases 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, chronic diseases;
    ii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors;

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:
    - Built environment;
    - Healthy eating behaviours;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral health;
    - Physical activity and sedentary behaviour;
    - Sleep;
    - Substance* use; and
    - UV exposure.
v. Evidence of 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 *Mental Health Promotion Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).†

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*

*Substance includes tobacco, e-cigarettes, alcohol, cannabis, opioids, illicit, other substances and emerging products.

†The *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current) provides guidance on alcohol, cannabis, opioids, and illicit substances.

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).

4. Context

Chronic diseases, also known as noncommunicable diseases, are diseases that are not passed from person to person, are of long duration, and are generally slow in progression.[3] Chronic diseases of public health importance include, but are not limited to, obesity, cardiovascular diseases, respiratory disease, cancer, diabetes, intermediate health states (such as metabolic syndrome and prediabetes), hypertension, dementia, mental illness, and addictions.

Chronic diseases account for a substantial burden on the health of Ontarians and on the province's health care system. They are the leading cause of death in Ontario and are responsible for a high rate of morbidity, associated reductions in quality of life, and negative impacts on communities and the economy.[4] Chronic diseases account for substantial direct and indirect health costs, including years of healthy life lost from premature death and lost productivity from illness and disability.[5]

Chronic diseases are complex with many influencers, including a variety of factors that can either increase risk of or protect against the development or progression of chronic diseases. While some risk and protective factors for chronic diseases cannot be controlled (e.g., genetics, age), the risk of developing chronic diseases can be reduced through modification of healthy lifestyle behaviours. By eliminating four common and modifiable risk factors for chronic disease (unhealthy eating, physical inactivity, tobacco use, and harmful use of alcohol), 80% of heart disease and type II diabetes, and 40% of cancers could be prevented.[6] Reducing population-level exposure to these four common and modifiable risk factor behaviours has been identified as one of the most effective interventions to prevent chronic diseases.[4,7]

Chronic diseases intensify inequities, disproportionately impacting populations who are socioeconomically disadvantaged and other priority populations. Chronic disease prevention is a particularly pressing issue given that Ontario's population is aging, and older adults have higher rates of chronic diseases.[4]

4.1 Key Public Health Frameworks and Concepts

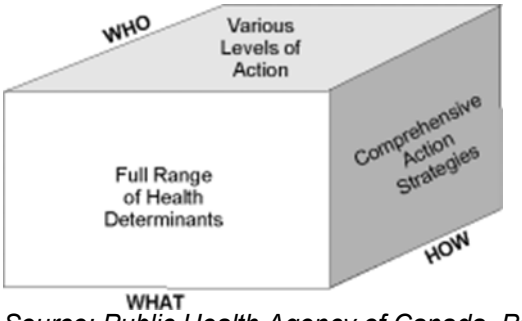
This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support chronic disease prevention with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

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. 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.[8]

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.[8]

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 chronic disease prevention including:

- Building healthy public policy;
- Creating supportive environments;
- Strengthening community action;
- Developing personal skills; and
- Re-orienting health services.[9]

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.[10]

4.1.3 Social-Ecological Model of Health

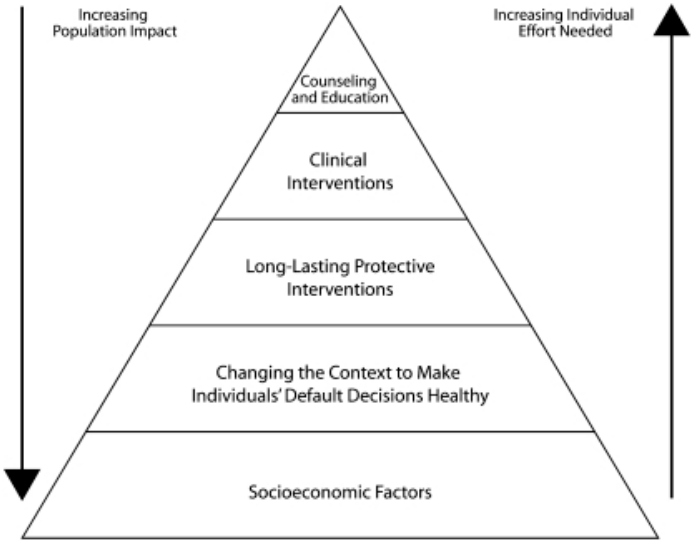
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[11]

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 chronic disease prevention.

- Upstream approach: seeking to address the causes of the causes.[12]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[13]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[14]
- 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.[15]
- 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.[16]
- 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.[17]

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.[17]

4.2 Key Content-Specific Frameworks and Concepts

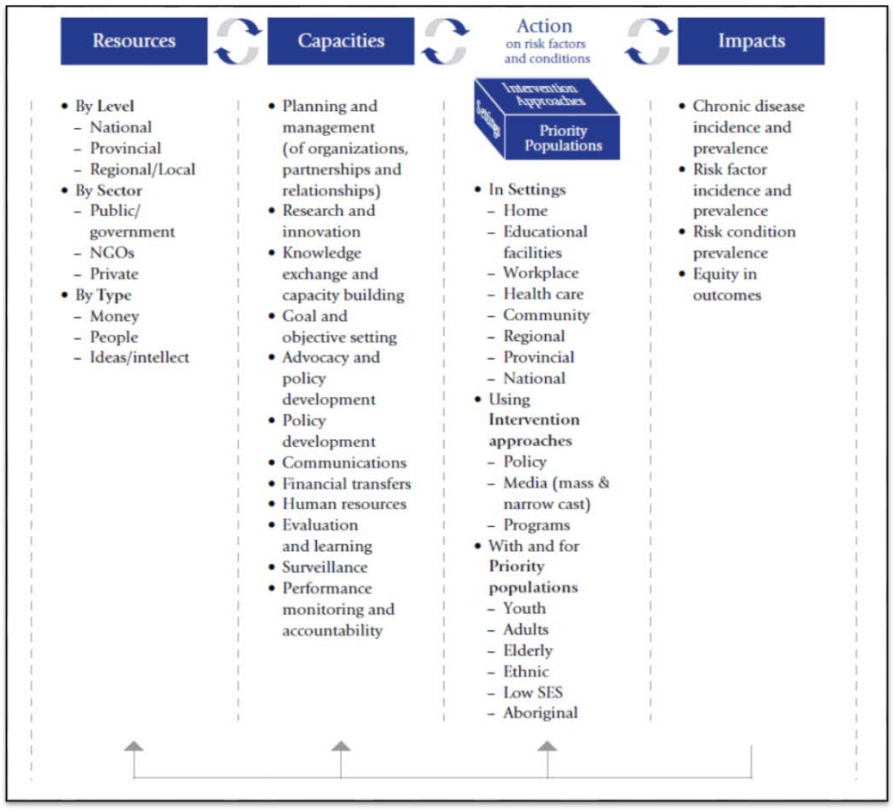
This section provides a summary of key content-specific frameworks and key concepts related to chronic disease prevention to inform the development and implementation of a program of public health interventions to support chronic disease prevention.

4.2.1 Primary Prevention of Chronic Diseases Framework

This framework provides a comprehensive approach to the primary prevention of chronic diseases including:

- The need for resources/investments in the form of people, money and ideas;
- The range of capacities required to effectively plan, implement and evaluate programming;
- The actions that consider intervention approaches, settings and priority populations; and
- The intended impacts addressing diseases, risk factors and inequities.[18]

Figure 3: Primary Prevention of Chronic Diseases Framework



Source: Chronic Disease Prevention Alliance of Canada. Primary prevention of chronic diseases in Canada: a framework for action. Ottawa, ON: Chronic Disease Prevention Alliance of Canada; 2008. Reproduced with permission.[18]

4.2.2 Key Content-Specific Concepts

Scope of Chronic Disease Prevention

The core focus of public health interventions to prevent chronic diseases emphasizes primordial and primary prevention. Prevention of disease occurs across four levels: primordial, primary, secondary, and tertiary. Primordial and primary prevention are more strongly tied to the health of the entire population, while secondary and tertiary prevention focus on those who already show signs of disease.

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 chronic diseases 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 Chronic Disease Prevention and Well-Being Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses chronic disease risk and protective factors to reduce the burden of illness from chronic diseases 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, chronic diseases.
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors.
- 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:
    - Built environment;
    - Healthy eating behaviours;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral health;
    - Physical activity and sedentary behaviour;
    - Sleep;
    - Substance use; and

    - UV exposure.
- Evidence of the effectiveness of the interventions employed.

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

- Healthy Environments Standard;
- Healthy Growth and Development Standard;
- Immunization Standard;
- School Health Standard; and
- Substance Use and Injury Prevention Standard.

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

- *Electronic Cigarettes Protocol, 2018* (or as current);
- *Healthy Environments and Climate Change Guideline, 2018* (or as current);
- *Healthy Growth and Development Guideline, 2018* (or as current);
- *Immunization for Children in Schools and Licensed Child Care Settings Protocol, 2018* (or as current);
- *Mental Health Promotion Guideline, 2018* (or as current);
- *Menu Labelling Protocol, 2018* (or as current);
- *Oral Health Protocol, 2018* (or as current);
- *Population Health Assessment and Surveillance Protocol, 2018* (or as current);
- *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current);
- *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current);
- *Tanning Beds Protocol, 2018* (or as current); and
- *Tobacco Protocol, 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 Chronic Disease Prevention and Well-Being 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

