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ASSOCIATION

The Voice of Public Health

CANADIAN PUBLIC HEALTH ASSOCIATION WORKING PAPER

# **PUBLIC HEALTH:**

*A conceptual framework*

**SECOND EDITION  
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# THE VOICE OF PUBLIC HEALTH

**The Canadian Public Health Association** is the independent national voice and trusted advocate for public health, speaking up for people and populations to all levels of government.

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## PREFACE

Health professionals often refer to looking at an issue from a “public health perspective” or “through a public health lens” and yet this concept has not been clearly defined. The following is a first effort at defining such a perspective, lens or approach. It is presented for consideration, and feedback is welcomed. All comments will be considered and may be incorporated into future iterations of what we hope will be an ‘evergreen’ document. Comments should be directed by e-mail to: [policy@cpa.ca](mailto:policy@cpa.ca).

The development of this working paper began with our attempts to define a “public health approach” during the development of the Association’s discussion paper *A New Approach to Managing Illegal Psychoactive Substances in Canada*. CPHA’s Board of Directors subsequently directed that a more substantive effort be undertaken to provide a summary document that would describe the principles and practices that underlie public health activities. As a result, practicum students working at CPHA developed an initial manuscript followed by an extensive internal review process. It was then reviewed by public health professionals who voluntarily support CPHA activities. The result of those efforts was ultimately reviewed, edited and approved as an evergreen document by our Board. The Board of Directors and staff of CPHA thank all those who participated in developing *Public Health: A Conceptual Framework*.

## PURPOSE

This working paper is meant to provide a **quick reference guide** to and portrait of the underlying principles that support current public health practice; **it is not intended to be the definitive treatise** on this topic. It defines the perspective that CPHA will use to develop its policy options.

## PUBLIC HEALTH: A HISTORY OF CHANGE

The practice of public health can perhaps find its roots with the development of aqueducts during the Roman/Byzantine era for the transportation of clean water into populated areas, and the management of human waste. Its true beginnings, based on a causal relationship to the prevention of infectious disease, might be better traced back to actions that were taken in Europe during the fourteenth century to limit the spread of plague. One of the first documented actions was in Venice around 1348, with the appointment of three guardians of public health to detect and exclude ships with passengers infected with that disease. Similarly, the first quarantine actions seemed to be taken in Marseille (1377) and Venice (1403), where travellers from plague-infected countries were

detained for 40 days to protect against transmission of the infection. The first surveillance systems can be dated to the “bill of mortality” established in London, England in 1532 and subsequently John Graunt’s publication of his “Natural and Political Observations” (1662) that was based on findings from the Bills of Mortality. John Snow, the father of epidemiology, published “On the Mode of Communication of Cholera” in 1849. The first consideration of the importance of the social determinants of health and the inclusion of social justice as a pillar of public health was described in 1790 when Dr. Johan Peter Frank argued “... curative and preventive measures had little impact on populations where people lived in abject poverty and squalor.”<sup>1</sup>

In the Canadian context, the first Board of Health was established in Lower Canada in 1832, with Upper Canada following suit in 1833. As these boards developed, they provided the infrastructure necessary for inspection and regulation that addressed issues as varied as pasteurization of milk, management of tuberculosis in humans, quarantine activities for various illnesses, and the control of sexually transmitted diseases. The early 20<sup>th</sup> century brought an increasing emphasis on maternal and child health and the immunization of children and youth.<sup>2</sup> In a parallel fashion, during the 18<sup>th</sup> and 19<sup>th</sup> centuries, public health practitioners investigated and advocated against nutritional (scurvy), occupational (mesothelioma - cancer of the scrotum) and environmental (lead poisoning) disease, and urged measures to overcome inequities of health.<sup>1</sup>

Through the 20<sup>th</sup> century, an expansion of focus from a principally communicable disease perspective to one combining communicable and non-communicable illnesses broadened public health practice. Similarly, there is an ongoing movement from an *agentic*<sup>\*</sup> approach based on behaviour modification, to a

population-based approach that focuses more on adjustment of societal structures, with an emphasis on support for populations at risk. The goal of these changes and this expansion has always been to foster the health of people and to develop a strong, resilient and just society. In striving for this goal, our actions have not always been correct, or may at times have been clouded by the beliefs of the day. These efforts continue, yet there are basic principles that have underlain public health practice since the beginning.

