

**A Framework for Core Functions
In Public Health**

Resource Document

**Population Health and Wellness
Ministry of Health Services
Province of British Columbia**

March 2005

Table of Contents

1.0	Introduction.....	1
1.1	An Introduction to Public Health.....	1
2.0	The Context.....	5
2.1	Governmental Context.....	5
2.1.1	Provincial Government Strategic Plan.....	5
2.1.2	Health Goals	5
2.1.3	Ministry of Health Services	5
2.2	Public Health Renewal.....	6
2.3	Population Health and Wellness Initiatives	7
3.0	Population Health and Public Health—A Clarification.....	8
4.0	Public Health’s Fundamental Tasks and Essential Functions	12
4.1	Essential Public Health Functions	12
4.2	Non-Essential Public Health Functions	13
5.0	Core Functions and the <i>Health Act</i>	14
6.0	The Need for Core Functions in Public Health.....	15
6.1	The Burden of Disease in BC	15
6.2	The Economic Burden of Illness.....	16
6.3	Summary of the Burden of Disease	17
6.4	Evidence in Public Health.....	18
7.0	Core Functions Framework	20
8.0	Core Programs	22
8.1	Criteria for Core Programs.....	22
8.2	Health Improvement Core Programs	24
8.2.1	Reproductive Health	25
8.2.2	Healthy Development	25
8.2.3	Healthy Communities	26
8.2.4	Healthy Living	28
8.2.5	Mental Health Promotion.....	30
8.2.6	Food Security.....	31
8.3	Disease, Injury, and Disability Prevention Core Programs	31
8.3.1	Chronic Disease Prevention.....	31
8.3.2	Unintentional Injury Prevention.....	33

8.3.3	Prevention of Violence, Abuse and Neglect	34
8.3.4	Prevention of Mental Disorders and Problematic Substance Use	34
8.3.5	Communicable Disease Prevention and Control	35
8.3.6	Dental Health and the Prevention of Dental Disease	36
8.3.7	Prevention of Disability	37
8.3.8	Prevention of the Adverse Health Effects of the Health Care System	37
8.4	Environmental Health Core Programs	38
8.4.1	Water Quality	39
8.4.2	Air Quality	39
8.4.3	Safe Food	40
8.4.4	Community Sanitation and Environmental Health	40
8.5	Health Emergency Management Core Programs	41
8.5.1	Prevention and Mitigation	41
8.5.2	Preparedness	42
8.5.3	Response and Recovery	42
9.0	Public Health Strategies	43
9.1	Health Promotion Strategies	43
9.2	Health Protection Strategies	43
9.3	Preventive Intervention Strategies	44
9.4	Health Assessment and Disease Surveillance Strategies	44
9.4.1	Population Health Research and Reporting	45
9.4.2	Clinical Epidemiology	45
9.4.3	Field-Level Surveillance Systems	46
9.4.4	Health Laboratory Networks	46
10.0	Public Health Capacity	47
11.0	The Lenses	48
11.1	The Inequalities “Lens” – Reducing Inequalities in Health	48
11.2	The Populations “Lens” – Populations of Concern	49
12.0	Implementation	51
12.1	Evidence Papers	51
12.2	Benchmarks and Better Practices	54
12.3	Indicators and Information Systems	55
12.4	Towards Performance Expectations and Performance Improvement	55
	Glossary	58
	References	66
	Appendix 1: Core Functions Framework	71

Appendix 2: Essential Functions in Public Health: International Studies	72
Appendix 3: Health Acts in Other Provinces.....	75
Appendix 4: A More Detailed Review of the Burden of Illness in Canada	77
Appendix 5: Participants in Consultation Process	79
Appendix 6: Summary of Comments Received During Consultation Process.....	80
Appendix 7: Participant List, Public Health Core Functions Workshop, October 14-15, 2003..	83
Appendix 8: Core Functions in Public Health: A Planning Workshop	86
Appendix 9: Professional Advisory Group Members.....	99
Appendix 10: Inappropriate Medical Care	101
Appendix 11: Core Competencies for Public Health Professionals	103

Information Boxes

Ten Great Achievements in Public Health.....	2
Health Goals.....	5
Population Health and Public Health.....	8
Deletion/Dilution Criteria, City of Toronto, 1982	13
Criteria for the Development of Core Programs.....	22

Figures

1. Population Health and Public Health.....	9
2. Core Programs and Province-Wide Initiatives	10
3. Core Functions Framework.....	21

Tables

1. The Burden of Disease in Canada, 1998, in Disability-Adjusted Life Years	16
2. Economic Burden of Illness in British Columbia, 1998	17
3. Proposed Core Programs in Public Health for British Columbia	23
4. Status of Core Programs Evidence Papers, February 2005	52

1.0 Introduction

The Ministry of Health Services acts as a steward of the health system. Using strategic plans, legislation, policy, performance expectations and other tools, the Ministry works with health authorities and health providers to achieve the goals set out by the Service Plan. Based upon this stewardship role, it is important and timely for the health system in British Columbia to review and renew its public health services. As demonstrated in recent Canadian reports¹, public health needs to be better structured and resourced, in order to improve the health of the population.

A Framework for Core Functions in Public Health is part of this public health renewal. This document provides a framework to help strengthen public health and improve population health in British Columbia. It is the intent of the Ministry of Health Services that Core Functions in Public Health (Core Functions) will identify the key set of public health services that health authorities will provide and will strengthen the link between public health, primary care, and chronic disease management.

The Core Functions Framework includes *core programs*—long-term core programs, representing the minimum level of public health services that health authorities would provide in a renewed and modern public health system—and *public health strategies* that can be used to implement the core programs. The Framework defines the *system capacity requirements* required for success, such as health information systems and quality management, and ensures that populations of concern are of high priority by the use of *population and inequalities lenses* (see Appendix 1 – Core Functions Framework).

The development of this directional document and the identification of core programs within this Framework is the first step in the process of strengthening and improving public health services in British Columbia. The next steps are to develop a series of evidence papers for each core program and to define best practices in public health that will form the basis for the guidelines (these processes are underway).

The development of core programs will include the creation of clear goals, measurable objectives, and an evidentiary base that shows it can improve people's health, and prevent disease, disability, and/or injury. Core programs will also be supported through the identification of best practices and national and international benchmarks.

1.1 An Introduction to Public Health

Authoritative groups in several countries have defined public health in similar ways in recent years. For example, in the United Kingdom, public health is: “the science and art of promoting health, preventing disease, prolonging life and improving quality of life through the organized efforts of society” (Committee of Inquiry, 1988, as cited in National Advisory Committee on SARS and Public Health, 2003).² In Australia, public health is defined as “the organised

¹ *Learning From SARS, Renewal of Public Health in Canada, A Report of the National Advisory Committee on SARS and Public Health* (the Naylor Report) and *The Future of Public Health in Canada: Developing a Public Health System for the 21st Century* (the CIHR Report)

² For additional definitions see glossary.

response by society to protect and promote health, and to prevent illness, injury and disability.” (National Public Health Partnership, 2003). In the United States it is defined as: “what we, as a society, do collectively to ensure the conditions in which people can be healthy” (Institute of Medicine, 1988).

Public health’s vision, succinctly stated, is “healthy people in healthy communities”, while the mission of public health is to “promote physical and mental health and prevent disease, injury, and disability” (Public Health Functions Steering Committee, 1994). Historically, public health has been very successful in carrying out this mission. In reviewing the achievements of public health in the 20th century, the US Centers for Disease Control and Prevention suggested ten great achievements (see information box: Ten Great Achievements in Public Health)

The challenge for the 21st century is to continue this important contribution to the betterment of society. Individual citizens, communities, the business sector, and governments all have an interest in improving health and preventing disease, injury, and disability. While these and other partners have a stake in improving public health, a strong governmental public health infrastructure is needed to protect and promote health and well-being (Institute of Medicine, 2002). In the US, as the Institute of Medicine’s report reveals, public health infrastructure has been neglected and as a result it is plagued by: “outdated and vulnerable technologies; a public health work force lacking training and reinforcements; antiquated laboratory capacity; lack of real-time surveillance and epidemiological systems; ineffective and fragmented communications networks; incomplete domestic preparedness and emergency response capabilities; and communities without access to essential public health services.”

Ten Great Achievements in Public Health

1. Vaccination
2. Motor-vehicle safety
3. Safer workplaces
4. Control of infectious diseases
5. Decline in deaths from coronary heart disease and stroke
6. Safer and healthier foods
7. Healthier mothers and babies
8. Family planning
9. Fluoridation of drinking water
10. Recognition of tobacco use as a health hazard (and demand reduction and control)

Source: From “Ten great public health achievements – United States, 1900-1999,” by Centers for Disease Control and Prevention, 1999, *Morbidity and Mortality Weekly Report*, 48(12), p. 241-243.

Such problems are not confined to the United States. Following the SARS outbreak in Toronto in 2003, a review of the public health response to the crisis revealed many similar problems in Canada. In their 2003 report, the National Advisory Committee on SARS and Public Health (commonly referred to as the Naylor Report) noted that: “an effective public health system is essential to preserve and enhance the health status of Canadians, to reduce health disparities, and to reduce the costs of curative health services” (p. 2).

They also noted that:

- a 2001 report to the Conference of Deputy Ministers of Health “highlighted the weaknesses in public health infrastructure across Canada”, including disparities in capacity between provinces, the relatively low priority of chronic disease and injury prevention, and weaknesses in human resources, recruitment, and retention (p. 3).

- a 2002 Senate of Canada Committee (chaired by Senator Michael Kirby) had noted the need to enhance the public health infrastructure and recommended an additional \$200 million annually to strengthen public health in Canada, as well as \$125 million annually for chronic disease prevention (p. 3),
- the federal government “does not currently make any earmarked transfers to other governments for public health”, nor did public health “figure directly in the two federal/provincial/territorial Health Accords reached in September 2000 and February 2003” (p. 5).
- in contrast to the United States and Australia, “Canada does not have national health goals, a related strategy, or programs of federal transfers to facilitate implementation of a national strategy” (p. 4).

Not surprisingly then, the Advisory Committee recommended a significant strengthening of Canada’s public health infrastructure. While noting that the two Health Accords “together appear to include over \$20 billion in non-earmarked transfers that could be used by provincial/territorial jurisdictions in part for spending on public health infrastructure.” The Committee concluded there is a need for significant federal transfers of funding, without which “Canada’s public health infrastructure will remain a flimsy patchwork”. In particular, the Committee recommended up to \$300 million annually in federal transfers “aimed at reinforcing core public health functions at the local level”, not only for responding to infectious diseases but to respond across the full range of public health functions (p. 7).

The 2004/05 federal budget confirmed \$400 million over three years to provinces and territories as an initial investment to support a national immunization strategy (\$300 million) and to assist in enhancing public health capacities (\$100 million). Further funding is dependent on the development of a national public health strategy. Of the above-noted funding, BC will receive approximately \$17 million per year for three years. This funding is of importance for the implementation of core public health functions in BC.

Public health, with its emphasis on health improvement and the prevention of disease, disability and injury, provides the base upon which a 21st century health system must be built.³ Fundamentally, public health shares the same goals as the rest of the health care system, namely to reduce premature death and to reduce the pain, suffering and the loss of enjoyment and quality of life that is associated with disease, disability, and injury. Interventions that prevent the onset conditions that cause death, pain, suffering, or disability are preferable to interventions after the onset of the condition, when some pain, suffering, and disability may have already occurred.

In many cases, it is also less costly to society to prevent the condition from occurring in the first place than to treat it afterwards. Investing in prevention is as important as investing in treatment and care.

³ Public health is not the only part of the health system that undertakes health improvement and disease, disability, and injury prevention, but it is the part of the system that has this as its principal focus.

There is now a substantial body of evidence of the effectiveness of public health interventions to promote health and prevent disease, disability, and injury. That evidence is alluded to in this paper, and will be summarized at length in a series of evidence-based papers. The core programs proposed in this paper are based on an understanding of that evidence.

2.0 The Context

2.1 Governmental Context

2.1.1 Provincial Government Strategic Plan

The overarching governmental context for Core Functions in Public Health is the Government of British Columbia's three-year strategic plan (2002), which articulates the government's vision: "British Columbia is a prosperous and just province, whose citizens achieve their potential and have confidence in the future." The strategic plan establishes three goals that are key to achieving this overall vision:

- a strong and vibrant provincial economy;
- a supportive social infrastructure; and
- safe, healthy communities and a sustainable environment.

Public health contributes to the achievement of these goals by helping to create safe and healthy communities; by being part of the supportive social infrastructure; and by preventing disease, prolonging life, and improving the overall level of health, thus helping to reduce both the direct costs of health care and the indirect costs to society from lost productivity.

2.1.2 Health Goals

Another important context is the province's Health Goals. These goals, established in 1998, guide the Provincial Health Officer's annual reports on the health of British Columbians.

These goals address many of the societal and community determinants of health. They can only be achieved by the actions of many stakeholders within and beyond the health care system. While public health alone cannot ensure that population health goals are met, an effective public health system does play a vital role in achieving such goals.

2.1.3 Ministry of Health Services

The Ministry of Health Services has three goals for the health system. They are improved health and wellness for British Columbians; high quality patient care; and a sustainable, affordable health care system. These goals provide important context, especially the goal of improved health and wellness for British Columbians. The development of Core Functions in Public Health is also consistent with the Minister of

Health Goals

- Goal 1: Living and Working Conditions:** Positive and supportive working conditions in all our communities.
- Goal 2: Individual Capacities, Skills and Choices:** Opportunities for all individuals to develop and maintain the capacities and skills needed to thrive and meet life's challenges and to make choices that enhance health.
- Goal 3: Physical Environment:** A diverse and sustainable physical environment with clean, healthy and safe air, water and land.
- Goal 4: Health Services:** An effective and efficient health service system that provides equitable access to appropriate services.
- Goal 5: Aboriginal Health:** Improved health for Aboriginal peoples.
- Goal 6: Disease and Injury Prevention:** Reduction of preventable illness, injuries, disabilities and premature deaths.

Source: From *Framework for Health Goals and a Healthy Population in BC*, by the Provincial Health Officer, (n.d.). Retrieved from <http://www.healthservices.gov.bc.ca/pho/hlthgoals.html>

Health Services' commitment to the people of British Columbia that "we will have the best health-care system in Canada" ("BC is putting its patients first", 2002).

The Ministry of Health Service's mission "to guide and enhance the province's health services in order to ensure British Columbians are supported in their efforts to maintain and improve their health" provides more context for public health, as do the Ministry's strategic shifts to a system that is planned and well managed; is accountable to the public for results; meets the real health needs of the population; and is efficient in allocation of resources.