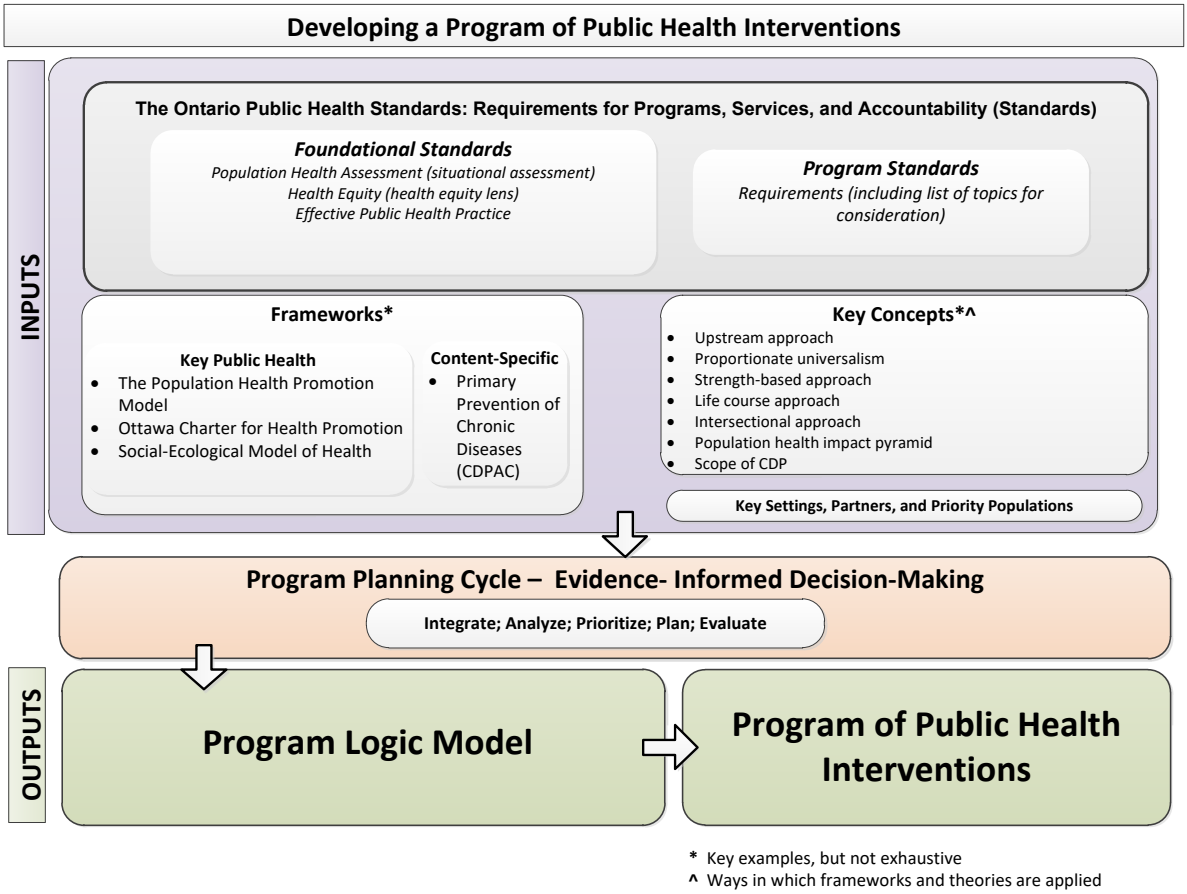
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support chronic disease prevention in the health unit population.

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 chronic disease prevention in the health unit population (Figure 4). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the *Chronic Disease Prevention and Well-Being Standard, 2018* (or as current) and related Program Standards (see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2);
- Key settings, partners, and priority populations, which may vary by chronic disease prevention topic and local context; and
- Key chronic disease prevention topics, based on an assessment of local need (see section 6.2).

Figure 4: 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 interventions to support chronic disease prevention based on an assessment of local need.

- **Built environment**
  The built environment is comprised of the buildings, transportation systems, energy systems, open space and agricultural lands that make up and support our communities. There is increasing evidence that the built environment has a direct impact on factors such as: employment; social support networks; and the physical and social environments that influence health and health equity and has been shown to impact physical inactivity, obesity, cardiovascular disease, respiratory disease, and mental illness, risk of injuries, and access to food.[19,20] It influences our exposure to environmental health hazards such as air pollution and extreme heat. The diverse and changing communities in Ontario are important to consider when thinking about the built environment and its impacts on health.[19,21]

- **Healthy eating behaviours**
  Healthy eating involves the consumption of foods from a variety of food groups and intake of water, while limiting processed or refined foods that are high in sodium, sugar, and saturated fat with the overall goal of maintaining or promoting health and preventing disease. Diet is a modifiable risk factor for prevention of many chronic diseases such as obesity, cardiovascular diseases, cancer, type II diabetes, hypertension, and others.[22] A substantial proportion of Canadians do not meet healthy eating recommendations and many factors challenge people's ability to make healthy choices including social, economic, built, and other environments and settings.[22-24]

- **Healthy sexuality**
  Sexual health is a vital component of an individual's physical and emotional health and well-being. Healthy sexuality involves acquiring the knowledge, skills and behaviour to enable good sexual health throughout life. It also includes the provision of information and services to prevent and manage sexually transmitted infections, unintended pregnancy, sexual dysfunction and violence. Some sexually transmitted infections, such as those due to the hepatitis B virus and the human papilloma virus, can result in the development of certain chronic diseases and cancers.[25] Sexually transmitted infections such as chlamydia, gonorrhea and syphilis have been rising since 2000.[26]

- **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; conversely, mental health and its determinants can be improved in association with changes in social and physical environments.[27] 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.

- **Oral health**
  A healthy mouth is a gateway to a healthy body. Dental diseases can lead to physical and psychosocial disability, influencing the way people eat, speak and socialize. Good oral health is essential as it is not only important in its own right but is associated with other chronic diseases such as diabetes, cardiovascular diseases, and aspiration pneumonia.[28] In addition, there are risk factors (e.g., diet, smoking, stress and trauma) which are a common cause for both poor oral health and other chronic conditions.[29]

- **Physical activity and sedentary behaviours**
  Physical activity is a key component of an individual's physical, mental and overall well-being. Insufficient physical activity is associated with increased rates of a number of chronic and preventable diseases such as type II diabetes, heart disease, stroke, high blood pressure, high cholesterol, certain cancers, osteoporosis, as well as with an increased risk of falls, fractures, and depression,

with resulting high economic impacts.[30,31] A substantial proportion of Canadians across all age groups are not meeting the recommended physical activity guidelines.[32,33]
Sedentary behaviour is postures or activities requiring little or no energy expenditure such as prolonged sitting, watching television, and extended time spent on computer and motorized transport. Sedentary behaviour is associated with an increased risk of: type II diabetes, cardiovascular disease and mortality; all-cause mortality (independent of physical activity); and certain cancers (e.g., colon, endometrial and lung cancer). Canadian adults are sedentary for most of their waking hours, and evidence demonstrates that children and youth spend a large proportion of their time in sedentary pursuits.[34,35]

- **Sleep**
  Sleep is a key component of an individual's physical, mental and overall well-being, with insufficient or disrupted sleep having immediate and long-term consequences. Both short and long sleep duration have been associated with adverse health outcomes including total mortality, cardiovascular disease, type II diabetes, obesity, respiratory disorders, and poor general health.[36,37] A substantial proportion of Canadians are not getting the right amount of sleep.[35,38]

- **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. Substance-related health risks include cancer, cognitive impairment, mental illness, heart disease, cirrhosis of the liver, and fetal alcohol syndrome.[39] Alcohol in particular is associated with a variety of chronic diseases. Tobacco use impacts nearly every organ of the body, contributing to the development of chronic diseases such as cancer, respiratory, cardiac, vascular, neurological, and metabolic diseases, and death.[40] Tobacco use includes smoking and vaping of cigarettes and heated tobacco; smoking pipes and cigars; and sniffing, sucking, or chewing smokeless tobacco products. A comprehensive approach that includes preventing the initiation and escalation of smoking, protecting the community from exposure to second-hand smoke and vapour, motivating and supporting individuals to quit smoking, and identifying and reducing disparities in tobacco use and related harms can influence the impact of tobacco addiction on chronic disease.

- **UV exposure**
  Exposure to UV radiation from the sun or from artificial sources like tanning beds has significant adverse health outcomes without adequate protection. While there can be benefits of UV exposure, including facilitating vitamin D3 formation, UV radiation from the sun and tanning devices has been classified as a human carcinogen and is a key risk factor for skin cancers in addition to premature skin aging, eye problems and weakening of the immune system.[41,42] A substantial proportion of Canadians spend time in the sun without use of protection against

UV radiation, and the incidence of preventable skin cancers continues to increase.[43-45]

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.

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".[46] 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.[47]

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.[48] The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

Prevention (Levels of):

Primordial prevention addresses underlying economic, social, and environmental factors that lead to disease causation and aims to establish and maintain conditions that minimize health risks.

Primary prevention addresses specific causal factors for disease and aims to reduce the incidence of disease.

Secondary prevention addresses earlier stages of disease and aims to decrease the prevalence of disease through shortening its duration.

Tertiary prevention addresses later stages of disease (rehabilitation, treatment) and aims to decrease the impact and/or number of complications.[49]

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 behaviours 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.[50]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing an unfavourable outcome.[51]

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.[52]

Well-being refers to "the presence of the highest possible quality of life in its full breadth of expression focused on but not necessarily exclusive to: good living standards, robust health, a sustainable environment, vital communities, an educated populace, balanced time use, high levels of democratic participation, and access to and participation in leisure and culture."[53]

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Ministry of Health and Long-Term Care

Healthy Growth and Development Guideline, 2018

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

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Ontario

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.[1,2] 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 healthy growth and development in the health unit population.

In doing so, this 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) for:
    - 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 healthy growth and development 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.

Healthy Growth and Development

Requirement 2. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to support healthy growth and development in the health unit population.

a) The program of public health interventions shall be informed by:
    i. An assessment of risk and protective factors that influence healthy growth and development.
    ii. 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.

iii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, social, and other relevant sectors with specific attention to:
- School boards, principals, educators, parent groups, student leaders, and students;
- Child care providers and organizations that provide child care services such as Community Hubs and Family Centres;
- Health care providers and LHINs;
- Social service providers; and
- Municipalities.

iv. Consideration of the following topics based on an assessment of local needs:
- Breastfeeding;
- Growth and development;
- Healthy pregnancies;
- Healthy sexuality;
- Mental health promotion;
- Oral Health;
- Preconception health;
- Pregnancy counselling;
- Preparation for parenting;
- Positive parenting; and
- Visual health.

v. Evidence of the effectiveness of the interventions.

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 *Healthy Growth and Development Guideline, 2018* (or as current); and the *Mental Health Promotion Guideline, 2018* (or as current).

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.

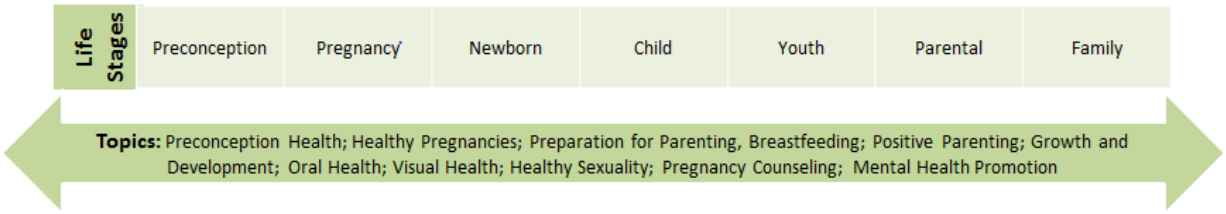
b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline,*

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).

4. Context

Healthy growth and development refers to a process that encompasses physical, mental, emotional and social well-being. It includes age-appropriate growth and development outcomes, such as motor, language, social, emotional and cognitive skills and abilities.[3] Healthy growth and development interventions are intended to help achieve a healthy start in life, including optimal preconception, pregnancy, newborn, child, youth, parental, and family health (See Figure 1).