## DEFINING PUBLIC HEALTH PRACTICE

Public health practice can be viewed as an approach to maintaining and improving the health of populations that is based on the principles of social justice, attention to human rights and equity, evidence-informed policy and practice, and addressing the underlying determinants of health. Such an approach places health promotion, health protection, population health surveillance, and the prevention of death, disease, injury and disability as the central tenets of all related initiatives. It also means basing those initiatives on evidence of what works or shows promise of working. It is an organized, comprehensive, and multi-sectoral effort.<sup>3-5</sup>

This definition and the practice of public health have developed over time, and will continue to develop to meet the evolving health requirements of the population. As these demands grow, there will be debates concerning the role and purpose of public health practice and the scope of practitioners’ activities. Underlying these debates and developments, however, are an amalgam of concepts and practices that are the foundation and building blocks of public health.

\* The term *agentic* denotes self-directed actions aimed at personal development or personally chosen goals (The Free Dictionary by Farlex. Available at: [www.medical-dictionary.thefreedictionary.com](http://www.medical-dictionary.thefreedictionary.com)). This concept is based on a social cognition theory perspective in which people are producers as well as products of social systems (definition from: [www.wordnik.com/words/agentic](http://www.wordnik.com/words/agentic)).

## FOUNDATION OF PUBLIC HEALTH

The foundation of, and lenses through which to view, all public health activities are the concepts of social justice<sup>6</sup> and health equity,<sup>7</sup> which relate to the social determinants of health. These lenses continually influence and inform each building block. All public health practice is built on the interconnectivity of five main building blocks (evidence base, risk assessment, policy, program and evaluation) that have been widely described in the literature, continue to evolve, and are the subject of the next section of this paper. Each component has many sub-components, and all the parts must function in a complex adaptive system\* (see Figure 1) to meet the goals of public health.

### Social Justice

The goal of social justice is to develop the ability of people to realize their potential in the society in which they live. Classically, “justice” refers to ensuring that individuals both fulfil their societal roles and receive their due from society,<sup>8</sup> while “social justice” generally refers to a set of institutions that enable people to lead fulfilling lives and be active contributors to their community. These institutions, among others, include education, health care, and social security.<sup>9</sup>

In Canada, social justice finds its root in Section 7 of the *Canadian Charter of Rights and Freedoms*, which provides for “...the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice.”<sup>10</sup> This clause was used as the legal argument for the Supreme Court decision concerning *Insite*, the supervised consumption facility in Vancouver,<sup>11</sup> and for the decision that struck

down three federal prostitution laws.<sup>12</sup> The *Canadian Charter of Rights and Freedoms* is further supported by various United Nations Conventions<sup>†</sup> that provide the social foundation on which to build a public health approach. In this context, social justice ensures that the population as a whole has equitable access to all public health initiatives implemented to minimize preventable death and disability.<sup>3</sup>

### Health Equity

Health equity is defined as “... the absence of avoidable or remediable differences in health among groups of people, whether those groups are defined socially, economically, demographically, or geographically.”<sup>13</sup> It is based on the principle of social justice and refers to the absence of disparities in controllable or remediable aspects of health. Underpinning this notion is the concept of the *social gradient* that notes “...the poorest of the poor throughout the world have the worst health. Within countries, the evidence shows that in general the lower an individual’s socioeconomic position the worse their health. There is a social gradient in health that runs from top to bottom of the socioeconomic spectrum”.<sup>14</sup>

In general, those who are healthier are at the top of the socioeconomic spectrum. The concept applies to every country. This notion is further shaped when the influences of *structural violence* and *intersectionality* are integrated into this consideration.<sup>‡</sup>

\* Complex adaptive systems are systems composed of many interacting parts that evolve and adapt over time. Organized behaviour emerges from the simultaneous interaction of parts without a global plan ([www.cognitern.psych.indiana.edu/rgoldsto/complex/intro.pdf](http://www.cognitern.psych.indiana.edu/rgoldsto/complex/intro.pdf)). This approach has been applied to many complex issues, including economic, scientific and organizational design thinking.