Also of relevance is the role of the Ministry of Health Services to "give health promotion and prevention activities a higher priority both as a means of improving the health and wellness of British Columbians, and as the means of creating a more sustainable system for the future."

2.2 Public Health Renewal

The Ministry of Health Services acts as a steward of the health system. Using strategic plans, legislation, policy, performance expectations and other tools, the Ministry works with health authorities and health providers to achieve the goals set out by the Service Plan. Based upon this stewardship role, it is important and timely for the health system in British Columbia to review and renew its public health services.

The 2003 report by the Canadian Institutes of Health Research, recommends key elements for a national (and by extension a provincial) public health system:

- Clearly defined essential functions;
- Defined roles/responsibilities at each level;
- Consistent, modern legislation;
- Appropriate delivery structures;
- Appropriate funding levels;
- Appropriate numbers of well-trained staff;
- Information systems to support assessment and surveillance;
- Access to expertise and support; and
- Accountability mechanisms.

These recommendations for public health renewal fit well with current Ministry initiatives. For example, the Ministry is working towards consistent, modern legislation with its development of a new *Public Health Act* to replace the old, outdated *Health Act*, and the implementation of a new *Community Care and Assisted Living Act* to streamline, update, and modernize the regulation of community care and child care facilities. Examples of accountability mechanisms include the performance agreements with the health authorities, or the Health Service Redesign and Budget Management Plans. Core Functions in Public Health fits into public health renewal as a means of establishing the essential functions of the public health system within BC. .

As part of the larger renewal process for public health, the new *Health Act* and Core Functions in Public Health will make an important contribution by assisting health authorities in providing effective public health services, thereby strengthening prevention activities to better complement the system of care and treatment. Public health is effective in its fundamental tasks of reducing

the burden of disease, disability, and injury and improving the overall health and well-being of the people of British Columbia. This report will provide evidence that public health is a cost-effective means of reducing that burden and of improving health.

2.3 Population Health and Wellness Initiatives

The Population Health and Wellness Division within the Ministry of Health Services has a mandate to contribute to improving the health of British Columbians and to reducing the burden of disease. This is being addressed in part through the development of a new *Health Act*, which will reference Core Functions in Public Health, and through the development of province-wide population health and wellness initiatives. These initiatives include, for example: ActNow BC, which promotes physical activity, healthy eating, living tobacco free, and making healthy choices during pregnancy; updating legislation, such as the *Community Care Facility Act* (which is now the *Community Care and Assisted Living Act*); and the implementation of various new childhood and adolescent vaccine programs.

These initiatives are described as “province-wide” rather than “provincial” because they extend well beyond the health care system. It is important for the health authorities, the Ministry, and the provincial government to maintain and continue developing partnerships with provincial voluntary organizations, local municipalities, community groups, and key private sector companies that play an important role in improving health; preventing disease, disability, and injury; and protecting people from environmental hazards.

3.0 Population Health and Public Health—A Clarification

The concept of population health has been championed by the Canadian Institute for Advanced Research and has been adopted by, among others, the Federal/Provincial/Territorial Advisory Committee on Population Health (ACPH), which in 1997 defined population health (see information box: Population Health and Public Health).

As an approach, population health focuses on the interrelated conditions and factors that influence the health of populations over the life course, identifies systematic variations in their patterns of occurrence, and applies the resulting knowledge to develop and implement policies and actions to improve the health and well-being of those populations.

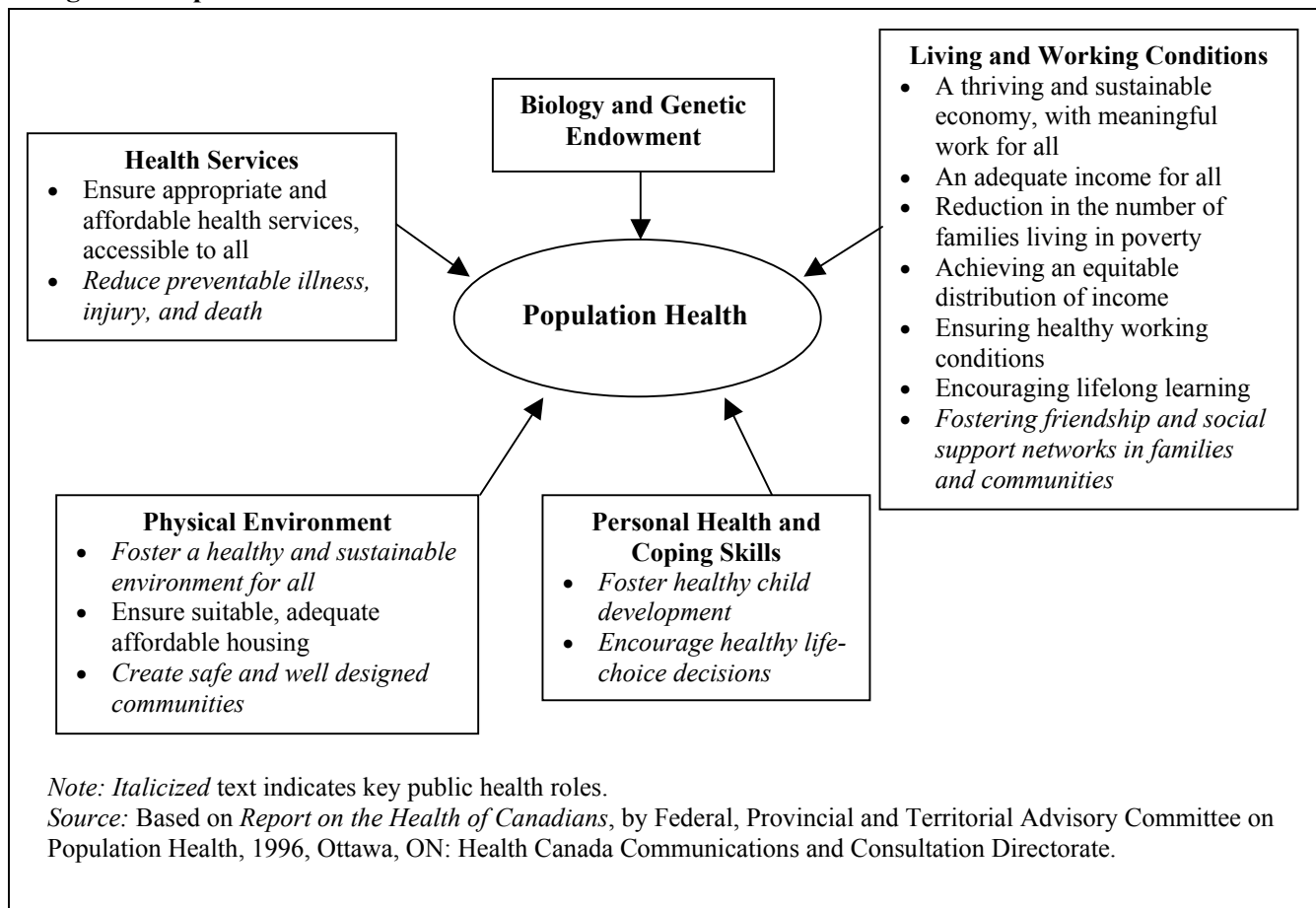
Population health is therefore concerned with understanding the determinants of the health of the population. These determinants, as adopted by ACPH, include biology and genetic endowment, the physical environment, living and working conditions, personal health practices and coping skills, and health services (see Figure 1). They also include gender and other cultural factors. The concept of population health also underlies British Columbia's Health Goals, which are focused on these broad determinants of health.

Population Health and Public Health

Population Health refers to the health of the population as measured by health status indicators, and as influenced by social, economic and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development, health services and gender and culture. Many of these determinants of health lie beyond the jurisdiction of public health, however health authorities can and should influence them.

Public Health is the science and art of preventing disease, health surveillance, prolonging life and promoting health through the organized efforts of society. Prevention is key to the health system's sustainability. Public Health services are an essential part of the health care system, and share with curative services the common goal of prolonging life (by preventing premature death) and reducing pain and suffering (by preventing the occurrence of diseases and conditions that cause pain and suffering).

Figure 1: Population Health and Public Health



Many of these determinants of health lie beyond the traditional field—and beyond the jurisdiction—of public health. For example, one of the determinants in the “living and working conditions” category is a thriving and sustainable economy, with meaningful work for all; another example is ensuring suitable and affordable housing, which is listed in the category of “physical environment”. These and similar broad determinants of health require societal commitment and societal action, and cannot be achieved by public health alone, or even by the health care system as a whole. This is the realm of “primordial prevention”, which focuses on changing the social, cultural, environmental, and economic conditions that determine population health.

In addition, the public health system has a role to play as an advocate with respect to the other broad determinants of population health. Indeed, this is an important role for the Provincial Health Officer, whose legislative mandate is to provide independent advice to government on health issues and to report on the health of British Columbians.

Within the broad set of determinants shown in Figure 1, there are a number (shown in italics), which apply in part or in whole to public health⁴. Chief among them, in the category of health services, is the need to reduce preventable illness, injury, and death. Public health also plays a direct role in the category of personal health practices (fostering healthy child development and encouraging healthy life-choice decisions), in the area of the physical environment, (fostering a healthy environment for all, and helping to create safe and well designed communities) and in the area of living and working conditions, by helping to foster social support networks in families and communities.

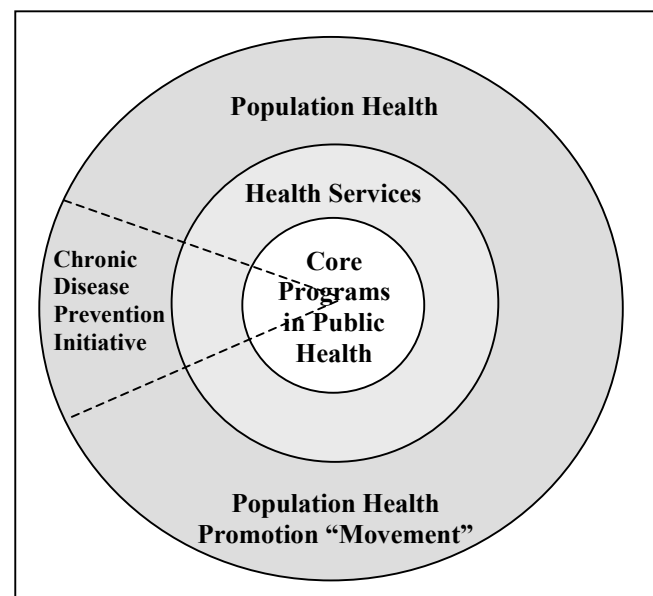
This distinction between population and public health also has important implications for the provision of public health services by health authorities and performance monitoring. For example, the prevention of chronic diseases such as cardiovascular disease, cancer, chronic lung disease, and diabetes cannot be accomplished solely by public health, nor even by health services more generally. Experience has shown that a broad, community-based approach is needed on issues such as comprehensive tobacco use reduction or responsible alcohol use that involves voluntary organizations, community groups, local businesses, schools, the media and others.

This is illustrated in Figure 2, which shows that the prevention of chronic disease, for example, involves more than just the delivery of public health core programs. A province-wide chronic disease prevention initiative, shown as a wedge crossing the entire spectrum of population and public health action, must extend beyond the realm of public health core programs in chronic disease prevention, to involve partners in the rest of the health care system and in the wider society beyond that contributes to the population health promotion movement, including, where appropriate, the private sector.

An example of a province-wide initiative is the BC Healthy Living Alliance, which is focused on chronic disease prevention and population health improvement, and includes the Ministry of Health Services, the health authorities, and many other stakeholders outside of the health system.

Health authorities and the health system are not solely accountable for population health issues such as inequalities in health, smoking rates, physical activity, or obesity. Broad determinants of

Figure 2: Core Programs and Province-wide Initiatives



⁴ There is a much wider population health promotion 'movement' beyond the publicly funded public health system, involving other branches of government, non-government organizations, municipalities, community organizations, academia, individual citizens, employers, workers, the media, and some private sector companies. This paper is concerned with the formal public health system, but still recognizes that achieving the goals of improved population health, prevention of disease, disability and injury, and reduced inequalities in health requires the active engagement, action, and support of the wider 'movement'.

population health, which have an effect on these population health issues—such as economic conditions, tobacco taxes, urban design, or portion size in restaurants—are beyond the jurisdiction of health authorities and the health system. At the same time, health authorities and their public health services can be held accountable for whether or not they are addressing broad determinants of population health through advocacy, coalition building, partnership development, and community development. Medical health officers and public health leaders at the local level have a similar responsibility to that of the Provincial Health Officer: to provide independent advice to health authorities and the community on matters of public health, to report on the health of their communities, and to play a leadership role in initiatives that address the determinants of health in their communities.

4.0 Public Health’s Fundamental Tasks and Essential Functions

4.1 Essential Public Health Functions

In 1994, the Public Health Functions Steering Committee in the United States suggested that the mission of public health should be to “promote physical and mental health and prevent disease, injury and disability”. In 2000, the US “Healthy People 2010” report established two overarching goals: to increase quality and years of healthy life, and to eliminate health disparities.

The Government of British Columbia believes that public health has the following fundamental tasks⁵:

- to improve the overall health and well-being of the population;
- to prevent diseases, injuries, or disabilities that may shorten life or impair health, well-being and quality of life; and
- to reduce inequalities in health between different groups and communities in society (this task cuts across the other tasks.)

In studies undertaken in the past decade in several countries, including Canada, Australia, England, and the US, as well as by three different World Health Organization groups, the carrying out of these fundamental tasks requires a set of public health functions that have been deemed essential. A review of these lists of essential public health functions (Appendix 2) suggests it is important to distinguish between two categories of essential functions:

- Those functions that are unique to public health and are considered the essence of what public health does. These include undertaking population health assessment and health surveillance; the improvement or promotion of health; the prevention of disease, disability, or injury; protection against environmental hazards; the prevention and/or investigation of communicable diseases; the promotion and encouragement of healthy behaviours; responding to urgent and emergent health issues; and disaster preparedness and response.⁶
- Those functions that establish and maintain the capacity of the system to carry out its core programs or services. This set of functions is not unique to public health, but is common to the health system as a whole (and all large organizations in both the public and the private sector). These include developing and maintaining a well educated and trained work force; undertaking research and evaluation; performing policy analysis and developing policies and legislation; planning and managing programs; undertaking performance assessment, monitoring and quality assurance; and working in and with communities to strengthen community capacity.

⁵ In practice the public health sector cannot carry out any of these tasks alone; it requires the organized effort of society if population health is to be improved. Nonetheless, these are the fundamental tasks to which public health is dedicated.

⁶ This is the approach taken in Canada, where a Survey of Public Health in Canada (Technical Report, 2001, cited in KPMG, 2001) identified the following five essential functions: health promotion, health protection, disease prevention, population health assessment, and health surveillance.