Figure 1. Life Stages and Topics for Consideration for Healthy Growth and Development



Healthy child development is a key determinant of health, with robust evidence linking early life experiences to mental and physical health outcomes throughout the life course.[4] Because of the critical foundation laid by childhood experiences, investments in early childhood development can strongly influence population health and promote health equity, including impacting school success, economic participation, and social well-being.[5]

Healthy growth and development requires family-centered, community-based, culturally competent, coordinated care and support throughout the life course.[6]

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 healthy growth and development 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. 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.[7]

Figure 2. 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.[8]

4.1.2 Ottawa Charter for Health Promotion

This framework provides the core strategies for health promotion action when planning, implementing, and evaluating healthy growth and development programs and services including:

- Building healthy public policy
- Creating supportive environments
- Strengthening community action
- Developing personal skills
- Re-orienting health services.[8]

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.[9]

4.1.3 Social-Ecological Model of Health

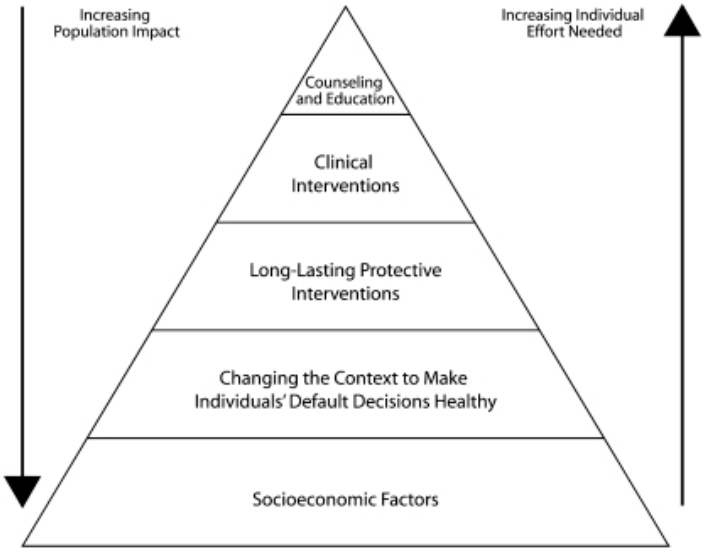
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[10]

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 healthy growth and development.

- Upstream approach: seeking to address the causes of the causes.[11]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[12]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[13]
- 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.[14]
- 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.[15]
- Population health impact pyramid (Figure 3): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.[16]

Figure 3. 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.[16]

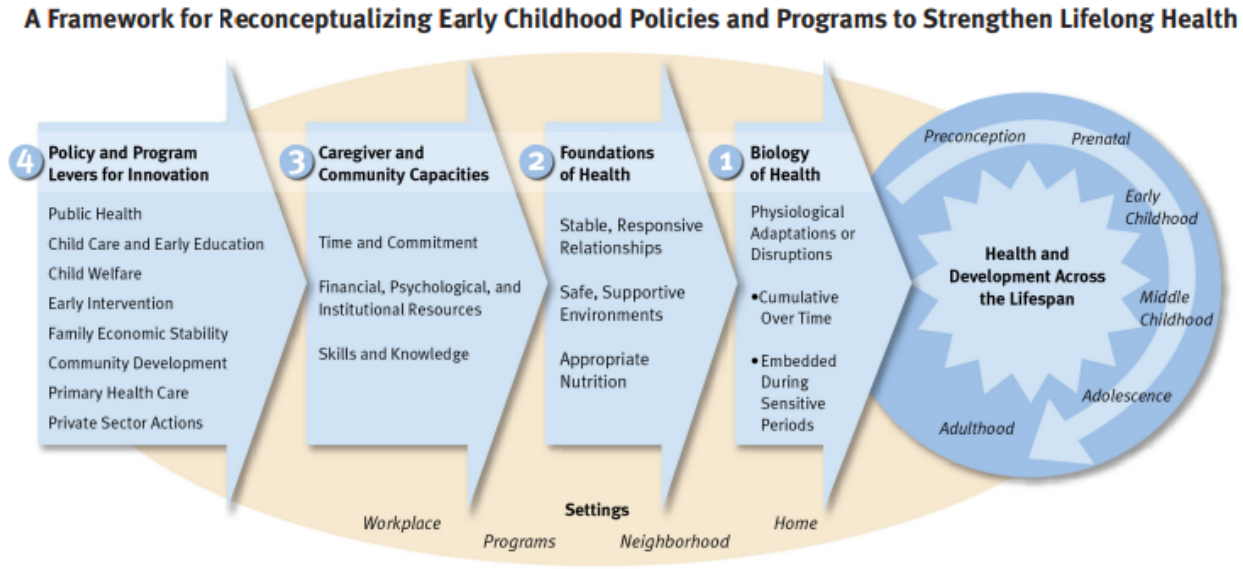
4.2 Key Content-Specific Frameworks and Concepts

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

4.2.1 Harvard's Early Childhood Policies and Programs Framework

The Center on the Developing Child at Harvard University developed an evidence-based framework addressing the contributors to early child development and which emphasizes the importance of action in a wide range of policy domains.[17]

Figure 4. Harvard's Early Childhood Policies and Programs Framework.



Source: Center on the Developing Child. The foundations of lifelong health are built in early childhood [Internet]. Cambridge, MA: Harvard University; 2010 [cited 2018 Jan 18]. Reproduced with permission.[17]

4.2.2 Key Content-Specific Concepts

Key concepts when applying these frameworks to practice include:

- **Developmental Assets:** a framework for positive youth development that includes 40 research-based internal and external strengths, supports, and non-cognitive skills that help children and youth to grow into healthy, caring and responsible adults[18]

- **Person-and-Family-Centred Care:** a holistic approach to the provision of care and services that encompasses not only the health of the individual but also their family, culture, and community.[19]

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 promote healthy growth and development 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 Healthy Growth and Development Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach to support healthy growth and development in the health unit population. The program of public health interventions shall be informed by:

- An assessment of the risk and protective factors that influence healthy growth and development;
- 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;
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, social and other relevant sectors with specific attention to:
    - School boards, principals, educators, parent groups, student leaders, and students.
    - Child care providers and organizations that provide child care services, such as Community Hubs and Family Centres;
    - Health care providers and Local Health Integration Networks (LHINs);
    - Social service providers; and
    - Municipalities.
- Consideration of the following topics based on an assessment of local needs:
    - Breastfeeding;
    - Growth and development;
    - Healthy pregnancies;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral health;

    - Preconception health;
    - Pregnancy counseling;
    - Preparation for parenting;
    - Positive parenting; and
    - Visual health.
- Evidence of the effectiveness of the interventions employed.

Healthy growth and development is also impacted by other Program Standards including but not limited to:

- Chronic Disease Prevention and Well-Being Standard;
- Infectious and Communicable Diseases Prevention and Control Standard;
- School Health Standard; and
- Substance Use and Injury Prevention Standard.[1]

There are linkages to healthy growth and development in other guidelines and protocols, including:

- *Child Visual Health and Vision Screening Protocol, 2018* (or as current);
- *Chronic Disease Prevention Guideline, 2018* (or as current);
- *Healthy Babies Healthy Children Protocol, 2018* (or as current);
- *Injury Prevention Guideline, 2018* (or as current);
- *Mental Health Promotion Guideline, 2018* (or as current);
- *Oral Health Protocol, 2018* (or as current);
- *School Health Guideline, 2018* (or as current);
- *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current); and
- *Substance Use Prevention and Harm Reduction 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 Healthy Growth and Development 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.[1]

6. Required Approaches

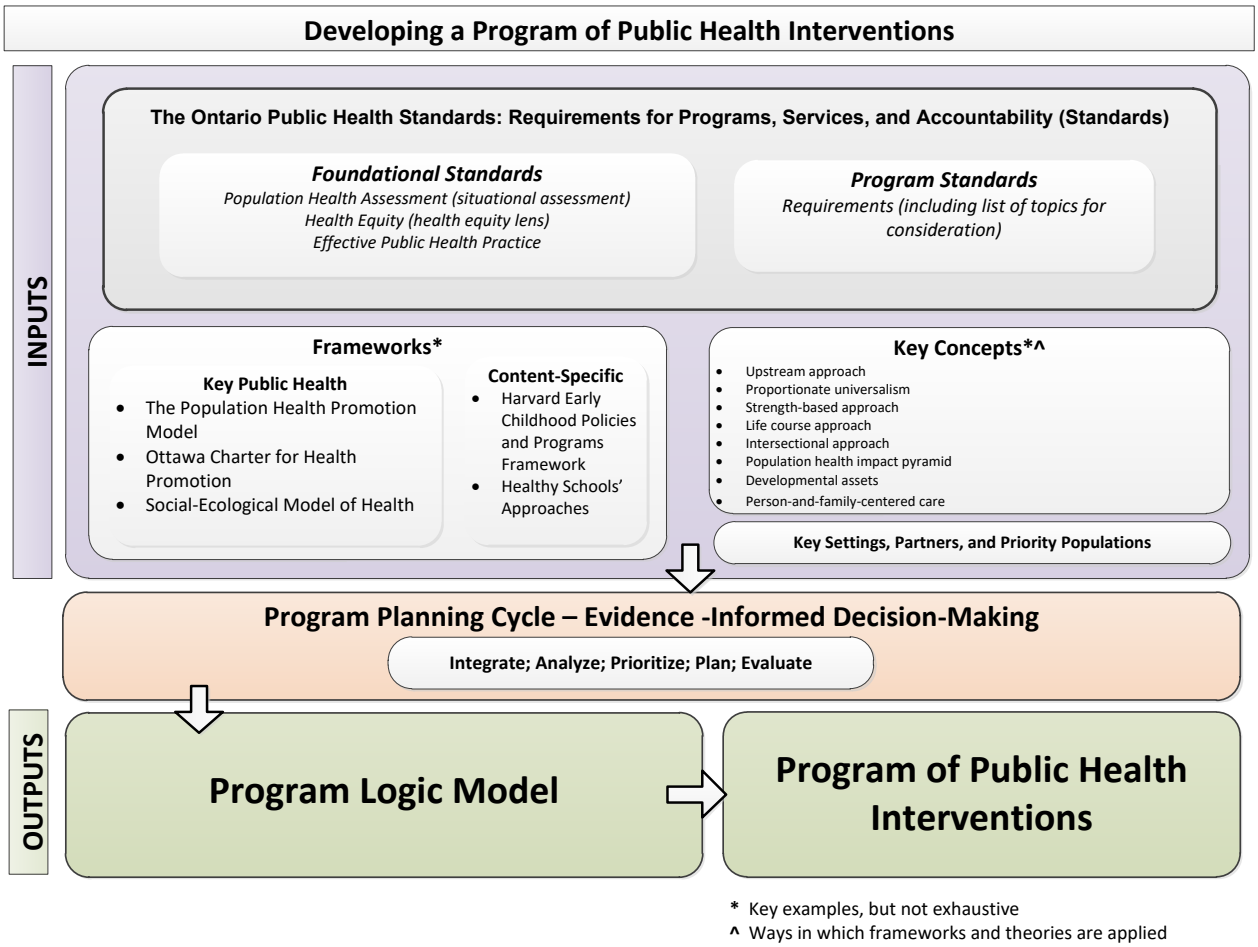
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support healthy growth and development in the health unit population.