† These include: the *International Convention on Civil and Political Rights*, the *International Convention on Economic, Social and Cultural Rights*, the *Convention Against Torture and Other Cruel, Inhuman and Degrading Treatment or Punishment*, the *Declaration of the Rights of Indigenous Peoples*, and the *International Convention on the Protection and Promotion of the Rights and Dignity of Persons with Disabilities*.

‡ *Structural violence* refers to the physical and psychological harms that can be caused by society’s social, political and economic systems. As such, it is avoidable and preventable. The theory is described in Ho K. Structural violence as a human rights violation. *Essex Human Rights Review* 2007;4(2):1-17. *Intersectionality* refers to “... a tool for analysis, advocacy and policy that addresses multiple discriminations and helps us understand how different sets of identities affect access to rights and opportunities.” Association for Women’s Rights in Development. *Intersectionality: A tool for gender and economic justice. Women’s Rights and Economic Change*. 2004;9(August):1-8.

One challenge is that the concepts of “equity” and “equality” are sometimes used interchangeably. They are related; however, there are important distinctions where:

*Equity ... involves trying to understand and give people what they need to enjoy full, healthy lives. Equality, in contrast, aims to ensure that everyone gets the same things in order to enjoy full, healthy lives. Like equity, equality aims to promote fairness and justice but it can only work if everyone starts from the same place.*<sup>15</sup>

As such, consideration must be given to the **equitable** distribution of health services and the creation of culturally competent programming and policy to meet the requirements of the population that is at risk. Attention to that population is required such that the proposed change is supported through group empowerment and ownership.

### **Social Determinants of Health**

The social determinants of health are defined as “the conditions in which people are born, grow, live, work and age”.<sup>16</sup> They are shaped by the distribution of money, power and resources, which causes health inequities within populations. Although the list of social determinants of health may vary depending on the source of the information, there are some that are common to all sources and are generally viewed as having the greatest effect on population health. These include income, education, gender, physical environment, social environment, access to health services, and healthy childhood development. The intermingling of these factors creates the health situation specific to an individual or population.

### **Ecological Determinants of Health**

There are many ecological processes and natural resources essential for health and well-being and that constitute Earth’s life-support systems. These

ecological determinants of health include adequate amounts of oxygen, water, and food. Other important ecological processes and natural resources include the ozone layer, nitrogen and phosphorus cycles, systems to detoxify wastes, and abundant fertile soil, fresh water and marine aquatic systems to grow food and other plants. For humans, three further requirements include materials to construct our shelters and tools, energy, and a stable global climate with temperatures conducive to human and other life forms.