These two categories of essential functions are reflected in the Framework for Core Functions . The unique public health functions and services are reflected in the core programs and in the public health strategies by which those core programs are implemented. The more generic maintenance and support functions are considered to be aspects of system capacity.

4.2 Non-Essential Public Health Functions

Non-core functions are those that are not identified as essential, but should not necessarily be discontinued. In reviewing core public health functions, health authorities will need to review all their programs to determine what is core for their health authority. Criteria for determining when to stop a service would need to be developed.

An example is provided by the City of Toronto's Public Health Department, which in the early 1980s identified a set of ten "deletion/dilution" criteria by which it evaluated all its programs (see Information Box: Deletion/Dilution Criteria, City of Toronto, 1982). The programs were assessed in terms of whether the criteria definitely applied or partially applied. A high rating in this process did not necessarily mean that the program would be dropped, but might mean that it needed refocusing; a moderate rating might even mean that a program needed to be strengthened, if it was epidemiologically important, but not well understood. As a result of this process, a number of programs were either scaled back or dropped (e.g. chronic respiratory disease and chronic mental health management programs, a school cardiac survey, school health medical exams, colour vision screening, scoliosis screening) (Hancock, 1986).

Deletion/Dilution Criteria, City of Toronto, 1982

- not a major cause of morbidity or mortality
- not a primary preventive measure
- not targeted at a high-risk group
- not targeted early in the life cycle
- no legal requirements
- no political demand
- no community demand
- a disproportionate use of time and resources
- duplicated effectively elsewhere
- inappropriate for the Department of Public Health

5.0 Core Functions and the *Health Act*

A Health Act (or a Public Health Act, as it is called in other jurisdictions) codifies the organized efforts of society by:

- defining the legal parameters and authorities of the Medical Health Officer and other public health staff, boards of health/health authorities, the Ministry of Health Services, and the Minister;
- defining the legal requirements that may be placed on individual citizens and corporate entities in order to prevent disease and protect health, and the conditions under which such requirements may be put in place; and .
- defining a set of essential public health activities to prevent disease, disability and injury, and improve population health, that are, or may be, required both locally and provincially.

Work is underway to develop a new *Public Health Act* for BC. This Act will address the issues noted above. It is also anticipated that the new *Public Health Act* will reference Core Functions in Public Health in broad terms. A combination of best practice guidelines, benchmarks, and outcome-based expectations will be used to ensure that core functions are implemented consistently across the province.

Several jurisdictions in Canada and elsewhere previously developed public health acts and core or mandatory programs. An overview of these programs for Ontario, Saskatchewan, and Quebec are provided in Appendix 3.

6.0 The Need for Core Functions in Public Health

The role of the Ministry of Health Services has evolved over the past several years. The current role is to exercise stewardship for public health services by providing effective direction, meaningful support, targeted monitoring, rigorous evaluation, and strategic intervention where appropriate.

The development of the Core Functions Framework is part of a larger effort to renew public health in British Columbia. As identified by the CIHR, an effective public health system needs clearly defined essential functions. The Core Functions Framework establishes these essential functions. In order to fully understand why British Columbia is developing the Core Functions Framework, it is necessary to understand the burden of disease in British Columbia and the economic burden of illness, and to review the evidence for public health.

6.1 The Burden of Disease in BC

Public health must direct its attention to those diseases, injuries, or disabilities that pose the greatest actual or potential threat to the health of the population.⁷ In order to determine the priority health issues to be addressed through core functions, it is important to calculate the burden of disease, which integrates years of life lost due to premature death with years of life lived in varying degrees of disability. Health Canada's (2002) study on the economic burden of illness in Canada provides BC-specific data.

The contribution of various diseases and conditions to the burden of disease in BC in 1998 (calculated as disability-adjusted life years, or DALYs⁸) has been estimated (Ministry of Health, 2001) and is shown in Table 1. The six top categories of disease and injury—those that contribute more than 5 per cent to the total—account for over three quarters of the total burden of disease borne by British Columbians today. Another four conditions, each at roughly 3 per cent of the burden, bring the total to almost 90 per cent of the burden of disease.

For males there were 425,570 lost DALYs, while for females there were 365,422 lost DALYs. For both males and females, the largest contributor to lost DALYs was cancer, and the second largest contributor was cardiovascular disease. For men, the third largest contributor was unintentional injury (sixth for women), while for women it was mental disorders (fourth for men).

⁷This may also mean reducing or eliminating those programs or services that deal with diseases, injuries or disabilities that pose the least actual or potential threat to population health.

⁸ A DALY is "one lost year of healthy life", which includes for each condition both years of life lost and years lived with a disability of known severity and duration, the latter weighted according to severity.

Table 1 - The Burden of Disease in Canada, 1998, in Disability-Adjusted Life Years (DALYs)			
Disease	% of DALYs Total	% (and rank) of DALYs Female	% (and rank) of DALYs Male
Cancer	20.7	22.5 (1)	19.1 (1)
Cardiovascular	18.3	17.3 (2)	19.1 (1)
Mental Disorders	11.0	12.1 (3)	10.1 (4)
Unintentional Injuries	9.0	5.8 (6)	11.8 (3)
Neurological and Sensory Disorders	8.7	9.9 (4)	7.7 (5)
Chronic Respiratory Disease	6.5	6.8 (5)	6.3 (6)
Musculo-skeletal diseases	3.4	4.7 (7)	2.2 (10)
Digestive Disorders	3.2	3.4 (8)	3.1 (8)
Intentional Injuries (violence and abuse)	3.2	1.6 (10)	4.6 (7)
Diabetes Mellitus	3.1	3.2 (9)	3.1 (8)
Total	87.1	87.3	87.1

6.2 The Economic Burden of Illness

A concept related to the burden of disease is the economic burden of illness, which examines both the direct costs of illness to the health care system and the indirect costs (lost productivity) resulting from premature mortality and short and long-term disability. See Table 2 for the Economic Burden of Illness in British Columbia (1998).

British Columbia data are not available for the economic burden of disease of dental services and vision care, but are available for Canada. This burden is reported at \$6.4 billion and \$2.3 billion respectively (Health Canada 2002, Table 2, footnote #4), making dental diseases 2nd (7.6 per cent) and vision 11th (2.7 per cent) in rank for direct costs. The report notes that it is hard to determine the proportion of dental costs linked to digestive diseases. Perhaps for the same reason, dental disease does not appear to be included in the estimation of the burden of disease in BC. See Appendix 4 for a more detailed discussion of the burden of illness in BC, and comparisons with Canada as a whole.

Table 2 - Economic Burden of Illness in British Columbia, 1998 (Diagnostic Categories contributing 1% or greater to total costs) ⁹			
% of total (and rank)			
Diagnostic Category	Total Cost (\$22.03 billion)	Direct Cost (\$10.95 billion)	Indirect Cost (\$11.09 billion)
Musculo-skeletal diseases	12.3% (1)	3.4% (7)	21.0% (1)
Cardiovascular diseases	10.0%(2)	7.5% (1)	12.4%(4)
Injuries	9.1% (3)	4.1% (3)	14.0% (2)
Cancer	7.9% (4)	2.7% (9)	13.0% (3)
Nervous system/sensory disease	5.5% (5)	3.4% (6)	7.5% (5)
Respiratory diseases	5.4% (6)	3.8% (5)	7.0% (6)
Mental disorders	5.3% (7)	5.1% (2)	5.4% (7)
Digestive diseases	3.2% (8)	4.0% (4)	2.4% (8)
Genitourinary diseases	2.0% (9)	3.1% (8)	1.0% (11)
Endocrine and related diseases	1.5% (10)	1.7% (10)	1.4% (10)
Infectious/parasitic diseases	1.4% (11)	1.0% (13)	1.9% (9)
Pregnancy	1.1% (12)	1.6% (12)	0.6% (12)
Skin and related disorders	1.0% (13)	1.7% (11)	0.2% (15)
Total Cost	65.70%	43.10%	87.80%
<i>(% of costs excluding unattributable, etc))</i>	98.80%	98.20%	98.90%
Source: Health Canada. (2002). <u>Economic Burden of Illness in Canada</u> .			
Note: Data derived from the charting application at http://ebic-femc.hc-sc.gc.ca/home_e.php?Lang=e .			

6.3 Summary of the Burden of Disease

A comprehensive public health approach needs to pay attention to the prevention of these important and costly conditions, whenever evidence of effectiveness of prevention is available.

Based on these data, the core programs component of the Core Functions Framework needs to address the following major diseases, injuries, disabilities, and conditions, whenever there is evidence that an effective public health intervention is available:

- cardiovascular disease;
- cancer;
- injuries, both unintentional and intentional;
- mental health problems;
- musculo-skeletal conditions;
- chronic neurological and sensory disorders;
- chronic respiratory diseases;
- digestive disorders; and
- diabetes.

⁹ Excludes “unattributable”, ranked #1 overall, (22.4% of total costs, 45.0% of direct costs, 0.1% of indirect costs); “ill-defined conditions”, ranked 6th overall (5.6% of total costs, 3.1% of direct costs, *.0% of indirect costs; “others”, ranked 11th overall (3.1% of total costs, 5.6% of direct costs, 0.7% of indirect costs); and “well patient care”, ranked 12th overall (2.4% of total costs, 2.4% of direct costs, 2.4% of indirect costs). Combined, these categories accounted for 33.5% of total costs, 56.1% of direct costs, and 11.2% of indirect costs.

In addition to these conditions that currently contribute to the burden of disease, attention is still required for diseases currently held in check by public health programs. These have historically been important contributors to the burden of disease and could easily become so again if public health measures are relaxed. These are principally the communicable diseases that were the main causes of death and disease in the 19th century (and remain so today in many parts of the world), as well as new or emerging diseases that pose a potential threat if not identified and controlled. Examples include:

- water-borne diseases such as cholera and typhoid that are prevented by modern water treatment and sewage disposal systems;
- food-borne diseases such as salmonella, hepatitis A, and botulism that are prevented by modern food preparation, hygiene, and sanitation;
- vaccine-preventable diseases such as smallpox, measles, diphtheria, polio, and—more recently—hepatitis and meningitis, that have been dramatically reduced and even eradicated by immunization programs; and
- new/emergent diseases such as multi-drug-resistant tuberculosis, HIV/AIDS, West Nile Virus, Bovine Spongiform Encephalitis (BSE), and SARS.

6.4 Evidence in Public Health

One of the most important next steps will be to assemble the evidence base for Core Functions, specifically related to the core programs component. For any single core program, we need to answer the question “what works”? There is a growing body of evidence from Canada, the United States, Europe and Australia as to which strategies work best, but the limited availability of these research findings makes it difficult to gather evidence.

The amount of funding devoted to public health services and to research on population and public health issues is currently much less than the amount spent on clinical services and clinical and basic research (public health currently receives approximately 2.5 to 3 per cent of the total health care budget). Research on public health services tends to focus on dated definitions of public health and is focused on infectious diseases and biological risk factors and behavioural change.

The long time frame and large sample size needed to pursue intervention studies in public health also present a challenge. Since such long-term studies are expensive and comparatively rare, the result is that often the evidence on prevention interventions comes from “inadequate trials, commonly based on type-II errors, and on inadequate control, compliance, and follow-up.”

The type of research required for population health intervention studies is different from the ‘gold standard’ randomized controlled trial of clinical medicine. It is worth noting the point made by the *Independent Inquiry into Inequalities in Health* (Acheson, 1998), that “the more a potential intervention relates to the wider determinants of inequalities in health . . . the less the possibility of using the methodology of a controlled trial to evaluate it.”

While there is comparatively good evidence about tobacco, alcohol, physical inactivity, diet, etc. as a result of some large long-term studies that have been undertaken, there is little firm data about the contribution (specifically, the population-attributable risk) made by societal or risk

conditions to the burden of disease, be it heart disease or depression. There is also little “hard” scientific evidence about the effectiveness of specific environmental, psychosocial, socio-economic, or cultural interventions as a means of reducing the burden of disease. Public health must therefore turn to the biological risk factors and the risk behaviours for which reasonable evidence is available. This does not diminish the importance of the broader determinants of health and the strategies need to address them, as absence of evidence is not evidence of absence of effect.

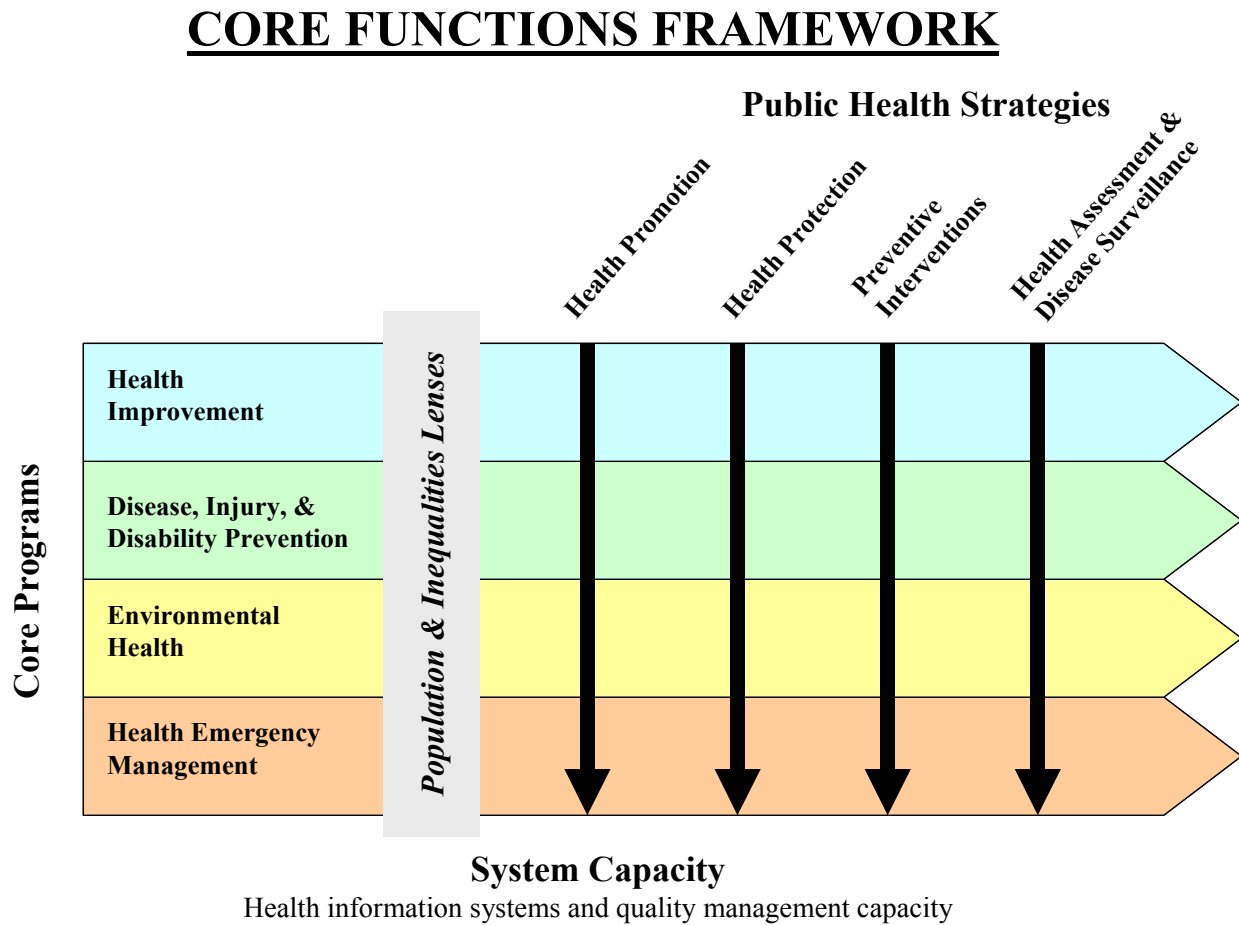
7.0 Core Functions Framework

The Core Functions Framework (see Figure 3 for a visual representation of the Framework and Appendix 1 for a more detailed example) has been developed as a matrix approach, which represents how the Ministry is going to develop consistent direction to health authorities in terms of which programs should be offered, and to what effect. In keeping with the broad mission and fundamental tasks of public health as identified in previous sections, the main components of the framework are:

- **Core Programs:** long-term programs, representing the minimum level of public health services that health authorities would provide in a renewed and modern public health system. Core programs are organized to improve health; they can be assessed ultimately in terms of improved health and well-being and/or reductions in disease, disability, and injury.
- **Public Health Strategies:** strategies by which core programs are implemented, no matter what the intended health outcome, e.g. health promotion.
- **The Lenses:** the Population Lens and the Inequalities Lens are in place to ensure the health needs of specific populations are addressed.
- **System Capacity:** the health information systems, quality management, research and knowledge development, and staff training and development capacity needed to apply public health strategies and implement core programs.

These components have been developed through extensive consultation with public health stakeholders in British Columbia, including a Professional Advisory Group, and participants in the Core Functions in Public Health Planning Workshop. These components have also been developed based upon an extensive literature review of core functions in other jurisdictions, and a review of the burden of disease in Canada, and BC (when data are available). See Appendixes 5 through 9 for: a list of the participants in the consultation process (Appendix 5); a summary of the comments received during the consultation process (Appendix 6); the participants list from the Core Functions Workshop (Appendix 7); a summary of the Core Functions in Public Health Planning Workshop (Appendix 8); and a list of the Professional Advisory Group Members (Appendix 9).

Figure 3: Core Functions Framework



8.0 Core Programs

8.1 Criteria for Core Programs

Core programs are based on a set of specific criteria (see information box: Criteria for the Development of Core Programs). Programs that do not meet these criteria, or meet very few of them, are not “core” public health programs or services, although they may be provided as part of the activities of other parts of the health care system. An example would be adult speech-language pathology services, which are mainly tertiary prevention services (rehabilitation) for people following a stroke, laryngeal cancer treatment, etc.

Criteria for the Development of Core Programs

- They are, primordial, primary, or early secondary prevention interventions.
- They either:
 - prevent diseases or conditions that are important contributors to the burden of disease; and/or
 - prevent diseases or conditions that are potentially important threats to health; and/or
 - improve the overall health and resilience of the population, or some part of the population.
- There is reasonable evidence of their effectiveness in the scientific literature or in reviews of ‘best practices’.
- There is reasonable evidence of their cost-effectiveness.
- Indicators are available or can be developed that will measure their impact.

Core programs are intended to achieve the three fundamental tasks of public health (see Section 4.1) by utilizing multiple strategies drawn from one or more of the essential functions of public health, as appropriate. Their implementation and impact is monitored and evaluated as part of the function of quality management. They are delivered either to the population as a whole or to selected populations, often in key life settings such as homes, schools, workplaces, health care settings, and neighbourhoods.

Core programs are long-term programs, representing the minimum level of public health services that health authorities would provide in a renewed and modern public health system. Each program will have clear goals, measurable objectives, and an evidentiary base that shows it can, indeed, improve people’s health and prevent disease, disability, and/or injury. Programs will also be supported through the identification of best practices and national and international benchmarks.

Core programs in BC will be targeted to one of four broad categories. These are not mutually exclusive, and there will be overlap:

- **Health Improvement Programs:** intended to improve overall health and well-being; they are capable of preventing a wide range of acute and chronic diseases and disability, as well as injuries.
- **Disease, Injury and Disability Prevention Programs:** intended to prevent specific health problems that make, or might make, a significant contribution to the burden of disease.
- **Environmental Health Programs:** intended to protect people from environmental hazards, whether caused by natural or human activity, in the built and natural environments.

- **Health Emergency Management Programs:** intended to coordinate available resources to deal with emergencies effectively, thereby saving lives and avoiding injury.

Within these broad categories, a large number of core programs have been identified based on the core program criteria. They are consistent with core or mandatory programs elsewhere in Canada. The proposed core programs are listed in Table 3, and are discussed in more detail in the sections that follow.

Table 3 -Proposed Core Programs in Public Health for British Columbia	
<p>Health Improvement Programs</p> <p>Intended to improve overall health and well-being; they are capable of preventing a wide range of acute and chronic diseases and disability, as well as injuries</p>	<p>Reproductive Health</p> <ul style="list-style-type: none"> • healthy sexuality; preconception health; family planning; prenatal care and education; and postpartum care and support. <p>Healthy Development</p> <ul style="list-style-type: none"> • healthy infant and early child development (0-6); and healthy child and youth development. <p>Healthy Communities</p> <ul style="list-style-type: none"> • healthy schools, workplaces, and care facilities; community development and capacity building. <p>Healthy Living (population-wide, non-specific)</p> <ul style="list-style-type: none"> • non-smoking/tobacco control; healthy eating; and active living. <p>Mental Health Promotion</p> <p>Food Security</p>
<p>Disease, Injury and Disability Prevention Programs</p> <p>Intended to prevent specific health problems that make, or might make, a significant contribution to the burden of disease</p>	<p>Chronic Disease Prevention (high-risk populations; specific diseases)</p> <ul style="list-style-type: none"> • cardiovascular disease; cancer; neurological and sensory; musculo-skeletal; chronic respiratory; digestive; and diabetes. <p>Unintentional Injury Prevention</p> <ul style="list-style-type: none"> • falls, especially children & seniors; motor vehicle crashes; poisoning; recreational and leisure; and drowning, fires etc. <p>Prevention of Violence, Abuse, and Neglect</p> <ul style="list-style-type: none"> • assault, including homicide; violent exploitation of women; and child and elder abuse. <p>Prevention of Mental Disorders and Problematic Substance Use</p> <ul style="list-style-type: none"> • depression/anxiety; psychoses; suicide and suicide attempt; and problematic substance use and addictions. <p>Communicable Disease Prevention and Control</p> <ul style="list-style-type: none"> • vaccine-preventable diseases; HIV/AIDS, STDs, blood-borne; TB; vector-borne; new/emergent diseases. <p>Dental Health and the Prevention of Dental Disease</p> <p>Prevention of Disability (including appropriate early intervention)</p> <ul style="list-style-type: none"> • sensory (hearing, vision, speech); and other. <p>Prevention of the Adverse Health Effects of the Health Care System</p> <ul style="list-style-type: none"> • nosocomial infections; medical error; unnecessary/inappropriate provision of services; and environmental impacts of health care.

Table 3 -Proposed Core Programs in Public Health for British Columbia	
Environmental Health Programs Intended to protect people from environmental hazards, caused by natural or human activity, in the built and natural environments	<i>Water Quality</i> <ul style="list-style-type: none"> drinking water; and recreational water. <i>Air Quality</i> <ul style="list-style-type: none"> indoor; and outdoor. <i>Safe Food</i> <i>Community Sanitation and Environmental Health</i> <ul style="list-style-type: none"> waste management (sewage, solid waste); vector control; public exposure to chemicals and radiation; complaint response and assessment; and land-use and environmental planning.
Health Emergency Management Programs Intended to coordinate available resources to deal with emergencies effectively, thereby saving lives and avoiding injury	<i>Prevention and Mitigation</i> <i>Preparedness</i> <i>Response and Recovery</i>

8.2 Health Improvement Core Programs

As the World Health Organization definition of health asserted more than 50 years ago, “health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.” Improving the health of the population is more than simply protecting them from environmental hazards or preventing diseases, injuries, or disabilities; it needs to address the improvement of the overall physical, mental, and social well-being of the population, which is sometimes referred to as ‘positive health’.¹⁰

Overall improvement in health and well-being depends upon addressing both the broad determinants of health described by the Federal/Provincial/Territorial Advisory Committee on Population Health (see Figure 1) and increasing the level of physiological condition, physical fitness, psychological resilience, and social functioning of individuals. This leads to a non-specific improvement in overall health, well-being, and quality of life, and often has a beneficial impact upon a wide variety of diseases—acute as well as chronic, mental as well as physical—and other health conditions such as injuries and disabilities.

Health Improvement Core Programs should be those that have been shown to be effective, or are considered to be ‘best practice’. Since they are focused on overall health improvement, they are intended to reduce the overall burden of disease, non-specifically.

Perhaps the most fundamental underpinning of good population health is to ensure that infants are born healthy and that their development in the first few years of life is healthy. The extraordinary increase in life expectancy from the mid-19th century was partially due to the dramatic reductions in infant and child mortality, primarily through the control of communicable diseases. Today, as then, lifelong patterns of physical and mental health are partially determined

¹⁰ As opposed to ‘negative health’, which is how we too often measure health – by measuring death and disease and then calling the absence of them ‘health’, or a reduction in them ‘better health’.

during a woman's pregnancy and the first few years of life. The first two priorities of health improvement are therefore reproductive health and healthy development, especially for infants and young children.

The Health Improvement Core Programs that will be developed and implemented in British Columbia are reproductive health; healthy development; healthy communities; healthy living; mental health promotion; and food security.

8.2.1 *Reproductive Health*

The first step in reproductive health is developing an understanding in young men and women of what is a healthy sexual life. This can help to reduce sexually transmitted diseases, unplanned pregnancies, cervical cancer, and other sex-linked health problems.

A healthy beginning to life starts before conception by establishing good health in girls and young women. This includes ensuring, through family planning programs, that women have access to reproductive choices, and in particular that unplanned pregnancy is avoided.

The health of women during their pregnancy requires a combination of high quality prenatal care and education (in particular, identifying those most vulnerable during pregnancy) and helping them access needed care and other resources, avoid or quit smoking, be well nourished (including folic acid supplementation), and avoid alcohol and illicit drug use.

The principal outcome of good prenatal care and education, together with access to good obstetrical care, will be an improvement in the health of pregnant women, and a further reduction in infant mortality rates, low birth weight or pre-term babies, and babies born with low Apgar scores, as well as lower rates of Fetal Alcohol Spectrum Disorder (FASD) and some congenital defects. An additional benefit of good prenatal education and good obstetrical care may be to reduce the rate of cesarean sections.

Finally, reproductive health ends with the important task of postpartum care and support for parents and their newborn infants. This includes supporting 'bonding' and the development of close family relationships, the promotion of breastfeeding, and social support for new mothers, especially first-time mothers, teenage mothers, and those who are isolated or otherwise in high-risk situations. As the child grows, this postpartum care and support continues on as support for healthy infant and early child development.

8.2.2 *Healthy Development*

There is now substantial evidence to suggest that development of the fetus, infant, and young child—neurologically, physiologically, psychologically, and emotionally—plays a significant role in determining their lifelong physical, mental, and social health and well-being. As Wadsworth (1999) observed:

... recent research in child health shows that early life health is, for each child, the basis of health in adult life. Therefore investment in health in early life has beneficial effects, specifically on the future health of a nation as well as on the future functioning of its citizens.

An important Canadian review of early child development (Guy, 1997) examined research that showed “the first few years of life can have a lifelong impact on health, mental ability and coping skills.” Development is influenced by a wide range of factors, including maternal health, nutrition and other health-related behaviour as influenced by prenatal care; early and ongoing physical, mental, and intellectual stimulation of the infant; nutritional quality; the strength of family and social relationships; the quality of the physical environment; and other factors. The benefits extend well beyond health to such important societal concerns as readiness and ability to learn, socialization, prevention of violence and crime, and many other issues.¹¹

There is considerable public health experience in ensuring healthy infant and early child development. Key areas here include:

- infant nutrition, especially breastfeeding;
- family relations;
- early detection and treatment of hearing loss to ensure healthy psychological and social functioning and to prevent developmental problems; and
- child safety programs to prevent injuries; immunizations; and monitoring (particularly in high-risk families or conditions) for physical, intellectual, and emotional development delay.

Since the fetus, infants, and young children are particularly vulnerable to contaminants in breast milk, food, water, air, and soil, special attention needs to be paid to environmental health conditions.

Given the inequalities in infant and child health that exist, programs in healthy infant and child development—as in other public health programs—need to address and work to change the broader community and societal factors that influence child health.

A healthy start in life in the early years needs to be continued as young children develop and mature into young adults. Healthy child and youth development focuses on children during their school-age years (approximately age 6–18), recognizing that the school is but one setting in which young people develop. In addition to a strong focus on healthy schools, public health programs in this area may involve working with recreational programs, youth groups, faith-based organizations, social agencies, the private sector, and many other partners in an effort to ensure that young people grow up in environments that make the healthy choices the easy choices, that then support them in making healthy choices, and help them move towards healthy ways of living.

8.2.3 *Healthy Communities*

The settings in which we lead our lives—homes, schools, workplaces, care facilities, and neighbourhoods—provide physical and social environments that shape our choices. A focus on the home setting is of particular importance not only for early infant and child development, but also in old age. Helping the elderly live independently and safely in their homes, in part by maintaining and enhancing their social support networks, is not only beneficial to their physical,

¹¹ See for example Mustard and Picherack (2002), or Keating and Hertzman (1999)

mental, and social well-being but also reduces the likelihood that they will require institutionalization.

The pre-school and school setting is one of the most promising places for helping children and youth develop healthy ways of living. Public health involvement in the pre-school setting, through licensing, inspection, and standard setting, provides an important opportunity to create healthy environments for these young children. The *Community Care and Assisted Living Act* and the Child Care Licensing Regulation specify staff qualifications, maximum group sizes, staff to child ratios, and minimum health and safety requirements.