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 healthy growth and development in the health unit population (Figure 6). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the Healthy Growth and Development Standard and related program standards(see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2);
- Key settings, partners and priority populations, which may vary by healthy growth and development topic and local context; and Key healthy growth and development topics, based on an assessment of local need (see section 6.2).

Figure 6: Developing a program of public health interventions



6.2 Topics for Consideration

Boards of health shall consider the following topics when developing and implementing a program of public health interventions to support healthy growth and development based on an assessment of local need.

- **Breastfeeding**
  Breastfeeding is the optimal source of nutrition to support healthy growth and cognitive development of infants.[20] Breastfeeding gives a healthy start to life, and provides short-and long-term health and neurodevelopmental benefits for the baby.[21,22] Mothers who breastfeed experience a delayed return of menses, which may help in child spacing. [23] Breastfeeding is also associated with a decreased risk for type 2 diabetes and certain breast and ovarian cancers.[23,24] Breastfeeding initiation rates have increased over time, but the rates for exclusive breastfeeding and breastfeeding duration are still low.[25]

- **Growth and Development**
  Healthy growth and development refers to a process that encompasses physical, mental, emotional and social well-being. Healthy child development is a key determinant of health, with robust evidence linking early life experiences to mental and physical health outcomes throughout the life course.[4] There is evidence of a health gradient in childhood development with socioeconomic factors clearly linked to healthy growth and development outcomes.[26] Interventions to ensure that all children have a healthy start in life can support physical, emotional, and mental health, including school success and economic participation.[5]

- **Healthy Pregnancies**
  Healthy pregnancies are essential to ensure the health of both the mother and child. Risk factors, such as alcohol intake, smoking, and poor nutrition in pregnancy, can lead to negative outcomes in the physical growth and cognitive development of the child.[27] In addition to prenatal care, interventions to improve modifiable risk and protective factors can better the health of the mother and child, families, and society overall.[28-31]

- **Healthy Sexuality**
  Sexual health is a vital component of an individual's physical and emotional health and well-being. Healthy sexuality involves acquiring the knowledge, skills and behaviour to enable good sexual health throughout life. It also includes the provision of information and services to prevent and manage sexually transmitted infections, unintended pregnancy (e.g., contraception, pregnancy counselling[*]), sexual dysfunction and violence. Sexually transmitted infections such as chlamydia, gonorrhea and syphilis have been rising since 2000.[32]

- **Mental Health Promotion**
  Mental health promotion is the process of enhancing the capacity of individuals and communities to increase control over their lives and improve their mental health. By working to increase self-esteem, coping skills, social connectedness and well-being, mental health promotion empowers people and communities to interact with their environments in ways that enhance emotional and spiritual strength. Evidence shows that initiatives that focus on giving "every child the best possible start" will yield the greatest impacts.[33] Adverse childhood experiences, such as poor attachment to parents, child abuse, family conflict, and neglect, have been clearly linked to risk for mental illness and addiction later in life. 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.

- **Oral Health**

[*] Pregnancy counselling is listed as one of the required topics for consideration in the Healthy Growth and Development Standard.

Tooth decay, though largely preventable, remains the most common chronic illness among children.[34] Dental problems can result in eating and sleep disruption, which in turn is associated with underweight, poor performance in school, and failure to thrive.[35,36] Poor oral health is also detrimental for social outcomes such as low self-esteem, as well as longer-term impacts on employability.[37,38]

- **Preconception Health**
  Preconception, whether before a first or a subsequent pregnancy, is an opportune period to improve the health of women to prevent adverse maternal and infant outcomes. Risk factors that may occur during the preconception period include chronic conditions (e.g., obesity, hypertension, diabetes) and high-risk behaviours (e.g., alcohol intake, smoking, substance use).[39,40] These are associated with adverse outcomes such as low birth weight, birth defects or other complications, and infant mortality. [39,40] Approximately 40% of pregnancies being unplanned, preconception care aims to promote the health of women of reproductive age before conception and thereby improve pregnancy-related outcomes.[41]

- **Preparation for Parenting**
  Preparation for parenting is a significant stage that influences parents/caregivers as they transition from being partners to parents. Preparation for parenting may include a range of activities such as gathering supplies needed for the baby, information related to infant care, feeding and immunizations, pregnancy and parental leave/benefits etc. These have significant impact on the parent-infant relationship, infant development as well as the relationship between partners/caregivers.[42,43]

- **Positive Parenting**
  Positive parenting promotes healthy attachment with the parent and child, as well as child management strategies to promote positive behaviours in children. Positive and consistent parenting has been associated with successful child development and fewer behaviour problems.[44,45] Positive parenting can improve a child's development trajectory despite other risks, whereas inconsistent parenting and poor parenting have negative effects.[46,47] Children subject to harsh, inconsistent discipline practices are more likely to develop behaviour problems.[47] Interventions to promote positive parenting may not only improve child behaviour but general child health outcomes.[48-51]

- **Visual Health**
  Visual health is critically important to mobility, independence, social engagement, physical health, and educational and employment outcomes.[52] Uncorrected vision impairment is associated with higher rates of injuries, depression, and some chronic diseases, and can significantly affect a child's growth and development by limiting social, physical and educational participation.[52] Six out of ten children experiencing reading difficulties have uncorrected or undetected vision problems and almost 25% of school-age children have vision problems.[53]

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.

Developmental Assets is a framework for positive youth development that includes 40 research-based building blocks of healthy development that help children and youth to grow into healthy, caring and responsible adults.[18] Research has shown that the more developmental assets young people acquire, the less likely they are to engage in high risk behaviours and the more likely they are to do well in school, be civically engaged and value diversity.[18]

Early childhood development refers to the physical, cognitive, linguistic, and socio-emotional development of a child from the preconception stage up to age six.[54] This period encompasses the most rapid development in a human life. Research has found that early childhood experiences have a decisive impact on the architecture of the developing brain and therefore lay a critical foundation for later life health, well-being, cognitive capacity and social behaviour.[17]

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".[55] 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.[56]

Life stages refer to developmental phases through which individuals pass over the course of their lives, including preconception, infancy, childhood, adolescence, adulthood, and old age, each with unique biological, psychological, and social characteristics.[57] Sub-phases within these stages are also often identified. Transitions between life stages can be accompanied by unique developmental needs, challenges and risks. This guideline focuses on preconception, pregnancy, newborn, child, and youth life stages, including the influence of parents and families on achieving a healthy start in life.

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.[58] The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

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.[59]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing an unfavourable outcome.[60]

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 and across the life span, impacting the health of individuals, groups and communities in different ways.[61]

Well-being refers to "the presence of the highest possible quality of life in its full breadth of expression focused on but not necessarily exclusive to: good living standards, robust health, a sustainable environment, vital communities, an educated populace, balanced time use, high levels of democratic participation, and access to and participation in leisure and culture."[62]

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Ministry of Health and Long-Term Care

Injury Prevention Guideline, 2018

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

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Ontario

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.[1,2] 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*

[*] 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).[3] The energy could be mechanical, thermal, chemical, or radiant.[3] 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).[4] Unintentional injuries represent the majority of injuries, with the precipitating events being predictable and preventable.[5]

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.[6] 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.[6]

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.[6]

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.[6]

Injury prevention refers to “ongoing strategies, policies, or programs designed to eliminate or reduce the occurrence and severity of injuries”.[7] 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

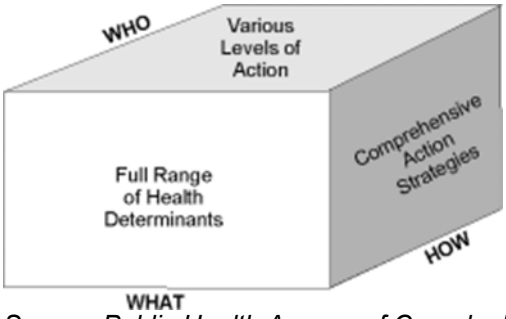
This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support injury prevention with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

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.[8] 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.[8]

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.[9]

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.[10]

4.1.3 Social-Ecological Model of Health

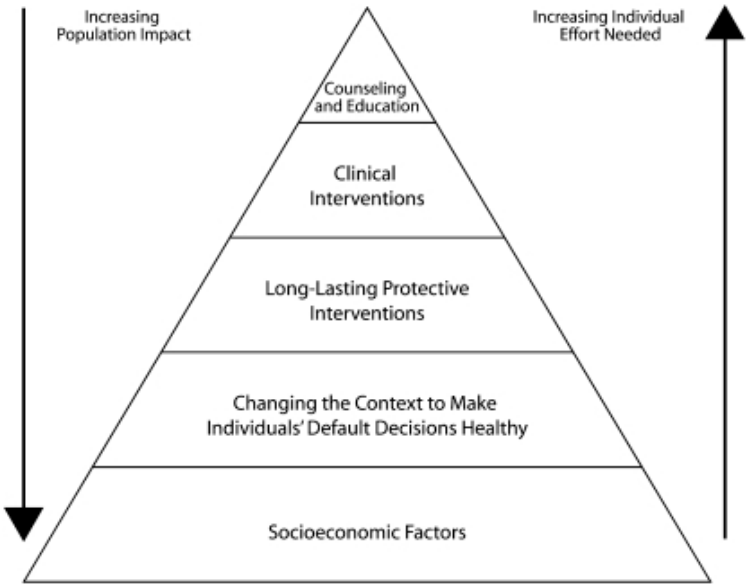
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[11]

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.[12]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[13]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[14]
- 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.[15]
- 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.[16]
- 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.[17]

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.[17]

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.[18] 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.[18] 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.[18]

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.[18] The Three E's can also include: evaluation, economic incentives, and empowerment.[18] 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.[18]