## **THE BUILDING BLOCKS OF PUBLIC HEALTH**

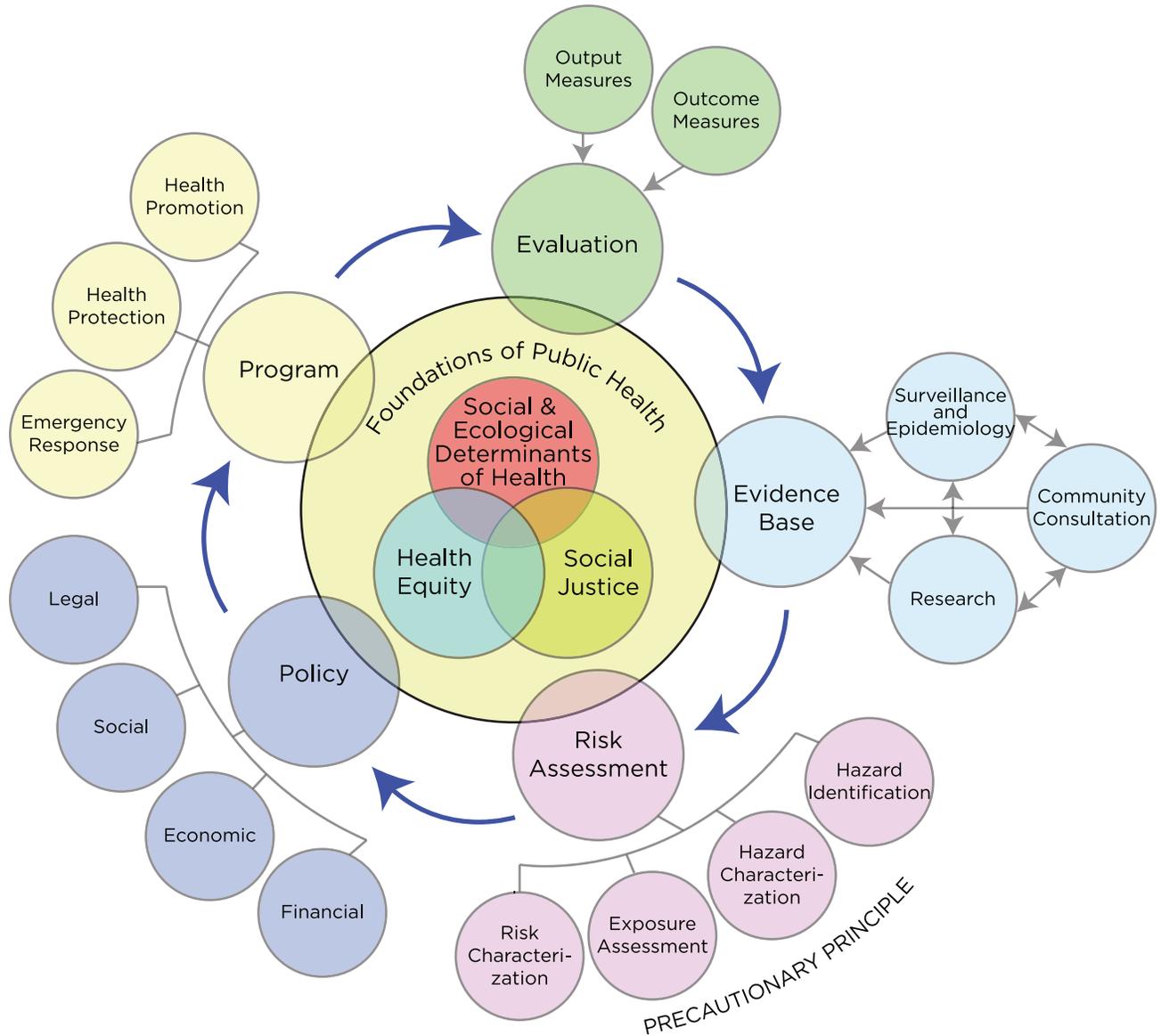
Public health, at its root, is the amalgamation of those activities that are taken to improve population-based health issues within the general domains of communicable and non-communicable disease. There is an internal tension between the domains; however, there are several activities (see Figure 1) that form the building blocks of all public health practice.

### **Evidence Base**

Public health relies on the robustness, accuracy and validity of its evidence base. That base is composed of scientific research, population characteristics, needs, values and preferences, and professional expertise.<sup>17</sup> Research, surveillance and epidemiology, and community consultation are the vehicles through which that evidence is provided (see Figure 2). There is a strong connection between each component, such that research can be used to focus and strengthen surveillance activities. Surveillance can be conducted to inform research, while both surveillance and research can support or be directed by community consultation.