Public health has a long history in the school setting. The evidence shows that to be effective, school health interventions need to be linked to the principal focus of schools (education and developing the knowledge base of young people); have strong connections with parents and health services; and address most if not all of the following: the curriculum, the environment, health services, partnerships, and school policies (St. Leger & Nutbeam, 2000). Moreover, a healthy school program is not one that is simply focused on tobacco use, physical activity, problematic substance use, and healthy eating, but also addresses the development of social-emotional competence, issues of violence and bullying, healthy sexuality, healthy peer relationships, access to healthy food choices, environmental quality in the school and school grounds, and the relationships between home, school, and community.

Many of these same factors are important in the workplace, and approaches similar to a healthy school program are applicable to the creation of healthy workplaces. There is growing evidence of the importance of psychosocial working conditions and social relationships in the workplace for both mental health and physical health problems such as cardiovascular disease. Here too, there is extensive evidence in how to create healthier workplaces, to the benefit of workers, employers, and society at large.

Care facilities—and in particular health care facilities—are unique environments that need special attention because they often house the most vulnerable members of society. Day care facilities for infants and young children, care facilities for people with developmental or physical disabilities or chronic mental health problems, long-term care nursing homes, assisted living and other facilities for the frail elderly and those with chronic health problems, even hospitals themselves, all require monitoring in terms of the physical environment and safety, infection control, standards of nutritional care including nutritional quality and food safety, and social conditions. The enforcement of the *Community Care and Assisted Living Act*, the purpose of which is to protect the health and safety of vulnerable and dependent persons in care facilities through the establishment of minimum health and safety requirements, is an important public health function. The Provincial Health Officer's report *Prevention of Falls and Injuries Among the Elderly* (2004) highlights the importance of preventing falls among the elderly in care facilities, and reviews the evidence of effective interventions that health authorities and others can implement.

The physical and social structures of our communities and neighbourhoods affect our health in many ways, and public health needs to be involved in the creation of healthy neighbourhoods.¹² This requires a combination of community development and capacity building, and public health input into land-use and environmental planning. This latter aspect is dealt with as part of environmental health, although both aspects of a healthy neighbourhood—the physical and social—need to be dealt with in an integrated manner.

Community development and capacity building seek to build strong social networks and social support, thus creating the social capital and social cohesion that has been strongly linked to the overall health and well-being of people in both spatial and non-spatial communities. This process not only has benefits for individuals directly, in that their sense of self-efficacy and other aspects of psychosocial well-being are increased, but also benefits the community as a whole, through the establishment of partnerships among a variety of community organizations. It also provides communities with the capacity to address a wide variety of issues that affect health. In neighbourhoods, these issues might include:

- a suitable mix of housing, or a community food policy which includes programs such as community gardening or community kitchens, which help meet basic prerequisites for health such as shelter and food;
- parks and recreation services, libraries, and other community services, which help to foster a sense of community and to strengthen social networking and support;
- local action to address issues such as urban design and transportation, which have an impact on air pollution, safety, and levels of physical activity; and
- smoking bylaws, which protect non-smokers and support smokers trying to quit.

8.2.4 Healthy Living

Four important forms of personal health practices that promote overall health and well-being and prevent a wide range of diseases, disabilities, and injuries are a healthy diet, a physically active way of life, not smoking, and drinking only moderately.¹³ The evidence is clear that these life choices, when adopted early in life (except for alcohol use) and maintained throughout life, can have beneficial impacts on the development of the fetus and infant; increase resistance to infection; reduce the risk of a wide variety of chronic diseases; improve recovery from disease and injury; improve overall mental health; and have a wide variety of other beneficial effects.

It is important to keep in mind that while these key personal health behaviours are important, they only explain approximately 27 per cent of the burden of disease in British Columbia. This is why a focus on the broader determinants of health is important, especially because these broader determinants also play an important role in shaping and constraining people's ability to make healthy choices.

¹² A neighbourhood is the physical expression of community as a spatial entity; there are also many non-spatial communities (e.g. people of colour, teens, gays and lesbians etc.). Community development and capacity building applies to both spatial and non-spatial communities.

¹³ Alcohol use, while beneficial to health in moderation, is addressed later as part of prevention of mental disorders and addictions.

Health advocacy is therefore an essential function for public health.¹⁴ Public health can and must play a role on behalf of the public as an advocate for healthier public policies in non-health sectors, improved living and working conditions, and healthier physical environments. Within the health care system, public health should be an advocate for health services that have been shown to be effective in improving overall population health, and for improved patient safety.

Once people are provided with, or have helped to create, healthy living conditions, they are much more likely to make healthy living choices. The experience with controlling and reducing tobacco use is clear and unequivocal, and provides a model for how to approach other ‘healthy living’ issues such as healthy nutrition and physical activity.

Experience has shown that reducing tobacco use involves a broad range of strategies, from enforcement (prosecuting the tobacco industry, banning advertising, requiring warning labels on cigarette packets, prosecuting those who sell to minors, banning smoking in restaurants and other locations, etc.) through persuasion (lobbying politicians, forming community coalitions, educating young people, etc.) to clinical strategies (counselling, behaviour modification, the nicotine patch, etc). In addition, the strategies have to be applied at all levels from the international to the individual, and have to appropriately address specific groups such as young women, while taking into account cultural differences (e.g. First Nations’ use of tobacco). A comprehensive tobacco control program has to include all of this, and more.

Healthy eating is an important part of food security, which is discussed below. Being able to eat the right amount of nutritious food on a daily basis while avoiding eating too much of the wrong foods requires paying attention to such issues as adequacy of income; food availability and price (healthy food is often more expensive and less available in low-income communities); the type of food available and portion size (large portions of high-fat foods are the norm in many fast-food outlets, while the nutritional quality of food in food banks is often inadequate); knowledge about food and skill development for production, processing, food selection, preparation, and storage, as well as the availability of food preparation and storage equipment; and social and cultural knowledge about food. A comprehensive healthy eating program has to include all of these issues, and more.

An individual’s level of physical activity is the product of a wide range of environmental and social conditions, including the constraints on time that many, especially women, face. We live in a sedentary society, in which the car has become the dominant form of mobility, and where both adults and children spend hours in front of the television or the computer. Encouraging people to exercise more will have little effect if the environmental and social cues that shape their physical activity are not changed.

One of society’s major current concerns, the ‘epidemic’ of obesity being observed in North America and elsewhere, is essentially the product of unhealthy eating patterns compounded by physical inactivity. If obesity is to be reduced, the root causes of these problems must be addressed in a comprehensive manner, similar to the long-term and comprehensive approach taken to reduce tobacco use.

¹⁴ As noted in the public health professional consultations, the advocacy function of public health leaders is so important and so sensitive to political pressure, that it needs to be protected in the new *Health Act*.

8.2.5 Mental Health Promotion

Another broad area of health improvement that is of growing interest and concern is the promotion of mental health throughout the lifespan. Mental health problems are an important component of the burden of disease, but we know much less about prevention of specific mental disorders than we do for specific physical diseases.

For many disorders, however, the risk factors are generic and it is not possible to determine which risk factors will lead to a particular mental disorder. Effective prevention programs (that) tend to target a range of risk factors . . . are likely to have a preventive effect for all mental health problems and mental disorders. (Australia, Commonwealth Department of Health and Aged Care, 2000)

There is a growing body of evidence of the general health benefits—physical, mental, and social—of good mental health, as well as a growing body of knowledge about mental health promotion. (Australia, Commonwealth Department of Health and Aged Care, 2000). Moreover, good mental health can be preventive with respect to other important health issues such as abuse, violence, alcohol and problematic substance use, unprotected sex, suicide, etc.

Of importance is the sense of self-esteem, self-worth, and self-efficacy that develop to a greater or lesser extent in young people, and a set of skills collectively referred to as ‘social-emotional competence’ that provide “the ability to effectively manage and coordinate ones affective, cognitive and social behaviour to achieve positive developmental outcomes” (Wallander, 2000). Social-emotional competence includes a number of specific abilities in the four broad domains of awareness of self and others; positive attitudes and values; responsible decision-making; and social interaction skills.

The acquisition of these skills can help to strengthen resilience—“the ability to experience adverse circumstances and to overcome them” (Mangham et al., 1995). While this has particular relevance to mental health, it has a broader application, given our modern understanding of the relationship between the psyche and physical health. The development of social-emotional competence, resilience, and other positive attributes depends to a significant extent on what happens to people during their infancy and childhood, and the psychosocial and physical environments in which they develop.

Risk and protective factors that contribute to or undermine resilience include poor parenting, genetic factors, the extent of adversity experienced, and protective factors that include personality factors such as autonomy, self-esteem, and a socially positive orientation; family cohesion, warmth, and an absence of discord; and external positive or reinforcing social support (Rutter, 2000). Short-term, poorly implemented prevention programs that focus solely on the individual and do not pay attention to the social context, do not produce lasting behaviour change. Comprehensive programs that focus on family support, early childhood education, and a comprehensive, school-based approach to the promotion of social competence, do have long-term effects.

8.2.6 Food Security

Food security exists “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (Food and Agriculture Organization of the United Nations, n.d.). There has been a growing concern in the public health field with the health problems caused by hunger and malnutrition. Food security is the foundation of healthy eating, and also incorporates issues such as food banks and other community mechanisms for feeding hungry people, as well as food safety, ecologically sensitive food production, and local production of food. If food security programs are successful, reliance on food banks can be reduced. Food security requires the development of local, provincial, and national food policies that support local food systems.

In recent years, many communities have been working to develop local food systems that provide dignified access to healthy food at an affordable price, while creating local employment and reducing environmental harm. These local food systems usually include a combination of some or all of the following: community gardening/urban agriculture, roof-top gardens, food boxes, food co-ops, farmers markets, gleaning, community-supported agriculture, food festivals, community kitchens, preserving farmland, organic production, and ensuring access to grocery stores. In some communities, these efforts are supported through local food policy councils that engage the public, non-profit, and private sectors in developing healthy food policies for communities, workplaces, schools, hospitals, and other settings.

Community nutritionists and other public health staff play an important role in such community health improvement efforts, but as with many other areas of public health work, food security also needs to be addressed as a province-wide initiative.

8.3 Disease, Injury, and Disability Prevention Core Programs

There are many categories of diseases, injuries, and disabilities that contribute to poor health and premature death in British Columbia. A comprehensive set of disease, disability, and injury prevention core programs needs to address those conditions that contribute most to the current burden of disease, or that might make a significant contribution if left unchecked.

This set of important current and potential diseases and conditions calls for core programs in chronic disease prevention; unintentional injury prevention; prevention of violence, abuse, and neglect; prevention of mental disorders and problematic substance use; communicable disease prevention and control; dental health and the prevention of dental disease; prevention of disability; and the prevention of the adverse health effects of the health care system.

8.3.1 Chronic Disease Prevention

The major contributors to the burden of ill health and premature death, and the associated economic costs (both direct health care costs and lost productivity), are chronic non-communicable diseases.¹⁵ Of particular concern is a cluster of chronic diseases (cardiovascular disease, some of the principal forms of cancer, chronic respiratory disease, and diabetes) that

¹⁵ Some chronic communicable diseases (e.g. HIV, hepatitis C, tuberculosis) also contribute significantly to the burden of disease. They are addressed later as part of control of communicable diseases.

have in common a small number of behavioural risk factors that make a significant contribution to these diseases (smoking, physical inactivity, and poor eating habits). This cluster of diseases accounts for almost half of the burden of disease and almost a quarter of the economic burden of illness in BC (see Table 3, which also indicates gender differences in the burden of some of these chronic diseases, and Table 4). The common behavioural risk factors account for roughly one-quarter of the burden of disease in BC, and were addressed earlier in the category of “Healthy Living”.

It is important, however, to recognize that a variety of other factors—including the social, economic, and cultural conditions that shape and constrain behaviours; stressful psychosocial conditions in our homes, especially as they affect women, schools, work places, and communities; environmental conditions; some infections; psychological status; biological risk factors; and genetic predisposition—account for the remaining three-quarters of the burden of disease.¹⁶ Therefore, an integrated chronic disease prevention program has to address not only the behavioural risk factors, but also the broader determinants of health that shape and constrain those behaviours. This requires a combination of health promotion, health protection, and preventive services strategies.

A comprehensive framework for chronic disease prevention has recently been adopted by Population Health and Wellness, Ministry of Health Services. This framework shows both the range of factors that contribute to chronic disease and the mix of strategies needed to address them, and is being used as the basis for strategic planning for chronic disease prevention (Ministry of Health Planning, 2003a). In addition to this framework, a major review of the evidence for effective preventive interventions in chronic disease prevention has been completed, based on the framework (Ministry of Health Planning, 2003b).

Most authorities in chronic disease prevention support this comprehensive approach, including the Federal/Provincial/Territorial Advisory Committee on Population Health and the Chronic Disease Prevention Alliance of Canada. The BC Healthy Living Alliance has also been established. It is a coalition of several leading voluntary health organizations, health professional associations, the Provincial Health Officer, and other key stakeholders such as the Union of British Columbia Municipalities and the BC Recreation and Parks Association.

There are also many effective strategies for prevention of chronic disease that focus more narrowly on specific diseases. A comprehensive approach to chronic disease prevention needs to include both broad-based, integrated programs and more narrowly focused preventive medicine programs, based on the available evidence as to what is effective. For example, while there are no known effective preventive interventions for type 2 diabetes, other than the general strategies of healthy eating and physical activity already described, there are specific interventions, in addition to general health improvement approaches, for a number of different chronic diseases. For example:

- some cases of lung cancer can be prevented by reducing radon exposure, especially in occupational settings;

¹⁶ See the Chronic Disease Prevention Framework, adopted by Population Health and Wellness in 2003, for a model that incorporates all these determinants. The Framework can be found at http://www.healthservices.gov.bc.ca/prevent/preventing_cd.html

- control of high blood pressure is an effective intervention for preventing cardiovascular and renal disease;
- the Pap test and, probably in the next few years, HPV vaccines, are specific for the early detection and prevention respectively of cervical cancer; and
- prevention of exposure to animal danders, environmental tobacco smoke, and other risk factors may be important in preventing asthma.

There are also other categories of chronic diseases that make a significant contribution to the burden of disease in BC and that merit attention. Three of these important contributors—musculo-skeletal diseases, neurological and sensory disorders, and digestive disorders—present interesting challenges for chronic disease prevention. While they account for 15.3 per cent of the burden of disease in BC and 20.9 per cent of the burden of illness in Canada, specific prevention measures are often not readily available. Nonetheless, their significant contribution to the burden of disease shows that we need to pay attention to them as part of an overall chronic disease prevention initiative.