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

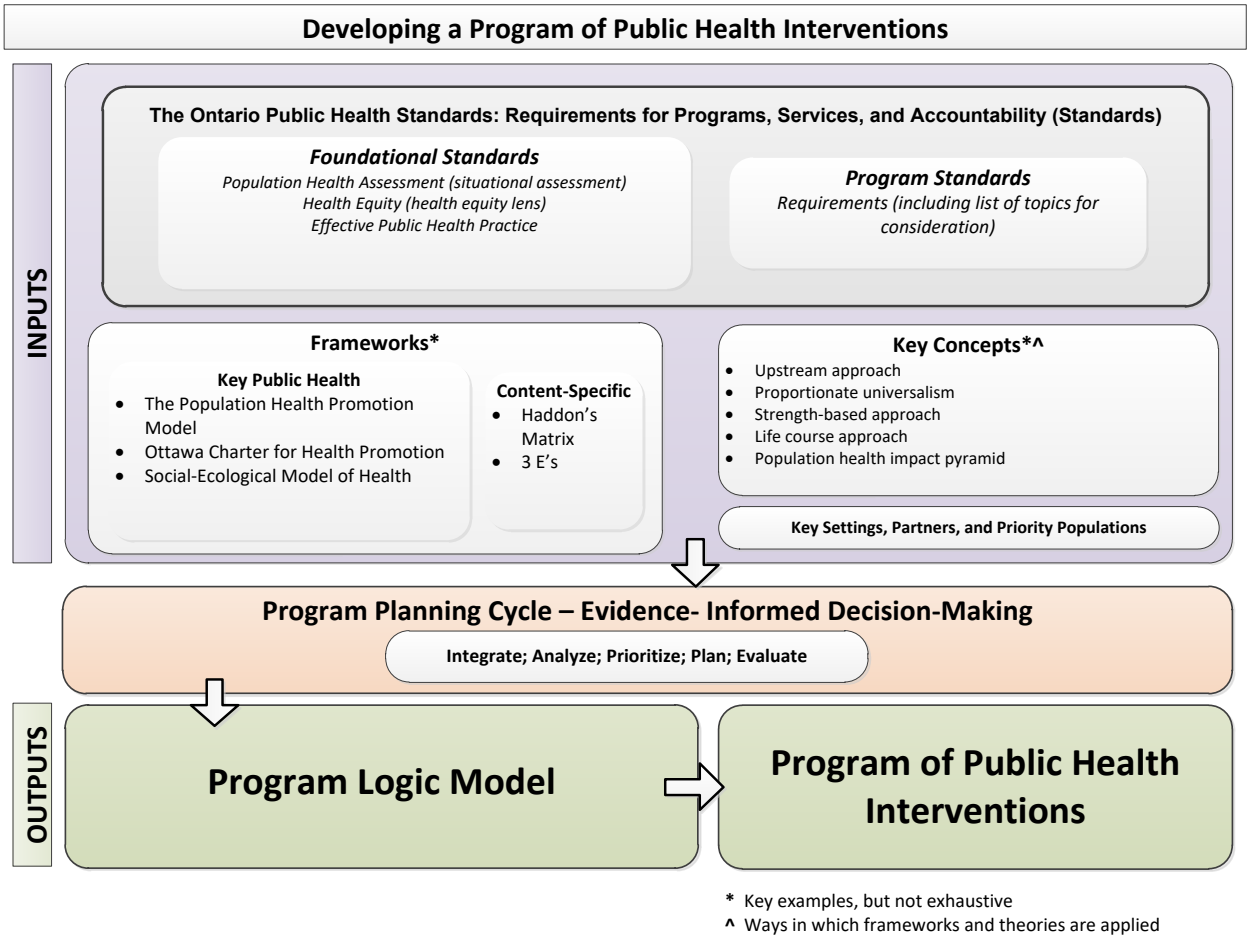
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support injury prevention in the health unit population.

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.[18] Common mechanisms of concussion include participation in sport and recreation activity, falls and motor vehicle collisions.[18] Signs and symptoms of concussion vary and include cognitive, sleep, physical or behavioural changes.[19] Repeated concussions are of particular concern given the significant impact they can have on an individual, across the lifespan.[18]

- **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.[20-22]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.[20] Falls in children are of particular concern, as serious injury to the head may result, with potential long-term outcomes.[18]
- **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.[23]
- **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.[24] 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.[25]
- **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.[22] 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.[26]
- **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.[27-29] 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.[30] 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.[31,32]

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.[6]

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".[33] 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.[34]

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.[35] 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.[6]

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.[36]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing a disease or injury.[37]

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.[38]

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Ontario

Ministry of Health and Long-Term Care

Management of Potential Rabies Exposures Guideline, 2018

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

Effective: January 1, 2018 or upon date of release

Ontario

Table of Contents

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.[1,2] 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. 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.

1.1 Introduction

The *Rabies Prevention and Control Protocol, 2018 (*or as current) is part of the Infectious and Communicable Diseases Prevention and Control Standard.[3] The purpose of the *Rabies Prevention and Control Protocol, 2018 (*or as current) is to prevent a human case of rabies by standardizing animal rabies surveillance and the management of human rabies exposures.[3]

This guideline document was created to assist staff at boards of health with the management of suspected rabies exposures. The document is a condensed version of the 'Rabies Vaccine' chapter in the *Canadian Immunization Guide*, with some amendments made by the Ministry of Health and Long-Term Care in order to adapt the information to an Ontario-specific context.[4] Please note that this document ONLY summarizes post-exposure prophylaxis (PEP) guidelines. For information about pre-exposure management and vaccination of high-risk occupational categories, please see the relevant chapter in the *Canadian Immunization Guide.*[4]

1.2 Reference to the Standards

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

Infectious and Communicable Diseases Prevention and Control

Requirement 11. The board of health shall provide public health management of cases, contacts, and outbreaks to minimize the public health risk in accordance with the *Infectious Diseases Protocol, 2018* (or as current); the *Institutional/Facility Outbreak Management Protocol, 2018* (or as current); the *Management of Potential Rabies Exposures Guideline, 2018* (or as current); the *Rabies Prevention and Control Protocol, 2018* (or as current); the *Sexual Health and Sexually Transmitted/ Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current); and the *Tuberculosis Prevention and Control Protocol, 2018* (or as current).

Requirement 13. The board of health shall receive and respond to all reported cases of potential rabies exposures received from the public, community partners, and health care providers in accordance with the *Health Protection and Promotion Act*; the *Management*

of Potential Rabies Exposures Guideline, 2018 (or as current); and the *Rabies Prevention and Control Protocol, 2018* (or as current).

Requirement 14. The board of health shall address the prevention and control of rabies threats as per a local Rabies Contingency Plan and in consultation with other relevant agencies* and orders of government, in accordance with the *Management of Potential Rabies Exposures Guideline, 2018* (or as current) and the *Rabies Prevention and Control Protocol, 2018* (or as current).

*Currently these agencies include the Ministry of Natural Resources and Forestry (MNRF), the Canadian Food Inspection Agency (CFIA) and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

Requirement 21. The board of health shall ensure 24/7 availability to receive reports of and respond to:

a) Infectious diseases of public health importance in accordance with the *Health Protection and Promotion Act*; the *Mandatory Blood Testing Act, 2006*; the *Infectious Diseases Protocol, 2018* (or as current); and the *Institutional/ Facility Outbreak Management Protocol, 2018* (or as current);
b) Potential rabies exposures in accordance with the *Health Protection and Promotion Act*; the *Management of Potential Rabies Exposures Guideline, 2018* (or as current); and the *Rabies Prevention and Control Protocol, 2018* (or as current); and
c) Animal cases of avian chlamydiosis, avian influenza, novel influenza, or *Echinococcus multilocularis* infection, in accordance with the *Health Protection and Promotion Act*, the *Management of Avian Chlamydiosis in Birds Guideline, 2018* (or as current); the *Management of Avian Influenza or Novel Influenza in Birds or Animals Guideline, 2018* (or as current); and the *Management of Echinococcus Multilocularis Infections in Animals Guideline, 2018* (or as current).

2. Post-Exposure Management

2.1 Species of Animal

The animals in Canada most often proven rabid are wild terrestrial carnivores (e.g., raccoons, skunks and foxes), bats, cattle and stray dogs and cats. If the incident involved a dog or cat, determining if it is a stray or domestic animal assists with the risk assessment. Generally, rabies is less likely in domestic animals, particularly domestic dogs, compared to stray animals due to the following factors: domestic animals *may be* more likely to be vaccinated; domestic animals may spend less time outdoors where exposure to a potentially rabid animal could occur; and an encounter with a potentially rabid animal is more likely to be recognized in a domestic animal.

Human exposures to livestock are usually confined to salivary contamination, with the exception of horses and swine, from which bites have been reported. The risk of infection after exposure to rabid cattle is low.

Squirrels, hamsters, guinea-pigs, gerbils, chipmunks, rats, mice or other small rodents, as well as lagomorphs (such as rabbits and hares) are only rarely found to be infected

with rabies because it is believed that they are likely to be killed by the larger animal that could have potentially transmitted rabies to them. These small animals can become infected by bat strains of rabies; however, no cases of transmission of bat strains of rabies from these animals to humans have been documented. Because these small animals are not known to have caused human rabies in North America, PEP should be considered only if the animal's behaviour was highly unusual. For example, a bite from a squirrel while feeding it would not be considered unusual behaviour and so does not warrant PEP based on this information alone.

Larger rodents, such as groundhogs, woodchucks and beavers, can potentially carry rabies. Although this is rare in Canada, the United States regularly reports a few cases of rabies in these species every year. Exposure to these animals requires an assessment of the circumstances of the exposure to determine the need for PEP, including the frequency of rabies in these animals in the geographic area, the frequency of rabies in other animals, the type of exposure, and the circumstances of the bite, including whether it was provoked or unprovoked.

2.2 Type of Exposure

Rabies is transmitted only when the virus is introduced into a bite wound, open cuts in skin, or onto mucous membranes such as the mouth or eyes. Three broad categories of exposure are recognized as warranting PEP: bite, non-bite and bat exposures.

Bite exposures: Transmission of rabies occurs most commonly through bites. A bite is defined as any penetration of the skin by teeth.

Non-bite exposures: This category includes contamination of scratches, abrasions or cuts of the skin or mucous membranes by saliva or other potentially infectious material, such as the brain tissue of a rabid animal. Non-bite exposures, other than organ or tissue transplants, have almost never been proven to cause rabies, and PEP is not indicated unless the non-bite exposure involves saliva or neural tissue being introduced into fresh, open cuts or scratches in skin or onto mucous membranes. These exposures require a risk assessment that considers the likelihood of salivary contamination.

Petting a rabid animal or handling its blood, urine or feces is not considered to be an exposure; however, such contact should be avoided. Being sprayed by a skunk is also not considered an exposure. These incidents do not warrant PEP.

Post-exposure prophylaxis is recommended in rare instances of non-bite exposure, such as inhalation of aerosolized virus by spelunkers exploring caves inhabited by infected bats or by laboratory technicians homogenizing tissues infected with rabies virus without appropriate precautions; however, the efficacy of prophylaxis after such exposures is unknown.

Exposures incurred in the course of caring for humans with rabies could theoretically transmit the infection. No case of rabies acquired in this way has been documented, but PEP should be considered for exposed individuals.

Bat exposures: Post-exposure rabies prophylaxis following bat contact is recommended when **both** the following conditions apply:

- There has been direct contact with a bat; **AND**

- A bite, scratch, or saliva exposure into a wound or mucous membrane cannot be ruled out.