### **Research**

Research is defined as those processes and activities that contribute to generalizable knowledge.<sup>18</sup> In this case, these activities inform public health practice



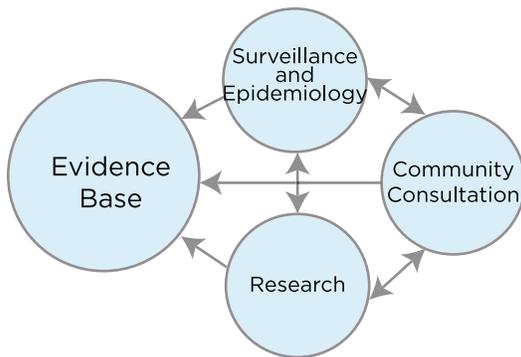
**Figure 1:** A conceptual framework for public health

and policy, and are targeted to develop, implement, and evaluate improved and more efficient ways of protecting and promoting health and preventing disease.<sup>19</sup> It can be divided into:

- *Quantitative research:* The use of data that can be counted or converted into numerical form.<sup>20</sup> It is primarily used to find statistical associations between variables, or when attempting to find

variances in patterns of health between two populations, with an aim to minimize human bias.

- *Qualitative research:* The use of non-numerical observations to interpret phenomena.<sup>20</sup> It is used to gather insight as to how particular situations are interpreted by the study population. These results may come from clinical case studies,



**Figure 2:** Interrelationship of the components of the evidence base

narratives of behaviour, ethnographies, and organizational or social studies, and can be used to develop theoretical pieces that are based on observable reality. Methods that may be used to gather this data include surveys, interviews, or focus groups to connect with the study population.

Both approaches can be combined to perform mixed methods or pragmatic research studies when seeking answers to complex research questions,<sup>21</sup> but there has to be a clear and strategic relationship between the methods used such that the data provides greater insight than can be obtained by using a single approach. Examples of mixed methods research are studies that link the social determinants of health with epidemiological data.

### Surveillance and Epidemiology

Public health surveillance is defined as “the continuous, systematic collection, analysis, and interpretation of health-related data needed for planning, implementing, and evaluating public health practice.” It can:

- serve as an early warning system for impending public health emergencies;
- document the impact of interventions, or track progress to specified goals; and

- monitor and clarify the epidemiology of health problems to allow priorities to be set and inform public health policies and strategies.”<sup>22</sup>

Long-term or passive surveillance involves the monitoring of general health trends and health determinants<sup>20</sup> and provides information on, for example, current obesity or cancer trends in the population. Short-term, active or ongoing surveillance involves searching for emergent diseases or outbreaks, such as the surveillance conducted during the SARS or H1N1 outbreaks. Both types of surveillance target a specific health state, disease, or agent.

The distinction between surveillance and epidemiology should be noted. Epidemiology is defined as:

*...the study of the distribution and determinants of health-related states or events (including diseases), and the application of this study to the control of diseases and other health problems. Various methods can be used to carry out epidemiological investigations: surveillance and descriptive studies can be used to study distribution; analytical studies are used to study determinants.*<sup>23</sup>

A fundamental concept for the application of epidemiological findings to preventive medicine is the distinction that separates the notion of a *high risk strategy*,\* which is based on conventional medical approaches for resolving a health issue, from that of a *population strategy* that defines the public health approach for addressing preventive medicine.<sup>24</sup> Both concepts are developed from the *Rose Hypothesis*.<sup>†</sup>

\* A *High Risk Strategy* focuses its efforts on individuals with the highest level of a risk factor and uses the established framework of medical practice to reduce that risk, while a *Population Strategy* predicts that shifting the population distribution of a risk factor prevents more burden of disease than targeting the people at high risk by providing a lower likelihood of an illness to the entire population.<sup>22</sup>

† The *Rose Hypothesis* notes that disease is a rare occurrence and that most people who adopt behaviour to lower a risk of disease will not benefit directly, but a few may benefit enormously. The challenge is that often a population-based approach must be applied so that those few who are at risk receive the benefits of preventive actions, or the necessary treatment. (Health Knowledge. Epidemiological basis for preventive strategies.

Research and surveillance/epidemiology may require the use of patient information, and could be subject to patient confidentiality requirements or review by organizational research ethics committees.