8.3.2 Unintentional Injury Prevention

The third most important category of health problems in terms of the burden of disease—after cancer and cardiovascular disease—is injury. Injury accounts for 12 per cent of the burden of disease and 9 per cent of the economic burden of illness in BC. Injuries include both unintentional injury and intentional injury resulting from violence and abuse. Nine per cent of the burden of disease (11.8 per cent in males and 5.8 per cent in females) is due to unintentional injuries, while three per cent (4.6 per cent in males, 1.65 per cent in females) is due to intentional injuries.

Unintentional injury is the leading cause of death in BC in the age groups 1–14, 15–24 and 25–44 (British Columbia Injury Research and Prevention Unit, 2004). The prevention of unintentional injuries (falls in children and the elderly, motor vehicle crashes, poisoning, drowning, occupational injuries, recreation and sports-related injuries, etc.) and the resultant disability requires a combination of health protection and health promotion strategies. Health protection strategies reduce or eliminate environmental hazards and create safer environments through a combination of engineering and enforcement. Examples include improving the safety of stairs, improving vehicle safety and requiring seat belt use, eliminating hazardous working conditions, fencing in swimming pools, etc. Health promotion strategies seek to reduce risk behaviours, (such as drinking and driving, aggressive and high-speed driving, diving into shallow water, etc.) and the social conditions that cue such behaviours.

A key public health role is to catalyze and support community-based coalitions for injury prevention, involving a wide range of community partners, while at the same time being effective advocates for health protection measures at the municipal, provincial, and national levels.

8.3.3 Prevention of Violence, Abuse and Neglect

Injuries that result from abuse and violence are largely intentional,¹⁷ compounded by risk environments (especially income disparity, poverty, and oppression), and risk behaviours, as well as mental disorders, problematic substance use, incarceration, witnessing acts of violence (especially in childhood), and media violence (Christoffel and Gallagher, 1999). The prevention of injuries resulting from violence and abuse, and the resultant disability, has less to do with health protection strategies that modify the physical environment (although activities such as improving street design and lighting can help deter crime), and more to do with health promotion strategies that address the root causes of violence and abuse in families (where women and children are the principal victims), in schools (bullying, etc.), in workplaces, and in communities. It overlaps with mental health promotion.

Possible public health interventions include recognizing the warning signs of actual or potential violence in families, schools, and workplaces through screening and early detection, programs to help individuals and families with anger management and conflict resolution, anti-bullying and conflict resolution programs in schools and workplaces, and helping at-risk individuals to leave potentially dangerous environments. Public health could also be involved in the development of community coalitions against violence, racism, and hatred of all sorts.

8.3.4 Prevention of Mental Disorders and Problematic Substance Use

Mental disorders, which account for 11 per cent of the burden of disease in BC, are the fourth most important category of health problem in terms of the burden of disease; they account for 5.3 per cent of the economic burden of illness in BC, which ranks them seventh. A recent Ministry of Health Services report (2002a) estimated that in 1999/2000, 656,000 British Columbians (18.5 per cent of the population) experienced a mental disorder (including problematic substance use disorders), with some 300,000 (8.5 per cent) seeing a physician for problems related to anxiety or depression (Ministry of Health Services [MOHS], 2002b). Among children and youth, it is estimated that 15 per cent in any given year experience mental disorders that cause significant distress and impaired functioning (Waddell and Shepherd, 2002).

While we know less about the specific factors that contribute to mental disorders in general, we do have a growing understanding of both the risk factors and conditions, and the protective factors and conditions, which apply to them. Measures to prevent anxiety and depression—the commonest forms of mental disorder—are closely related to measures to promote overall mental health and to create healthy living and working conditions, including strengthening social support and reducing isolation and loneliness. Specific measures to prevent conditions such as schizophrenia and other psychotic conditions, however, are less apparent.

Suicide, which is the largest cause of death from injury in BC among those aged 25–34 and 45–74 (and the second highest cause of death from injury in the 0 – 24 and 35 – 55 age groups), is the most dramatic consequence of depression and other mental disorders. Suicide prevention requires recognition of risk factors (in particular suicide attempts) and risk situations, including postpartum depression.

¹⁷ While self-inflicted violence (suicide and suicide attempts) is a form of intentional violence, it is addressed later as an aspect of mental disorders.

One important aspect of prevention of mental disorders is the prevention of problematic substance use¹⁸, including addiction to alcohol, some prescription drugs and over-the-counter (OTC) medications, and illicit substances.¹⁹ The largest problematic substance use problems stem from tobacco and alcohol use, followed by prescription and illicit drug use. It has been estimated that in 1992, the total cost of problematic substance use in BC (which included tobacco use) was \$2.3 billion. Of this, \$939 million (42 per cent) was attributable to alcohol use and \$208 million (9 per cent) was due to illicit drugs (MOHS, 2004a).

The experience with moderating the use of alcohol is similar to that of tobacco control, although the message is somewhat different, since there are cardiovascular health benefits to a moderate intake of alcohol. The message is not as absolute as it is with tobacco use, where the goal is no use. Nonetheless, moderating alcohol use requires the same combination of enforcement and persuasion strategies, including strategies to protect non-users (e.g. a range of different strategies to dissuade people from drinking and driving so as to protect people from drunk drivers). In addition, avoiding environmental conditions that encourage excessive consumption (such as ‘happy hours’, or unlimited alcohol in vacation packages, etc.) is an important issue. The strategies also have to apply at all levels from the international to the individual. In addition, community coalitions and social marketing play an important role in changing the societal norm with respect to alcohol use, just as they do with tobacco.

As with other aspects of prevention of mental disorders, there is an important contribution here from mental health promotion, which might be said to create a generalized resistance to a propensity for addiction. Specific addictions prevention programs are also needed as well. As has been the case with reduction of tobacco use, such programs require a comprehensive, long-term community-based approach, facilitated by supportive provincial policies.

8.3.5 Communicable Disease Prevention and Control

Public health in the 19th and early 20th century focused on the most common causes of death and disease, namely communicable disease. This approach was so successful that today, communicable diseases represent only a small proportion of the burden of disease, although the emergence of HIV/AIDS, the re-emergence of tuberculosis, and the importation of exotic diseases such as West Nile Virus, SARS, and dengue fever means that the prevention and control of communicable disease remains an important public health priority.

Key areas of concern include some that are covered in the area of environmental health core programs (the prevention of water and foodborne communicable diseases and the control of disease vectors), while the prevention of hospital-acquired infection—or, more generally, infections acquired in care facilities of all sorts—are considered elsewhere. Other areas of priority concern include:

¹⁸ The reverse is true as well; one important aspect of prevention of problematic substance use is prevention of mental disorders.

¹⁹ Problem substance use is “not related to the legal status of the substance used, but to the amount used, the pattern of use, and the context in which it is used and, ultimately, the potential for harm.” (Ministry of Health Services, 2004a)

- Prevention of vaccine-preventable communicable diseases, through the continued provision and administration of vaccines to infants and children, to those 65 years and over, those with certain medical conditions, and health and emergency responders..²⁰
- Prevention of sexually transmitted and blood-borne communicable diseases, including HIV/AIDS, chlamydia, gonorrhea, syphilis, and viral hepatitis B and C.
- Prevention and control of tuberculosis, especially the multiple resistant strains.
- Prevention and control of travel-related, imported, and exotic diseases, including rare but potentially serious conditions such as Lassa fever or Ebola virus.
- Control of outbreaks of communicable disease, including influenza.

Of these diseases, BC has the highest rate of HIV/AIDS and hepatitis B and C in Canada, and a rate of tuberculosis higher than the national average.

In all cases, prevention of communicable disease requires an effective system of surveillance and measures to control outbreaks or epidemics. Depending on the risk posed, the latter may involve the use of the considerable powers granted under the *Health Act*, powers that must be retained in the new *Public Health Act*.

Finally, public health must now be prepared to deal with the possibility of bio-terrorist threats, many of which involve the potential use of communicable disease agents.

8.3.6 Dental Health and the Prevention of Dental Disease

The burden of dental disease in BC is significant, both in terms of its prevalence and its economic cost to society. The US Centers for Disease Control and Prevention (1999) identified fluoridation of water as one of the ten greatest achievements of public health in the 20th century. Together with other preventive dental hygiene measures, it has resulted in a dramatic decline in both the frequency and severity of dental caries in Canada over the past few decades.

British Columbia has the lowest level of water fluoridation in Canada. It is therefore important to maintain current efforts to improve oral health and prevent dental disease, particularly those efforts directed at parents of infants and young children (in effect, children are not responsible for getting decay; it results from parental knowledge and habits). This includes preventing nursing bottle syndrome, continuing to encourage the use of fluoridated dental toothpaste, as well as other preventive dental hygiene programs that can help to ensure that this once-common disease is controlled and the burden of this disease is further reduced. In addition, the growing burden of dental disease among the population of seniors who retain their teeth, and the special oral health needs of people with disabilities, are areas of growing importance.

²⁰ BC currently provides immunization for children against diphtheria, pertussis, tetanus, polio, measles, mumps, rubella, hepatitis B, *haemophilus influenzae* type B, chickenpox, and meningococcal and pneumococcal disease. Immunization against influenza is provided to people at high-risk of complications from influenza disease, such as adults and children with chronic illness, people who are residents of nursing homes, people 65 years of age and over, and healthy children aged 6 to 23 months; people capable of transmitting influenza to those individuals at high-risk of complications such as healthcare workers, household contacts of children age 0 to 23 months of age, and pregnant women in their third trimester; and people who provide essential community services that bring them into frequent and close contact with people at risk, such as first responders (police, fire fighters, and ambulance and corrections officers).

8.3.7 *Prevention of Disability*

There are several distinct forms of disability that need to be addressed, and they may be either inherited or acquired. Each form of disability needs a somewhat different prevention strategy. For example, preconception rubella immunization can prevent a range of neurological and other problems in the child; some forms of genetically determined physical, mental, or developmental disabilities may be prevented through preconception counselling, while *in utero* diagnosis may present opportunities for early postpartum intervention or the option of termination of pregnancy; spina bifida may be prevented through maternal nutritional supplementation; cerebral palsy may be prevented through high quality care both prenatally and during birth; and fetal alcohol spectrum disorder may be prevented by avoiding or reducing alcohol consumption during pregnancy.

Other forms of developmental disability may be prevented through programs for healthy infant and child development, including the detection and treatment of iron deficiency anemia in infancy and the prevention or early detection of hearing problems or speech-language pathology that, uncorrected, can result in developmental and mental health problems in later years. Some forms of mental disability may be prevented through mental health promotion in homes, schools, and workplaces. A wide range of physical disabilities may be prevented through injury prevention, while neuro-sensory disability such as loss of sight or hearing can be prevented through a range of protective interventions in homes, schools, workplaces, recreational settings, and the community.

8.3.8 *Prevention of the Adverse Health Effects of the Health Care System*

The harm done inadvertently by the health care system is not negligible; the issue of medical error has recently received much attention in the United States²¹, the United Kingdom, and Australia, and is attracting growing attention in Canada.²² A recently published report on adverse events²³ in Canada's health care system (Baker et al., 2004) estimated that:

...in 2000, between 141 250 and 232 250 of 2.5 million similar admissions to acute care hospitals in Canada were associated with an AE and that 9250 to 23 750 deaths from AEs could have been prevented. (p. 1684)²⁴

This would make such adverse events among the most important causes of death in Canada, comparable to deaths from such important conditions as stroke, chronic obstructive pulmonary disease, unintentional injury, pneumonia, or influenza. As Davis (2004) notes in an accompanying editorial, this is a public health issue with "clear opportunities for prevention." (p. 1689)

²¹ "The Institute of Medicine reports that preventable adverse patient events, including hospital-acquired infections, are responsible for 44,000-98,000 deaths annually at a cost of \$17-\$29 billion." (Monitoring Hospital-Acquired Infections, 2000).

²² See for example http://www.bcma.org/public/bc_medical_journal/BCMj/2002/july_august_2002/Library.asp

²³ "an unintended injury or complication that results in disability at the time of discharge, death or prolonged hospital stay and that is caused by health care management rather than by the patient's underlying disease process" (Baker et al., 2004, p. 1679).

²⁴ The methodology used in the US and the Canadian reports has been criticized as significantly over-representing the burden (Birnbaum & Scheckler, 2002), and Woolf (2004) cites estimates that "perhaps fewer than 5% [of these deaths] are causally linked to errors" (p. 34).

On the other hand, Woolf (2004) argues that ‘lapses in safety’ (mistakes in the provision of care) and ‘medical error’ (failing to protect people and to prevent them requiring care by, for example, providing immunization or screening, or controlling hypertension) are both subsets of ‘lapses in quality’ that arise from “flaws in the design and operating procedures of systems and organizations” (e.g. failing to provide access to care or reminders for overdue services) and ‘lapses in care’, which go beyond a “failure to meet normative benchmarks for quality” to include the more subjective (but nonetheless important) sense on the part of patients that they are not cared for (p. 34). Woolf argues that far more people are harmed as a result of inadequate prevention, screening, and treatment (lapses in quality) than are harmed by lapses in safety or medical error, and that consequently priority should be given to addressing lapses in quality.

In addition, there is considerable evidence that there are inappropriate and unnecessary levels of medical intervention, ranging from inappropriate investigation and diagnostic procedures, through inappropriate medication, to inappropriate surgery (see Appendix 10). There is also evidence that women are more likely to receive inappropriate treatment (over-medicated and over-treated in some cases, under-medicated and under-treated in others), and that some women may feel traumatized by their interactions with health care providers and the health care system.

Since all interventions involve some degree of risk, preventing inappropriate intervention from occurring, or preventing medical error, is a form of primary prevention. As the part of the health care system that has prevention of death, disease, injury, and disability as its primary focus, public health extends from the conventional role of infection control to the broader role of using epidemiological skills and population health knowledge to secure the greatest health benefits with limited resources. Its role may involve:

- working to control infections in hospitals and other institutional settings and to reduce practices that may result in the further development of multiple resistant microorganisms;
- public health practitioners assisting their clinical colleagues and the health authority through the application of their preventive and epidemiological skills, to ensure the provision of quality care, including the provision of effective prevention services; and
- as part of its environmental health role, the public health function includes working to reduce the environmental impact of the health care system, which is significant, particularly with respect to energy use (Hancock, 2001). Both the Interior and Northern health authorities have recently created system-wide initiatives to begin to address this issue.

8.4 Environmental Health Core Programs

Every day we have to eat, drink, and breathe. Continuing to assure and improve the safety and sustainability of our food, water, air, and soil is of paramount importance for the prevention of a wide range of communicable and non-communicable diseases, and the promotion of health and well-being. Since we spend 90 per cent of our time indoors, and we are 80 per cent urbanized, the built environment is by far the most significant human environment. Our health is affected by the quality of our built environments—from safe stairs to safe streets, from indoor air quality to urban smog, from damp housing to polluted neighbourhoods.