Direct contact with a bat is defined as the bat touching or landing on a person. When there is no direct contact with a bat, the risk of rabies is extremely rare and rabies PEP is not recommended.

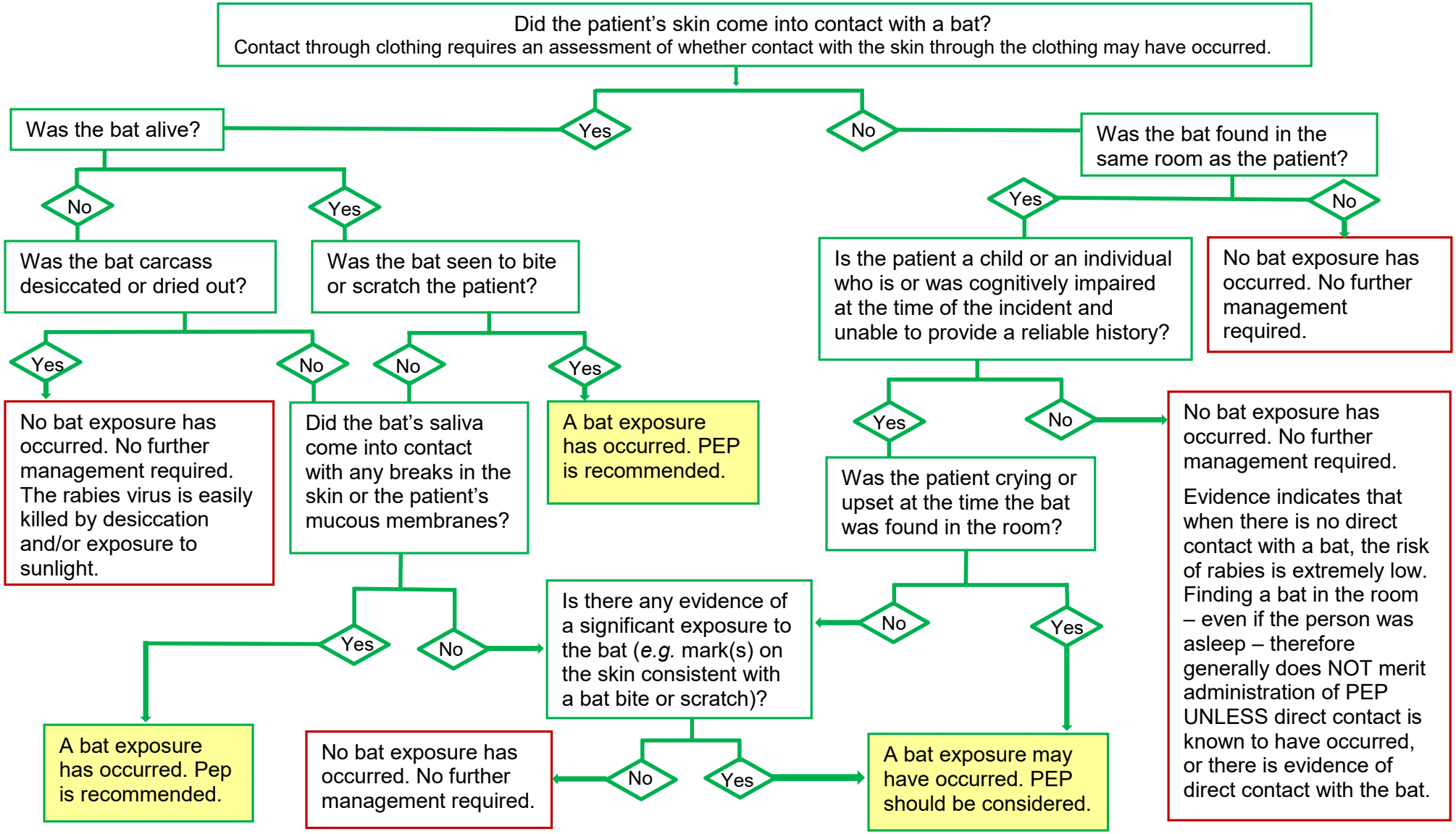
In an adult, a bat landing on clothing would be considered reason for PEP administration only if a bite, scratch, or saliva exposure into a wound or mucous membrane could not be ruled out. Therefore, if a bat lands on the clothing of a person who can be sure that a bite or scratch did not occur and that the bat's saliva did not contact an open wound or mucous membranes, then PEP is not required.

In a child, any direct contact with a bat (*i.e.,* the bat landing on or touching the child, including contact through clothes) could be considered a reason for PEP administration, as a history to rule out a bite, scratch or mucous membrane exposure may not be reliable.

When a bat is found in the room with a child or adult who is unable to give a reliable history, assessment of direct contact can be difficult. Factors indicating that direct contact may have occurred in these situations include the individual waking up crying or upset while the bat was in the room, or observation of an obvious bite or scratch mark.

Figure 1 below illustrates an algorithm for bat exposures and PEP administration

Figure 1: Algorithm for Bat Exposures and PEP administration



If there has been no direct contact with the bat, the bat should not be captured for testing and should be safely let out of the house. To remove a bat from the house, the area with the bat should be closed off from the rest of the house and people and pets kept out of the area. The doors or windows in the area with the bat should be opened to the exterior to let the bat escape.

If there has been direct contact with a bat, individuals should be instructed NOT to attempt to capture or kill the bat themselves, and a trained wildlife or animal control worker should be contacted to attempt to capture the bat. The worker should use extreme caution to ensure that there is no further exposure to the bat. They should wear appropriate Personal Protective Equipment, such as thick leather gloves, avoid touching the bat, and place the intact bat in a closed secure container. Once the bat has been captured and humanely euthanized, local public health officials should be contacted. The public health unit should contact the Ontario Association of Veterinary Technicians (OAVT) Rabies Response Program regarding rabies testing of the bat. Bats should be submitted intact for rabies testing.

Should the bat test positive, the public health unit should notify the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) if there are any pets in the household that may also have been exposed to the rabid bat, for appropriate follow-up of these animals.

Please note that spelunker exposure in caves will require special consideration, as explained above, under **Non-bite exposures**.

2.3 Investigation of the Incident

Each incident of possible exposure requires a full investigation by the public health unit. This should include an assessment of the risk of rabies in the animal species involved (including vaccination status, history of potential exposure to other animals of unknown rabies vaccination status, and travel history) and the behaviour of the particular domestic animal implicated.

Any mammal that has bitten a human or is suspected of being rabid should be reported to local public health officials. The ministry's Public Health Veterinarian should be notified of any animal suspected of being rabid on the basis of a veterinary examination, regardless of whether it has been involved in a biting incident.

When the rabies virus is inoculated into a wound, it must be taken up at a nerve synapse to travel to the brain, where it causes fatal encephalitis. The virus may enter a nerve rapidly or it may remain at the site of the bite for an extended period before gaining access to the nervous system. More severe bites may be more likely to suggest the animal is rabid and these bites may also provide more opportunity for transmission of the virus because of the extent of exposure to saliva.

A higher density of nerve endings in the region of the bite increases the risk of developing rabies encephalitis. Bites on the hands and face are considered higher-risk exposures because of the density of nerve endings. Bites to the face and neck are also considered higher-risk exposures because of the proximity to cranial nerves leading directly into the brain.

A history of abnormal or aggressive behaviour in a domestic animal, potential for exposure of a domestic animal to other animals that could transmit rabies (including other domestic animals of unknown rabies vaccination status), and a previous encounter of a domestic animal with a wild animal should be considered when determining the likelihood that a domestic animal exposure carries a risk of rabies transmission.

An unprovoked attack is more likely to indicate that the animal is rabid. Nevertheless, rabid animals may also become uncharacteristically quiet. Bites inflicted on a person attempting to feed or handle an apparently healthy animal should generally be regarded as provoked. However, while unprovoked attacks are more likely to indicate that an animal is rabid, provoked attacks should NOT be interpreted to indicate a **lower** overall likelihood of rabies in the biting animal, as rabid animals are just as likely to bite when provoked as non-rabid animals. For example, attempting to pick up a rabid animal is likely to result in a bite exposure that would be classified as a provoked bite, but this should not lower the overall perceived risk of rabies transmission from that animal. Untrained individuals should never handle wild or stray animals or any domestic animal that is behaving unusually and children should be taught this precaution.

Domestic pets with up-to-date rabies vaccination are unlikely to become infected with rabies, although vaccine failures have been documented. A veterinarian should be consulted to determine if the animal is up-to-date with its vaccinations, and a copy of the animal's current vaccination certificate obtained. If there are other animals residing with the animal under investigation, their vaccination status should also be determined. Any domestic dog, cat, or ferret (regardless of vaccination history) that has bitten a human should be reported to public health officials for appropriate follow-up.

Dogs, cats and ferrets that are apparently healthy should be confined and observed for 10 days after an exposure incident, regardless of the animal's rabies vaccination status. Animals that are alive and healthy at the end of the 10-day period would not have transmitted rabies in their saliva at the time of the bite. If illness suggestive of rabies exists at the time of the bite or develops during the observation period, it should be examined by a licensed veterinarian as soon as possible. If the outcome of the veterinary examination supports a likely onset of clinical rabies in the animal, the animal should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing. Rabies virus is readily demonstrable in brains of animals with neurologic symptoms. The OAVT Rabies Response Program should be contacted to assist with organizing the testing.

The confinement and observation of an apparently healthy dog, cat or ferret can take place at the owner's home, an animal shelter, or a veterinarian's office, depending on circumstances including the reliability of the owner, the capacity to keep the animal away from people and other animals, and the suspicion of rabies in the animal. The person responsible for observation of the animal should be advised to notify public health officials if the animal becomes ill or escapes during the observation period. The animal should be observed by a public health official or veterinarian at the end of the 10-day observation period to ensure it is alive and healthy. Unvaccinated animals that remain healthy should be vaccinated at the end of the observation period.

Stray or unwanted dogs, cats or ferrets involved in an exposure that could potentially transmit rabies should be confined and observed as outlined above. If this is not possible, the animal should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

If the dog, cat or ferret has escaped, attempts should be made to find the animal and owner. If the dog, cat or ferret cannot be located, a decision should be made in consultation with public health officials regarding the need for PEP.

Generally, behaviour in wild animals cannot be accurately evaluated and should not be considered part of the risk assessment; however, some behaviour in bats may be considered abnormal and indicative of rabies, such as a bat attacking a person without cause or hanging on to a person tenaciously.