### Community Consultation

Community consultation is a well-known methodology that can be viewed as a best practice for informed decision-making on complex issues within communities.<sup>25</sup> It is based on the following principles:

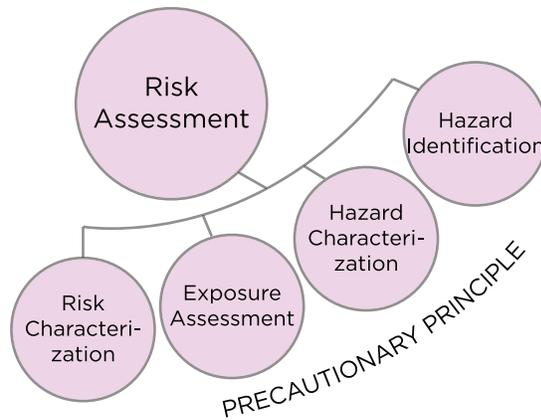
- Recognize the community as a unit of identity, with a shared sense of identification and emotional connection that influences common values, norms, and needs;
- Build on the strength and resources within a community to address local health concerns. Community consultation methodologies recognize and seek to expand social structures and processes that contribute to the ability of community members to work together to improve health; and
- Integrate knowledge and action for the mutual benefit of partners and stakeholders, as well as the reciprocal transfer of knowledge, skills, capacity and power.

This process enables community members to be active contributors, through collaboration and involvement, in an initiative that seeks to establish positive social change within the community.<sup>26</sup> The topic chosen must be of practical relevance to the community, and community members should be actively involved in the project's design, implementation, and dissemination. The design may involve aspects of quantitative and qualitative data collection methods, as well as information gathered through surveillance activities. At the completion of this process, results are transferable to community members to support positive social change. An example of where this

Available at: <http://www.healthknowledge.org.uk/public-health-textbook/research-methods/ic-health-care-evaluation-health-care-assessment/epidemiological-basis-pstrategies.>

process would prove, and has proven, useful is the development and implementation of a supervised consumption facility for illegal psychoactive substances.