Given the particular vulnerability of the fetus, infants, and young children to environmental contaminants, special attention needs to be paid to the quality of the food, water, air, and soil to

which they are exposed. At the global level, changes such as climate change, depletion of the ozone layer, ecotoxicity (contamination of the food chain with persistent organic pollutants and heavy metals), depletion of key resources (fisheries, forests, freshwater, farmlands, soils, and fuels), the loss of habitat and biodiversity, and the mass extinction of species, also pose significant threats to the long-term health and well-being of different populations, and are thus issues of public health significance.

Environmental Health Core Programs seek to avert these threats to health, and include water quality, air quality, safe food, and community sanitation and environmental health.

8.4.1 Water Quality

On a global scale, water-borne infectious diseases remain one of the great scourges of humanity. While much less common in Canada, water-borne disease remains a potentially serious problem that can only be kept at bay by a high degree of vigilance over the quality of drinking water, as evidenced by the incident in Walkerton, Ontario. The recent amendments to the *Drinking Water Protection Act*, as well as the Drinking Water Action Plan, will help to ensure that outbreaks of water-borne diseases are prevented in BC. Public health will continue to play a central role in ensuring the safety and health of drinking and recreational water in BC.

Of particular concern is drinking water quality in Aboriginal communities, where “some Indian reserves have inadequate drinking water systems”, although “there are also examples where water treatment on-reserve is ‘state of the art’” (Provincial Health Officer, 2002).

In addition to drinking water, recreational water (swimming pools and similar artificial settings, as well as public beaches) needs to be monitored and managed so as to protect the public’s health.

In addition to microbial contamination, vigilance is also required to reduce or eliminate chemical contaminants (heavy metals, persistent organic pollutants, nitrates, disinfection by-products, etc.) and radiological contaminants that can threaten the water supply.

8.4.2 Air Quality

Since Canadians spend 90 per cent of their time indoors, indoor air quality is a significant public health concern. One key issue is second-hand (environmental) tobacco smoke, for which there is clear evidence that the health of non-smokers is threatened. Other indoor air quality issues that need to be monitored include moulds, combustion by-products, volatile organic compounds, dusts, radon gas, and other contaminants, particularly in public settings such as schools, arenas, and care facilities.

Outdoor air pollution, particularly particulate matter, ground level ozone, and acid emissions, have been shown to be related to a variety of significant health problems including asthma, other chronic respiratory diseases, cardiovascular disease, and lung cancer. The health effects of these pollutants remain an important public health concern.

In both cases, public health needs to play an important role in ensuring that the health implications of air quality are addressed by architects, planners, builders, developers, local

governments, and others, and in identifying and addressing health problems related to poor air quality.

8.4.3 *Safe Food*

Food safety has long been a public health priority, and today it has to be understood within the broader context of food security. Although Canada's food supply is generally safe compared to many other parts of the world, food-borne disease continues to be the cause of a significant, though under-reported, burden of disease. Outbreaks caused by salmonella, toxigenic *E. coli*, and other microbial contaminants continue to occur, as well as other food-borne disease such as bovine spongiform encephalopathy. The inspection of food premises, from production through to sale, continues to be an important public health priority, as evidenced by the passage of a new *Food Safety Act*.

While much of the focus has been and continues to be on microbial contaminants, chemical contamination of the food supply is also a matter of concern. Depending on the chemical, between 70 and 100 per cent of the dose of persistent organic pollutants that people receive comes through their food (Davies, 1990). Food safety also involves protecting people from these chemical contaminants.

8.4.4 *Community Sanitation and Environmental Health*

A wide variety of environmental problems—chemical, microbiological, radiological, and others—in the community have the potential to result in health problems. The widespread contamination of our environment and our food chains with toxic substances such as persistent organic pollutants and heavy metals has been a cause of concern for decades, as has contamination with radiation. Although levels of some of these contaminants have been declining as a result of environmental and public health protection measures, we have a greater understanding of the potential impact of low levels of multiple contaminants on human health, particularly for infants and young children. Continuing to reduce exposure to toxic contaminants remains an important concern for public health.

Maintaining a vigilant eye on the community's environmental health and acting to prevent, control, or remove such threats to health remains an important task of public health, often in collaboration with local governments and provincial or federal environmental authorities. Of particular concern are:

- ensuring that both solid and liquid (sewage) waste is properly managed and does not present a threat to human health;
- controlling disease vectors such as mosquitoes, flies, rats, and other animals that may carry or transmit infectious diseases to humans;
- identifying actual or potential public exposure to chemicals or radiation that presents a threat to human health, and preventing, reducing, or eliminating such threats;
- responding to complaints, assessing whether they represent a health hazard, and responding appropriately; and

- providing input on land-use and environmental planning so that potential environmental and social threats to human health are prevented, and that community planning and design contribute to the creation of healthy communities.

8.5 Health Emergency Management Core Programs

Public health can be threatened by all manner of natural and human-generated emergencies, from explosions, fires, and industrial accidents involving hazardous materials, to storms and earthquakes. As well, there is the potential for terrorist acts to occur, which could involve highly toxic or infectious agents. Public health plays an important role in the process of comprehensive health emergency management, while the powers granted to medical health officers are important in managing the consequences of community emergencies.

In discussing disaster, vulnerability, and mitigation from a population health perspective, Lindsay (2003) suggests that “through health promotion, health protection and personal health services, it is possible that [prevention] may successfully prevent negative health impacts” of disasters, thus situating health emergency management squarely within the Core Public Health Function Framework (Figure 3) as a program that employs the full range of public health strategies.

Health Emergency Management Core Programs include prevention and mitigation; preparedness; and response and recovery.

8.5.1 Prevention and Mitigation

The first stage of health emergency management is prevention and mitigation. The prevention of a disaster ever happening (primary prevention) is the ideal, but failing that, mitigation (reducing ahead of time the health impact of the event) is still a form of prevention and thus a public health function. Primary prevention of disasters involves the environmental health functions of ensuring high air and water quality and safe food; identifying potential environmental health threats and working to reduce or eliminate them; and providing input and advice to land-use and environmental planning. Also important is public health’s role in drawing attention to larger scale and less specific threats to health such as climate change or resource depletion. Preventing their occurrence, if it can be achieved, is primary prevention.

If primary prevention is not possible, the second level of disaster prevention is mitigation. In terms of the public health function of a health authority, this has two aspects: mitigation of the impacts of a disaster on the health of the public, and mitigation of the impact on the health care infrastructure (Lindsay, 2003).

In the first case, the task of public health is to participate in the identification of populations at risk and work to reduce their risk. If climate change is going to happen, or an earthquake, volcanic eruption, flood, or fire is probable at some time in the future, steps need to be taken to reduce the likely extent and severity of the event’s impact on the public. This may involve either taking steps to reduce the number of people at risk (e.g. by moving people away from vulnerable areas such as low-lying land or land susceptible to earthquake damage) or putting in place protective measures (e.g. sea walls, lava berms, strengthening buildings against earthquakes) to reduce the harm to health if an emergency or disaster does arise. It also includes structural

improvement of vital public health infrastructure such as water supply or sewage treatment systems so that, in the event of a disaster, there would be less likelihood of damage, which would reduce the likelihood of infectious disease outbreaks.

The second aspect of mitigation is concerned with the health care system itself. Public health needs to be part of the health care system's health emergency management program, helping to ensure the system is prepared to respond effectively to disasters of all kinds. Mitigation overlaps with the second stage of health emergency management, namely emergency preparedness.

8.5.2 *Preparedness*

An important way to limit the harm resulting from a disaster is to have prepared for it and to have in place a rehearsed disaster plan for all the most likely events that may affect the community. This planning needs to encompass the community as a whole, and not just the health sector. While health authorities need to plan for the continued provision of emergency services, evacuation of facilities, response to epidemics and other issues, the public health sector also needs to plan for its role in preventing or controlling communicable disease outbreaks (which may constitute emergencies in themselves, or may be secondary to other disasters), as well as its role in monitoring food, water, air, land, and buildings for health hazards during and after the disaster. Plans for continuity of service, including the provision of safe water and food in the event of an emergency, are key, and are an obvious area in which public health plays an important role.

8.5.3 *Response and Recovery*

The third stage of health emergency management is the response to an emergency, and this will likely include a range of public health staff, depending on the nature of the emergency. As was seen in the SARS outbreak in Toronto in 2003, an emergency—particularly an infectious disease emergency—can quickly overwhelm public health capacity even in the largest city in the country. Planning and preparation, including the effective management of “system surge” at the provincial and national levels is important.

In the final stage of health emergency management, recovery from the disaster, public health will continue to play an important role in any cleanup and in monitoring and certifying the safety of the water supply, food supply, and other key infrastructure elements as they are restored.

Interestingly, Lindsay (2003) suggests that the broad strategy of population health improvement can also contribute to the ability of a community to cope with and respond to a disaster, by increasing personal coping skills and strengthening social support networks; this community resilience can also be important in the post-disaster recovery phase. It appears that this discussion of core programs has come full circle; effective health emergency management depends to a significant degree on overall population health improvement and the creation of safe and healthy communities.

9.0 Public Health Strategies

Public health core programs use four complementary strategies that are particularly identified with the public health approach. These four strategies of health promotion, health protection, preventive interventions, and health assessment and disease surveillance overlap with each other, and rest on the capacity of the public health system.

9.1 Health Promotion Strategies

Health promotion, defined as “the process of enabling people to increase control over and improve their health” (World Health Organization [WHO], 1986), creates living and working conditions that enable people to make healthy life choices, and then supports them in that choice. The focus should be on groups or communities, rather than on individuals, and on changing the social norms that ultimately shape behaviour. This is accomplished through a set of health promotion strategies focused on communities, groups and individuals. Based on the Ottawa Charter for Health Promotion (WHO, 1986), these strategies are:

Health Promotion Strategies – range from health advocacy for change in public policy or private sector practices, to partnership building and coalition development, to education that helps people develop personal skills for health.

- developing public policies (and private sector policies) beyond the health care sector that will improve health (e.g. a healthy energy policy, or a healthy food policy);
- creating physical and social environments supportive of health;
- strengthening communities’ capacities to address health issues of importance to them, and to mutually support their members in improving their health;
- helping people to develop the skills they need to make healthy life choices, and to care for themselves and their families’ minor or chronic ailments; and
- where necessary, re-orienting health services to support health promotion, health protection, and the prevention of disease, disability, and injury.

9.2 Health Protection Strategies

Health protection protects people from involuntary risk posed by both natural and human-created hazards that are an actual or potential threat to their health. It does so through government legislation, regulations, taxes, inspections, sanctions, and, if need be, punishing those who put the health of their fellow citizens at risk. Again, the focus tends to be both population-wide and focused on protecting identified, vulnerable populations that are at high-risk.

Health Protection Strategies – protect people through legislation, regulation, inspection and, if necessary, enforcement and prosecution.

9.3 Preventive Intervention Strategies

Preventive interventions comprise a set of primarily clinical interventions that have been shown to reduce significantly the likelihood that a disease or injury will affect an individual, or to interrupt or slow the progression of that disease.²⁵ While preventive interventions include the full range from primordial to quaternary prevention, the public health function is mainly concerned with primordial, primary, and early secondary prevention.

Preventive interventions tend to be provided mainly to individuals or families (although sometimes in group settings), particularly high-risk individuals, and are provided by both public health staff and primary care practitioners. In addition to primordial prevention activities that address the determinants of health, preventive interventions include:

- primary prevention, such as family planning; prenatal care and education (e.g. nutrition counselling, breastfeeding promotion); immunization against vaccine-preventable diseases (may soon include some forms of cancer); counselling and behavioural modification such as smoking cessation or healthy eating; prophylactic administration of antibiotics to prevent meningitis; and treatment of precursor conditions (e.g. control of hypertension, which is a primary prevention of stroke, myocardial infarction, and renal disease); and
- early secondary prevention (screening and early detection of disease), such as breast-screening and Pap tests for women; colon cancer screening; screening newborns for phenylketonuria or sickle cell anemia; hearing screening in infants and young children; and preconception or prenatal screening of high-risk groups for genetic and congenital disorders, syphilis, etc.

Preventive Intervention Strategies – include immunization, counselling, screening and early detection, and prophylactic (or in some cases preventive) treatments.

9.4 Health Assessment and Disease Surveillance Strategies

Health Assessment and Disease Surveillance needs to be carried out for all core programs. This involves:

- monitoring and reporting on population health status, and changes in that status, particularly with respect to core programs; and
- detecting disease clusters and outbreaks (both communicable and non-communicable) through community-based, hospital-based, and clinical epidemiology, and laboratory surveillance networks (microbiological, genetic, metabolic, and toxicologic).

Health Assessment and Disease Surveillance Strategies – critical for monitoring population health status, detecting and responding to outbreaks of disease or other health-related issues, and assessing the effectiveness of public health programs and services.

According to the US Centers for Disease Control and Prevention, the essential capabilities that underlie public health's ability to carry out its essential functions are surveillance, laboratory practice, and epidemic investigation. Health surveillance and disease assessment is applied

²⁵ Based on Table 1, KPMG, June 2001

across the entire range of core public health programs, and is of such fundamental importance to public health that although in this framework it is a “strategy”, it merits treatment equivalent to that of a program, including the development of performance expectations.

Surveillance is “the ongoing systematic collection, analysis and interpretation of health data that are essential to the planning, implementation and evaluation of public health practice”. (Federal/Provincial/Territorial Surveillance Integration Design Team, 1998). Surveillance also requires that the information collected be disseminated in a timely fashion to those who need it. Each health authority needs to have the capacity to assess and report on the determinants and status of the health of its population, and to anticipate, detect, and monitor outbreaks, clusters, or unusual occurrences of communicable and other diseases or conditions of significance to public health.

The components of this capacity include population health research and reporting, including the routine collection of data on population health status and population health determinants; clinical epidemiology; field-level surveillance systems; and health laboratory networks.

9.4.1 Population Health Research and Reporting

Population health improvement, the prevention of disease, disability, and injury, and environmental health protection, require a thorough understanding of the population health status of the region and its communities and the current and emerging challenges to population health, and require a plan to address these population health issues. At the provincial level, this is done mainly by the Provincial Health Officer, through annual reports on the health of British Columbians, and by the Population Health and Wellness Division of the Ministry of Health Services. Health authorities may want to consider a similar process to provide accountability to their community.

Health authorities may also want to consider reporting to their Board and community on the health of the region (it is recognized that some health authorities do). This may include the identification and prioritization of current and emerging challenges to population health, including inequalities in health; an analysis of the principal factors contributing to threats to population health, including factors contributing to inequalities in health; and a plan to improve population health, reduce disparities, and address challenges to health identified in the regional population health report.