The period of rabies virus shedding in a wild terrestrial carnivore that is a rabies reservoir species (such as a raccoon, skunk, or fox) is unknown. Therefore, when these animals are involved in an exposure that could potentially transmit rabies, a trained wildlife or animal control worker should be contacted to capture the animal. The worker should use extreme caution to ensure that there is no further exposure to the animal. The animal should be immediately humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

When domesticated livestock species, such as horses, cattle, sheep, goats and pigs are involved in a potential rabies exposure of a human, a 14-day observation period may be used to rule out the potential for rabies transmission at the time of the exposure. If illness suggestive of rabies exists at the time of the bite or develops during the observation period, the animal should be examined by a veterinarian as soon as possible. If the outcome of the veterinary examination supports a likely onset of clinical rabies in the animal, it should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

Management of other animals (e.g. exotic pets, zoo animals, etc.) involved in potential rabies exposures should be determined on a case-by-case basis, in consultation with the ministry's Public Health Veterinarian.

The history obtained from a child who has been potentially exposed to an animal can be difficult to interpret and potentially unreliable. This should be considered when determining the appropriate post-exposure management.

3. Management of People after Potential Exposure to Rabies

The objective of post-exposure management is to neutralize the rabies virus at the site of infection before the virus can enter the central nervous system. Immediate and thorough cleaning and flushing of the wound with soap and water is imperative and is probably the most effective procedure in the prevention of rabies. Care should be taken

to clean the wound to its depth. Flushing for approximately 15 minutes is suggested. Some guidelines also suggest the application of a viricidal agent such as iodine-containing or alcohol solutions. Suturing the wound should be avoided if possible, and tetanus prophylaxis and antibiotics should be given as appropriate.

If exposure to rabies is considered highly likely, PEP should be started as soon as possible after the exposure. In other circumstances, if the initiation of PEP is delayed until test results from the involved animal are available, a maximum waiting period of 48 hours is recommended. In consultation with public health officials, the post-exposure vaccine series may be discontinued if appropriate laboratory testing of the involved animal is negative. If indicated based on the risk assessment, PEP should be offered to exposed individuals regardless of the time interval after exposure.

Post-exposure prophylaxis should begin immediately following exposure to a wild terrestrial carnivore (such as a fox, skunk or raccoon) in enzootic areas unless the animal is available for rabies testing and rabies is not considered likely. Initiation of PEP should not be delayed beyond 48 hours while waiting for laboratory tests if the exposure is from a terrestrial animal in an enzootic area. If PEP is started before the test results are available, in consultation with public health officials, the rabies vaccine may be discontinued if the animal tests negative for rabies.

When there is a known bat bite, scratch or saliva exposure into a wound or mucous membrane, rabies PEP should be initiated immediately because of the higher prevalence of rabies in bats. This is particularly important when the exposure involves the face, neck or hands, or when the behaviour of the bat is clearly abnormal, such as if the bat has attacked the person or hangs on tenaciously. If the bat is available for testing, PEP may be discontinued after consultation with public health officials if the bat tests negative for rabies.

If someone is touched by a bat (such as a bat in flight) and the bat is available for rabies testing, the health care provider may decide to delay PEP. PEP should not be delayed more than 48 hours. If a bat tests positive for rabies, the need for PEP should depend on whether direct contact with the bat occurred and not the rabies status of the bat. If someone is touched by a bat and a bite, scratch or saliva exposure into a wound or mucous membrane cannot be ruled out, but the bat is not available for testing it should be considered a direct contact and PEP given.

Table 1 outlines recommendations for the management of people after possible exposure to rabies. **These recommendations are intended as a guide and may need to be modified in accordance with the specific circumstances of the exposure.**

Table 1: Summary of Post-Exposure Prophylaxis (PEP) for Persons Potentially Exposed to Rabies

Animal species	Condition of Animal at Time of Exposure	Management of Exposed Persons not Previously Immunized against Rabies	Management of Exposed Persons Previously Immunized against Rabies
Dog, cat or ferret	Healthy and available for a 10 day observation period	1. Local treatment of wound 2. At first indication of rabies in animal, give RabIg and begin four or five doses of HDCV or PCECV 3. At first indication of rabies in the animal, arrange to have the animal tested for rabies	1. Local treatment of wound 2. At first indication of rabies in animal, begin two doses of HDCV or PCECV 3. At first indication of rabies in the animal, arrange to have the animal tested for rabies
	Unknown or escaped	1. Local treatment of wound 2. Consult public health officials for risk assessment	1. Local treatment of wound 2. Consult public health officials for risk assessment
	Rabid or suspected to be rabid*	1. Local treatment of wound 2. Give RabIg and begin four or five doses of HDCV or PCECV 3. Arrange to have animal tested for rabies, if available	1. Local treatment of wound 2. Begin two doses of HDCV or PCECV 3. Arrange to have animal tested for rabies, if available
Skunk, bat, fox, coyote, raccoon and other carnivores.	Regard as rabid* unless geographic area is known to be rabies free	1. Local treatment of wound 2. Post-exposure prophylaxis with RabIg and four or five doses of HDCV or PCECV should begin immediately. If animal is available for rabies testing, in some instances PEP may be delayed for no more than 48 hours while awaiting results. 3. Arrange to have animal tested for rabies, if available	1. Local treatment of wound 2. Post-exposure prophylaxis with two doses of HDCV or PCECV should begin immediately. If animal is available for rabies testing, in some instances PEP may be delayed for no more than 48 hours while awaiting results 3. Arrange to have animal tested for rabies, if available
Livestock, rodents or lagomorphs (hares and rabbits)	A 14-day day observation period can be used for livestock. Consider exposures involving all other animal species individually and consult the ministry's Public Health Veterinarian. Bites of squirrels, chipmunks, rats, mice, hamsters, gerbils, guinea pigs, other small rodents, rabbits and hares would only warrant post-exposure rabies prophylaxis if the behaviour of the biting animal was highly unusual. Bites from larger rodents (e.g., groundhogs, woodchucks, beavers) require a risk assessment.		

RabIg = human rabies immune globulin, HDCV = human diploid cell vaccine, PCECV = purified chick embryo cell culture vaccine.

* If possible, the animal should be humanely killed and the brain tested for rabies as soon as possible; holding for observation is not recommended. Discontinue vaccine if rabies testing of the involved animal is negative.

4. Schedule and Dosage

4.1 Post-Exposure Prophylaxis (PEP) of Previously Unimmunized Individuals

Post-exposure prophylaxis of previously unimmunized individuals should consist of both Rabies Immune Globulin (RabIg) and rabies vaccine. The RabIg provides immediate passive protection until the exposed person mounts an immune response to the rabies vaccine.

4.1.1 Rabies Immune Globulin (RabIg)

The recommended dose of RabIg is 20 IU/kg body weight for all age groups, including children, given on the first day of initiation of therapy (day 0). Because of possible interference of RabIg with the immune response to the rabies vaccine, the dose of RabIg should not be exceeded.

If possible, the full dose of RabIg should be thoroughly infiltrated into the wound and surrounding area. Infiltration of wounds with RabIg in some anatomical sites (finger tips) must be carried out with care in order to avoid increased pressure in the tissue compartment. If not anatomically feasible, any remaining volume of RabIg should be injected, using a separate needle and syringe, intramuscularly (IM) at a site distant from the site of vaccine administration. When more than one wound exists, each wound should be locally infiltrated with a portion of the RabIg using a separate needle and syringe. In such instances, the RabIg can be diluted twofold to threefold in a solution of 0.9% sodium chloride in order to provide the full amount of RabIg required for thorough infiltration of all wounds.

If the site of the wound is unknown, the entire dose should be administered IM at a separate site from where the rabies vaccine is administered. Rabies vaccine and RabIg should never be mixed in the same syringe.

Under no circumstances should vaccine be administered in the same syringe or at the same site as RabIg.

Protective antibodies are present immediately after passive vaccination with RabIg, but they have a half-life of only approximately 21 days. Since vaccine-induced antibodies begin to appear within 1 week, if RabIg is not administered as recommended at the initiation of the rabies vaccine series, there is no value in administering RabIg more than 8 days after initiating an approved vaccine course.

RabIg is supplied in 2 ml vials containing 150 IU/ml. Use the following formulae to calculate the dose required and use **Table 2** to determine how many vials to dispense:

- 20 IU/kg x (client wt in kg) ÷ 150 IU/mL = dose in mL

  dose in mL ÷ 2 mL/vial = # of vials to order

- 9.09 IU/lb x (client wt in lb) ÷ 150 IU/mL = dose in mL

  dose in mL÷ 2 mL/vial = # of vials to order

Table 2: Number of 2 mLVials of RabIg Required per Total Body Weight of Client

Total Weight		***# of 2mLVials***	***Total Weight***		***# of 2mLVials***
≤33 lbs	*≤ 15 Kg*	***1***	*>165 – 198 lbs*	*>75 – 90 Kg*	***6***
>33 – 66 lbs	*>15 – 30 Kg*	***2***	*>198 – 231 lbs*	*>90 – 105 Kg*	***7***
>66 – 99 lbs	*>30 – 45 Kg*	***3***	*>231 – 264 lbs*	*>105 – 120 Kg*	***8***
>99– 132 lbs	*>45 – 60 Kg*	***4***	*>264 – 297 lbs*	*>120 – 135 Kg*	***9***
>132 – 165lbs	*>60 – 75 Kg*	***5***	*>297 – 330 lbs*	*>135 – 150 Kg*	***10***

Note that the amount of RabIg administered may include administration of only a portion of one of the vials ordered. For example, a patient that requires 7mL of RabIg should only have 3.5 vials administered, rather than 4 full vials, with the remainder of the RabIg in the 4th vial being discarded.

4.1.2Rabies Vaccine

Vaccine should be administered IM into the deltoid muscle in older children and adults or into the *vastus lateralis* muscle (anterolateral thigh) in infants but never in the gluteal region as this may result in decreased response to the vaccine.

The rabies vaccine and RabIg should be given at different anatomical sites on day 0 using a separate needle and syringe. For subsequent vaccine doses, the limb where the RabIg was administered can be used.

The vaccination schedule for PEP should be adhered to as closely as possible and it is essential that all recommended doses of vaccine be administered. Although there is little or no evidence, in keeping with routine immunization practice it is recommended that, if a dose of vaccine is given at less than the recommended interval, that dose should be ignored and the dose given at the appropriate interval from the previous dose. If a dose of vaccine is delayed, it should be given as soon as possible and the schedule resumed respecting the appropriate intervals from the latest dose. If the vaccination schedule has been altered such as there is doubt about an appropriate immune response, post-vaccination serology should be obtained 7 to 14 days after completing the vaccination series.

Neutralizing antibodies develop 7 days after immunization and persist for at least 2 years.

Post-exposure prophylaxis should be started as soon as possible after exposure and should be offered to exposed individuals regardless of the elapsed interval. When notification of an exposure is delayed, prophylaxis may be started as late as 6 or more months after exposure.

Based on a risk assessment, and where the specimen is received at the lab within 48hrs of exposure, treatment may be withheld until the Fluorescent Antibody Test (FAT) result is available. The FAT report can be obtained within 6 to 24 hours from receipt of an animal specimen at the laboratory. If the suspect animal is a cat, dog, ferret or livestock species and is available for observation, then immunization may be withheld pending the animal's status after the observation period.