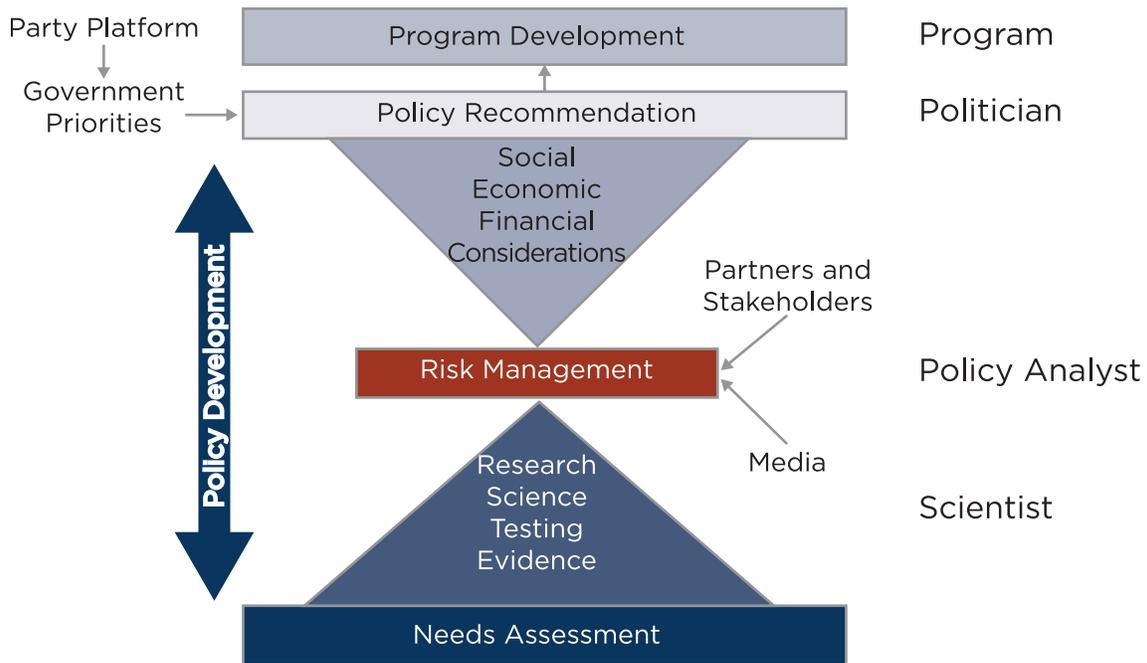
### Risk Assessment



**Figure 3:** Components of risk assessment

The evidence base in public health is constantly expanding as new information is uncovered through research, surveillance, and community consultation. Issues recurring within that base become priorities for public health attention. Prior to taking action on a specific issue, a risk assessment is necessary to estimate the nature and likelihood of negative health outcomes in individuals.<sup>27</sup> It can be applied to conventional public health issues as well as occupational, environmental, social and behavioural risks. A four-step process (see Figure 3) is used, and includes:

- *Hazard identification:* Identification of specific health effects or hazards. Information from surveillance and epidemiology activities can be used to identify them.
- *Hazard characterization:* Evaluation of the nature of the effects associated with a particular hazard. Qualitative and quantitative research may be



**Figure 4:** Simplified model of a public health policy development process

used to characterize biological, physical, and chemical hazards.

- *Exposure assessment:* Evaluation of the possible effect of the hazard.
- *Risk characterization:* Integration of hazard identification, hazard characterization, and exposure assessment into a holistic estimate of adverse effect at the population level.

Following completion of the risk assessment, response options are identified and a risk management plan developed. Managers with the appropriate level of authority must decide on actions and take steps to implement them. The desired action could be undertaken directly when immediate action is required, for example during a response to an infectious disease outbreak, or through policy and program development processes.

Underlying this decision process is the *Precautionary Principle*, an approach to managing risk that has been developed to address circumstances of scientific uncertainty. It reflects the need to take prudent action without having to wait for completion of scientific research. This principle was applied by Krever during the inquiry into the Canadian tainted blood scandal,<sup>28</sup> and was enshrined in the 1992 *Declaration of the Rio Conference on Environment and Development*.

**Policy**

Policy is defined as the principles or protocols adopted or proposed by a government, party, business or individual that provide a definitive course or method of action, and guide or determine present or future decisions. Policies are generally not time limited, and provide the supportive environment, framework and anticipated outcomes to focus program activities and enable future decision-making. Policies are usually developed through a flexible, iterative process that

encompasses issue identification, policy instrument development, consultation, coordination, decision-making, implementation and evaluation. Partner and stakeholder collaboration is required. Within the Canadian context, federal policy development can find its starting point either in the political platform of the ruling party, or through a process that originates within the bureaucracy.

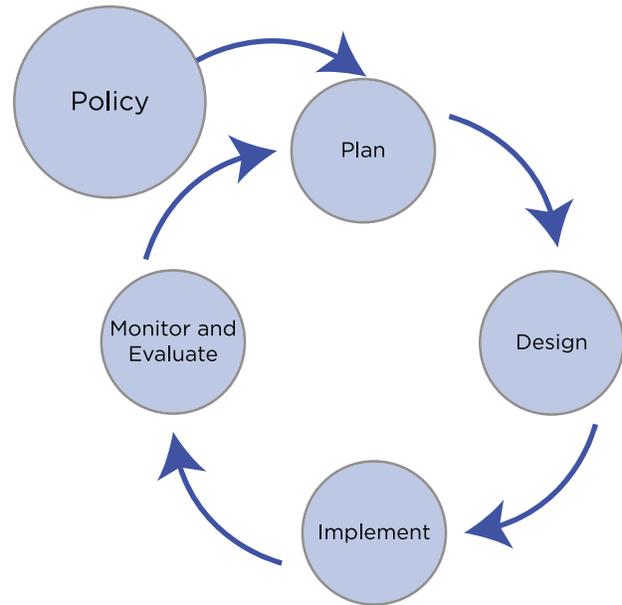
Within the public health domain, an ongoing challenge is to balance the role of science in policy-making, as the evidence base and risk assessment should inform and support policy development, while the policy decision could modify scientific activities. Complicating the process is the inclusion of economic, financial and social policy, and legal and jurisdictional considerations within the decision-making process.

It is essential to engage in the process those partners and stakeholders affected by a decision. The goal is to support development of a final approach that will be acceptable to the affected groups. Those engaged in the consultation must be at a level and have the authority necessary to speak for the organization. The role of a non-governmental organization such as CPHA is to participate in the policy development process through advocacy at the political and bureaucratic levels with the expressed positions reflecting the interests of Association members and based on the best available evidence.

A simplified model of these relationships is presented in Figure 4.

### Intervention

As policy development provides the framework and anticipated outcomes for public health activities, programs or interventions are the specific actions that respond to the policy direction. They address health protection, health promotion and emergency response activities. The goal of any intervention is to limit the onset and progression of disease, injury or infection,<sup>20</sup>



**Figure 5:** A generalized intervention development process

and may be implemented through collaboration with all levels of government, other government departments, non-governmental organizations, not-for-profit organizations, and private sector partners, as appropriate. In addition, all interventions must be evaluated to measure success in terms of the expected outputs (the desired product of the intervention), as well as the desired outcomes (improvement in the health of the population). Effective intervention development requires that those affected by the health issue addressed by the intervention be included in its development and implementation to improve its likelihood of success. A generalized program development process is presented in Figure 5.

Intervention activities generally address three broad categories of work and are listed below.

#### *Health Protection*

Health protection activities address the negative influences on health, and include interventions

as diverse as testing of food and water supplies, environmental testing, and surveillance to identify and track infectious disease outbreaks.<sup>20</sup> These activities rely on surveillance information to direct intervention activities, for example annual influenza vaccination programs, and can provide evidence for epidemiological investigations (food and water testing).

### *Health Promotion*

Health promotion is the mix of activities that assist individuals and communities in taking charge of their personal health. It assists in developing healthy public policy, healthy environments, and personal resiliency, and “... involves any combination of health education and related organizational, economic, and political interventions designed to facilitate behavioural and environmental changes conducive to health.”<sup>20</sup> This concept was first described as an entity in the *Ottawa Charter for Health Promotion*.<sup>29</sup>

### *Emergency Preparedness*

Emergency preparedness interventions are those activities that provide the capacity to respond to acute harmful events that range from natural disasters to infectious disease outbreaks and chemical spills. They are founded on four building blocks:

- *Prevention*: those activities that reduce the likelihood of an event occurring
- *Preparedness*: planning, training and organizing to respond to harmful events and situations
- *Response*: the capacity to respond to acute, harmful events
- *Recovery*: the processes required to return to a “normal” state of existence

### **Evaluation**

Each policy and program must be evaluated to determine whether it meets its agreed-to deliverables (output measures) and its desired effect in mediating

the issue it was established to address (outcome measures). These can be described as implementation or process, and effectiveness or outcome evaluations.<sup>30</sup> Implementation evaluations assess whether a program is reaching its intended potential, and occur while the program is active. Qualitative and quantitative data are used to make informed judgements. Outcome evaluations measure progress in addressing the program’s targeted public health challenge, and may include short-, intermediate-, and long-term results, that are also based on quantitative and qualitative data. The information gathered through evaluation can allow for further development of the program within the affected area of public health.

## SUMMARY

Public health is a complex adaptive system which has evolved from providing clean water and managing human waste, to managing a broader cadre of communicable and non-communicable diseases, and continues to change as we address the influence of social determinants and the environment on health. Contributing to this challenge is the notion that the populations we serve are continually evolving, as are the related public health issues. Each public health practitioner must continually adjust his or her practise, but each adjustment must be based on the building blocks of evidence, risk assessment, policy, intervention and evaluation, which are supported by a foundation of health equity, social justice, and the social determinants of health. As such, this document should be considered a first attempt to define the basics of public health, and will continue to develop as the practice evolves.

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