However, if the bite wound is to the head and neck region, prophylaxis should generally begin immediately and not be delayed, unless a risk assessment would support an observation period instead. Considerations that may support delaying initiation of prophylaxis and instead observing the animal include:

- If the animal is a domestic pet;
- If the animal is fully vaccinated;
- If the bite was provoked; and
- If there is very low prevalence of rabies in the area.

If a rabies exposure is considered likely then PEP should never be delayed.

PEP may be discontinued after consultation with public health officials if the animal tests negative for rabies.

4.1.2.1 Schedule & Dosage for Immunocompetent Persons

For PEP of immunocompetent persons previously unimmunized with rabies vaccine, four 1.0 mL doses of HDCV or PCECV should be administered IM. The first dose of the four-dose course should be administered as soon as possible after exposure (day 0). Additional doses should be administered on days 3, 7 and 14 after the first vaccination.

4.1.2.2 Schedule & Dosage for Immunocompromised Persons

Corticosteroids, other immunosuppressive agents, chloroquine, and immunosuppressive illnesses (*e.g.* congenital immunodeficiency, human immunodeficiency virus [HIV] infection, leukemia, lymphoma, generalized malignancy) may interfere with the antibody response to rabies vaccine. Refer to Part 3 of the Canadian Immunization Guide for an overview of which individuals are considered immunocompromised.

Previously unimmunized immunocompromised persons and those taking chloroquine, should continue to receive a five-dose vaccination regimen on days 0, 3, 7, 14 and 28. Immunosuppressive agents should not be administered during PEP unless essential for the treatment of other conditions.

Determination of antibody response is advisable if post-exposure vaccination is given to those whose immune response may be reduced by illness or medication. In these groups, antibody titres should be determined 7 to 14 days after completing the post-exposure immunization series to ensure that an acceptable antibody concentration has been achieved.

If no acceptable antibody response is detected, the patient should be managed in consultation with their physician and appropriate public health officials to receive a second rabies vaccine series, followed by serologic testing. RabIg should not be repeated at the initiation of this second course.

4.2 Post-Exposure Prophylaxis (PEP) of Previously Immunized Individuals

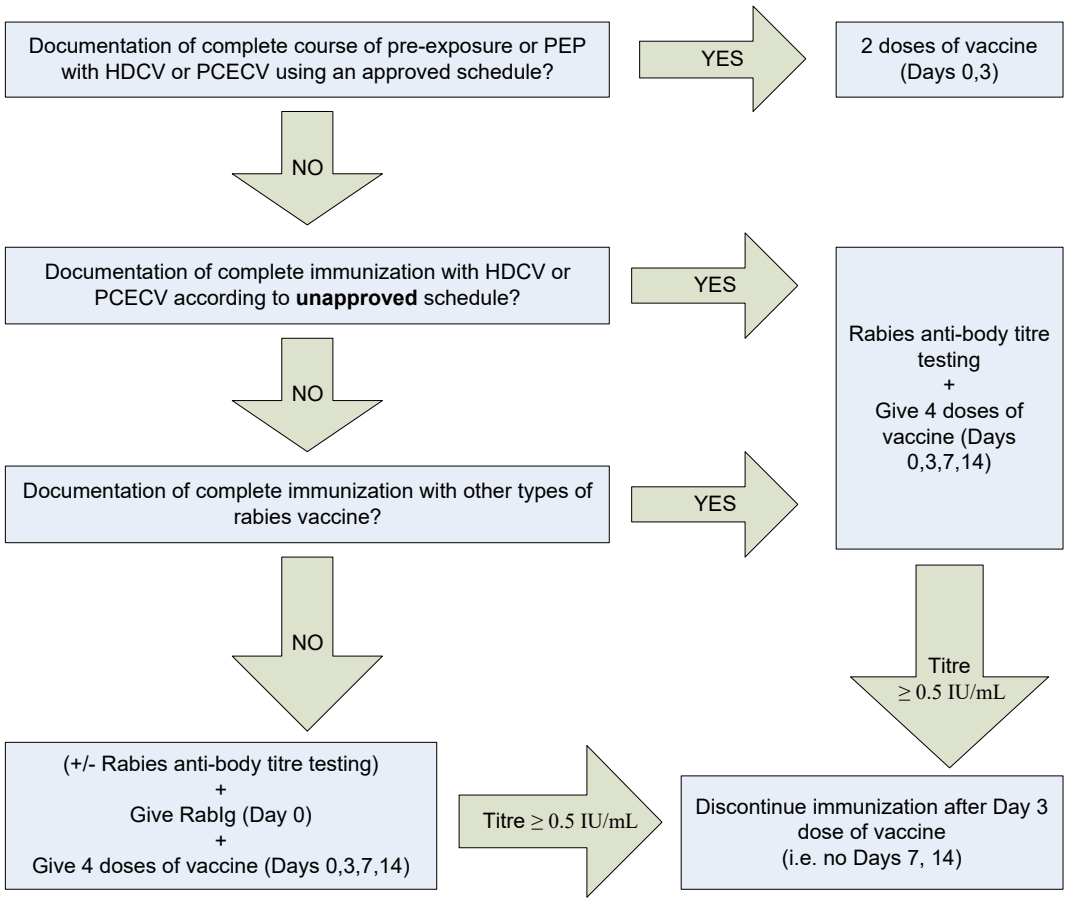
RabIg is not indicated and should not be given to someone who has been previously appropriately immunized as indicated below. In previously appropriately immunized individuals who require PEP, two doses of HDCV or PCECV, one administered immediately and the other 3 days later, are recommended. Appropriate rabies immunization consists of:

- Documentation of a complete course of pre-exposure or PEP with HDCV or PCECV; OR
- Documentation of complete immunization with other types of rabies vaccine or with HDCV or PCECV according to unapproved schedules with the demonstration of an acceptable concentration of neutralizing rabies antibody in serum. Refer to **Section 6, Serologic Testing** for information regarding when serologic testing is recommended.

A complete course of HDCV or PCECV plus RabIg is recommended for those who may have received rabies vaccines in the past but do not fulfill the above criteria for appropriate vaccination. A serum sample may be collected before the initiation of PEP, and if an acceptable antibody concentration (0.5 IU/mL or greater) is demonstrated, the vaccine course may be discontinued, provided at least two doses of vaccine have been given. If in doubt, consultation with an infectious diseases or public health physician is recommended.

Figure 2 outlines an algorithm for PEP administration schedule for previously immunized individuals.

Figure 2: PEP Administration Schedule for Previously Immunized Individuals



5. Route of Administration

RabIg is always given IM. If possible, the full dose of RabIg should be thoroughly infiltrated into the wound and surrounding area. If this is not anatomically feasible, any remaining volume of RabIg should be injected, using a separate needle and syringe, IM at a site distant from vaccine administration.

Rabies vaccine for PEP must be administered IM. Both HDCV and PCECV are approved in Canada for IM use.

6. Serological Testing

The Canadian national rabies reference laboratory for serology is the Public Health Ontario Laboratory, which considers an acceptable antibody response to be a titre of at least 0.5 IU/mL by the rapid fluorescent-focus inhibition test. Neutralizing antibodies begin to develop within seven days after starting the immunization series and persist for

at least two years. Protective antibodies are present immediately after passive vaccination with RabIg and have a half-life of approximately 21 days.

Because of the excellent immune response to rabies vaccine, healthy people immunized with an appropriate regimen do not require routine antibody determinations after either pre-exposure or post-exposure rabies vaccination, unless one of the following applies:

- Pre-exposure vaccination was given by the intradermal (ID) route – check serology at least 2 weeks after completion of the vaccine series. If using the ID route for a booster dose, serology should be checked at least 2 weeks after the booster dose.
- There has been substantial deviation from the recommended post-exposure schedule – check serology 7 to 14 days after completing the series.
- The person has been immunized with a vaccine other than HDCV or PCECV – check serology at least 7 to 14 days after completing the series.

Where antibody levels are required, a sample of 5cc whole clotted blood, or serum therefrom, should be submitted to the nearest Public Health Ontario regional laboratory or directly to the Central Public Health Ontario Laboratory (http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/laboratory-location-and-contact.aspx). There is no charge for this test. To establish laboratory priority, please indicate the purpose of the sample.

7. Contraindications and Precautions

There are no contraindications to the use of rabies vaccine or RabIg after significant exposure to a proven rabid animal; however, care should be taken if PEP is to be administered to persons who are hypersensitive to the products or to any ingredient in the formulation or component of the container. Expert opinion should be sought in the management of these individuals.

For rabies vaccines and rabies immune globulin, potential allergens include:[3]

- IMOVAX® Rabies: neomycin, phenol red
- RabAvert®: amphotericin B, chick protein, chlortetracycline, neomycin, polygeline (gelatin)
- IMOGAM® Rabies: latex in vial stopper

Persons with egg allergies are not necessarily at increased risk of a hypersensitivity reaction to PCECV. If HDCV as an alternative vaccine is not available, PEP using PCECV should be administered to a person with a hypersensitivity to egg with strict medical monitoring. Facilities for emergency treatment of anaphylactic reactions should be available.

Persons with specific IgA deficiency have increased potential for developing antibodies to IgA after receipt of blood products including rabies immune globulin and could have anaphylactic reactions to subsequent administration of blood products containing IgA, such as RabIg.

Infiltration of wounds with RabIg in some anatomical sites (finger tips) must be carried out with care in order to avoid increased pressure in the tissue compartment.

A history of a serious allergic or neuroparalytic reaction occurring during the administration of rabies vaccine poses a significant dilemma in the post-exposure situation. The risk of rabies developing must be carefully considered before a decision is made to discontinue immunization. The use of corticosteroids to attenuate the allergic response may inhibit the immune response to the vaccine. The existing titre of rabies antibodies should be determined and expert opinion in the management of these individuals should be sought promptly.

Pregnancy is not a contraindication to PEP with rabies vaccine and RabIg.

Pre-exposure immunization with rabies vaccine should be postponed in persons with moderate or severe acute illness. Persons with minor acute illness (with or without fever) may be vaccinated. Post-exposure vaccination should not be postponed.

8. Other Considerations

Vaccine interchangeability: wherever possible, an immunization series should be completed with the same product. However, if this is not feasible, RabAvert® and Imovax® Rabies are considered interchangeable in terms of indications for use, immunogenicity, efficacy and safety.

9. Additional Resources

Communicable Diseases – General, RRO 1990, Reg 557. Available from: https://www.ontario.ca/laws/regulation/900557

PCEC/ RabAvert Product Monograph.

Ministry of Agriculture, Food and Rural Affairs, Rabies in Ontario. Available from: http://www.omafra.gov.on.ca/english/food/inspection/ahw/rabies.htm

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