9.4.2 Clinical Epidemiology

Consistent with earlier discussions about the importance of clinical prevention and the prevention of adverse health effects of the health care system as an essential component of quality management in health care, and the fact that these are aspects of the public health function, health authorities require a clinical epidemiology capacity to provide monitoring of the quality of care, to detect problems, and to assist in the development of solutions.

9.4.3 Field-Level Surveillance Systems

The first line of detection of new or emerging threats to health is often the health care provider, which includes public health staff, primary care providers, emergency rooms, and other key nodes. The requirements under the *Health Act* to report notifiable diseases to public health officials are a key part of this process. Health care providers also need to pay attention to new or emerging diseases (such as SARS), even when they are not designated as reportable, as well as to other potential threats to public health, including environmental health problems. In order to be successful, it may be beneficial to educate health care providers on their important role and support them with tools so they may rapidly identify reportable diseases and other public health threats.

9.4.4 Health Laboratory Networks

From a public health core functions perspective, the key roles played by laboratories in health assessment and surveillance include:

- detection of positive results (microbial, biochemical, toxicological, histological, or other) that indicate there is or may be an outbreak, cluster, or unusual occurrence of communicable and other diseases or conditions of significance to public health;
- maintenance of an effective communications and knowledge transfer network with other health laboratories (Tier 1, Tier 2, or reference and public health laboratories, and public health laboratories in other provinces or countries) where appropriate, to facilitate the anticipation, detection, and monitoring of outbreaks, clusters, or unusual occurrences of communicable and other diseases or conditions of significance to public health;
- timely communication of positive results of significance to public health (including but not limited to those required by law) to the appropriate public health authorities (local and/or provincial); and
- collaboration with public health authorities in the ongoing investigation, monitoring, and control of the incident, consistent with the *Health Act* and other legislation.

10.0 Public Health Capacity

If public health is to perform core public health functions at a level sufficient to deliver the “preventive dose”, it needs the capacity to do so.

The concept of an adequate dose and a suitable course of treatment is well understood in clinical medicine. This could involve a short but intense course of treatment, or lifelong medication. In all cases, the dose must be sufficient. In recent years this concept has also been applied to health promotion and disease prevention. The same principles apply: the intervention must be the correct one, the dose must be high enough, and the duration of the intervention long enough to have an effect.

As a recent report on the preventive dose in heart health noted: “with a few exceptions (e.g. immunization programs), the amount of sustained prevention delivered to citizens and communities is limited” (Ad Hoc Working Group, 2001, p. 10). This same report also noted that the concept of the “preventive dose” requires a level of policy and program activity necessary to achieve specific health outcomes, which in turn “depends completely on the existence of capacity (scientific, financial, programmatic etc.) and the application of political will” (Singapore Declaration on Heart Health, 1998, as cited in Ad Hoc Working Group, 2001, p. iv).

To ensure an effective public health system, capacity should be maintained and strengthened through investments at both the provincial level and by health authorities in the following areas:

- A public health information system to:
 - undertake population health assessment and disease surveillance; and
 - provide information for monitoring and quality management of public health programs and services.
- Public health human resource development to ensure that all public health staff have the necessary core competencies (see Appendix 11) to carry out core public health services. This requires programs to prepare public health professionals, to continue to educate and train staff, and to recruit and retain staff.
- Research and evaluation to support public health innovation and evaluate the effectiveness of public health programs. Such evaluation contributes to quality management.
- The skills and capacity to undertake policy analysis and development, and to propose, advocate for, and implement, policies in the health sector and beyond that will improve population health.
- Program planning and management capabilities.
- Quality management for public health, including monitoring and performance assessment.

These capacities should be maintained and strengthened not only at the regional health authority level, but at the provincial level, both at the Ministry of Health Services and at the Provincial Health Services Authority, and in particular at the BC Centre for Disease Control.

11.0 The Lenses

11.1 The Inequalities “Lens” – Reducing Inequalities in Health

Inequalities in health status are widespread. It is worth pointing out the extent to which inequalities in health exist in BC, as documented by the Annual Report of the Provincial Health Officer (2003a):

- Life expectancy (1997-2001) ranged from a low of 77.7 years in the Northwest to 81.8 years in Richmond, a difference of 4.1 years.
- In those same regions, female life expectancy ranges from 80.2 years to 84.1 years and male life expectancy ranged from 75.4 years to 79.2 years, indicating the relative disadvantage experienced by males with respect to this important health status measure.
- Conversely, BC’s recently released tobacco control strategy noted that “women may be especially vulnerable to some smoking-related diseases . . . being female doubles the risk of lung cancer in smokers”, while within the next decade more women than men in Canada are expected to die from chronic obstructive pulmonary disease, reversing the current pattern (MOHS, 2004b).
- Infant mortality (1998-2002) ranged from 2.3 per 1,000 live births in East Kootenay to 5.9 per 1,000 in North Vancouver Island.
- The proportion of BC adults surveyed in 2000/01 who:
 - responded “no” when asked if they were usually free of pain or discomfort (e.g. indicating they usually experience pain or discomfort) ranged from a low of 12 per cent in South Fraser to a high of 22.3 per cent in East Kootenay;
 - reported having a disability ranged from 15.8 per cent in Richmond to 32.9 per cent in the Okanagan;
 - self-rated their health as “excellent” ranged from a high of 32 per cent in North Shore/Coast Garibaldi to a low of 20.6 per cent in the Northern Interior.

There is still room for improvement. However, for the most part (except for those that have a biological cause) these inequalities have their roots in the social, economic, cultural, and environmental determinants of population health. These determinants do not fall within the mandate or jurisdiction of the public health sector, and therefore are not directly amenable to public health interventions. At the same time public health has a duty, as one of its fundamental tasks, to work to reduce inequalities in health. This can be accomplished in several ways:

- by documenting inequalities, reporting on them so as to draw public attention to them, and analyzing the factors that contribute to these inequalities;
- by working with communities to change the conditions that contribute to inequalities in health in their community; and
- by advocating for healthier public policies and changes in social, economic, cultural, and environmental conditions that will reduce inequalities in health.

Consideration may be given, in consultation with the health authorities, to an accountability framework for reducing these inequalities. This may involve reporting on core public health program activities by documenting and making public regional inequalities; by analyzing the factors that contribute to such inequalities; and by reporting on their involvement in advocacy coalitions, agency partnerships, community development, and similar efforts directed at reducing inequalities in access to the basic determinants of health.²⁶

There are also some actions that health authorities may want to consider that contribute directly to reducing inequalities in health. One example is to ensure that those in greatest need of public health services, or those most vulnerable or at-risk, receive more attention. This involves:

- directing programs to high-risk/disadvantaged groups;
- improving access/removing barriers to public health programs;
- forging partnerships with other organizations to address multiple barriers and/or issues in a coordinated and comprehensive manner;
- using community development as a means to support self-advocacy and self-reliance; and
- ensuring that the core programs provided by the health authorities reflect the priorities of the people with greatest need.

11.2 The Populations “Lens” – Populations of Concern

While some core programs should be universal (e.g. immunization, inspection of water and food, etc.), others should be preferentially or exclusively provided to selected populations that are at higher risk or are more vulnerable due to biological, social, environmental, economic, cultural, or other factors. Those selected populations for whom core programs should be specifically tailored might, depending on the program, include:

- Aboriginal people;
- ethno-cultural communities and people of colour;
- women, where they are at special risk, or for female-specific conditions;
- men, where they are at special risk, or for male-specific conditions;
- people with disabilities;
- infants and children;
- youth;
- seniors;
- people with low incomes;
- residents of remote, rural, or northern communities; and
- lesbian, gay, bisexual, and transgendered people.

The particular health concerns of British Columbia’s Aboriginal people have been the subject of a recent report by the Provincial Health Officer (2002). The report identified the unique cultural, social, economic, and environmental issues faced by Aboriginal people; their strength and resilience in the face of daunting challenges and historical inequities; the inequalities in health they experience; and the sometimes remarkable improvements in some aspects of their physical, mental, social, emotional, and spiritual health that they have achieved in recent years, even

²⁶An example might be food security, where community nutritionists and other public health staff work with community organizations to address issues of hunger and inadequate diet for people living in poverty.

though much remains to be done. The report identified many ways in which health authorities, the Ministry of Health Services, and others can contribute, in partnership with Aboriginal people, in the protection and promotion of Aboriginal health and the prevention of disease, disability, and injury.

In addition to considering the population who need to be reached, or for whom a program has to be tailored, it is important to consider the setting²⁷ in which that population can most effectively be reached. Experience has taught and the evidence shows that there are certain key settings where integrated programs can be effectively provided. These key settings include homes, schools, workplaces, care settings, and neighbourhoods or other community settings. This suggests that both local and province-wide initiatives (such as a Healthy Schools program or a Healthy Communities Network) may need to be developed for these settings, as a way of coordinating the effort, sharing resources and experience, and gaining synergy as a result.

²⁷ A setting is both a physical place and a social space; it is where people lead their lives.

12.0 Implementation

The identification of core programs was the first step in the process of renewing and strengthening public health services in British Columbia. It is a process that will take many years, and the commitment of resources by the health authorities and the province. This process will also depend in part on the evidence that can be developed and presented that shows that the public health services defined here are effective in practice. That evidence takes two forms:

- Evidence from the literature that the core programs defined here have been shown to work, or are considered best practice, either in Canada or internationally, and
- Evidence that the public health functions performed by the health authorities are of high quality and meet performance expectations; this will in turn require the development of performance measures, performance expectations, and the information systems needed to make performance improvement feasible.

This provides an agenda for the next phases of the process of developing and implementing core functions in public health for British Columbia. The process will begin with the development an evidence paper for each core program, followed by the convening of a joint workgroup for that program, with health authority, Ministry, and other stakeholders. The workgroup will:

- review the evidence paper and determine the implications for core programs in BC;
- identify best practices for that program, both within BC and nationally or internationally;
- identify for each health authority the gap between current service levels and the best practice;
- where appropriate, identify national or international benchmarks;
- identify key performance areas, performance targets, and suitable performance indicators, relevant to each health authority; and
- identify the information systems currently in place or needed to provide the relevant indicators.

To aid in the process of specifying outcome measures, a public health logic model is being developed in conjunction with Professor Diane Watson at the Centre for Health Services and Policy Research at the University of British Columbia. The model is adapted from her Primary Care Logic Model, recently completed for the Ministry's Primary Health Care Program, which in turn is based on the (Canadian) Treasury Board Logic Model.

12.1 Evidence Papers

A series of evidence papers is under development for the core programs identified herein, some of which were completed during 2004, and the rest will be completed in 2005. Many of these papers are being developed by or in collaboration with health authority staff and the staff of British Columbia's public health research centres.

The status of these evidence papers, as of February 2005, is summarized in Table 4.

Table 4 - Status of Core Programs Evidence Papers, February 2005	
Core Program	Status
Health Improvement	
Reproductive Health	Evidence paper required - under discussion with the BC Reproductive Care Program
Healthy Development <ul style="list-style-type: none"> Healthy infant and early child development (0-6) 	<p>Two drafts completed by HELP—one on programs, one on policy instruments—for the Forum on Healthy Child Development with the Minister of State for ECD. Preliminary review of infant screening (hearing, dental, vision) completed (for Cabinet Submission).</p> <p>Audiology and SLP Evidence papers completed by A&SLP Council</p>
<ul style="list-style-type: none"> Healthy child and youth development 	Evidence paper required
Healthy Communities <ul style="list-style-type: none"> Healthy schools Healthy workplaces Community development and capacity building 	<p>Healthy schools, healthy workplaces, and community development and capacity building covered in part in CDP evidence paper. Healthy Schools also covered in recent PHO report.</p>
<ul style="list-style-type: none"> Healthy care facilities 	Evidence paper required
Healthy Living <ul style="list-style-type: none"> Tobacco control Healthy eating Active living 	<p>Completed (CDP evidence paper)</p> <p>Completed (CDP evidence paper)</p> <p>Completed (CDP evidence paper)</p>
Mental Health Promotion	<p>Evidence paper required -Partially covered in CDP paper. Overview paper for more comprehensive review of mental health promotion and prevention of mental disorders to be developed by Community Medicine Resident.</p>
Food Security	Evidence paper finalized by Community Nutritionist Council
Prevention of Disease, Injury and Disability	
Chronic disease prevention <ul style="list-style-type: none"> Cardiovascular disease Cancer Neurological and sensory Musculo-skeletal Chronic respiratory Digestive Diabetes 	<ul style="list-style-type: none"> Completed Completed Evidence paper required Evidence paper required Completed Evidence paper required Completed
Unintentional Injury Prevention <ul style="list-style-type: none"> Falls, especially children & seniors Motor vehicle crashes 	<ul style="list-style-type: none"> Several reports available from BCIRPU–
<ul style="list-style-type: none"> Poisoning Recreational and leisure Drowning, fires etc 	<ul style="list-style-type: none"> draft report completed on preventing youth-related motor vehicle crashes

Table 4 - Status of Core Programs Evidence Papers, February 2005	
Core Program	Status
Prevention of Violence, Abuse, and Neglect <ul style="list-style-type: none"> • Assault, including homicide • Violent exploitation of women • Child and elder abuse 	Evidence papers required
Prevention of Mental Disorders and Problematic Substance Use <ul style="list-style-type: none"> • Depression/anxiety • Psychoses • Suicide • Problem alcohol use • Problem prescription drug use • Illicit drug use 	Evidence papers required Overview paper for more comprehensive review of mental health promotion and prevention of mental disorders developed by Community Medicine Resident Some aspects (e.g. FASD) covered elsewhere
Dental Health and Prevention of Dental Disease	Evidence paper completed by BC Dental Public Health Representatives Committee Review of early screening done for Cab. Submission
Communicable Disease Prevention and Control <ul style="list-style-type: none"> • Vaccine-preventable diseases • HIV/AIDS, STDs, blood-borne • Tuberculosis • Vector-borne • New/emergent diseases 	First draft completed by BCCDC, being reviewed in consultation with Health Officers Council, PHN Leadership Council and Environmental Health Directors Council
Prevention of Disability (including appropriate early intervention) <ul style="list-style-type: none"> • Sensory (hearing, vision) • Other 	Evidence paper required Elements covered elsewhere (e.g. reproductive health, healthy infant and early child development, injury prevention) Hearing draft completed by Audiologists Council
Prevention of the Adverse Health Effects of the Health Care System	Evidence papers required Coordinate with Ministry response to national report on medical error. Existing report available on 'greening' health care in Canada at www.greenhealthcare.ca
Environmental Health (EHO Council has established working group to prepare evidence papers)	
Water quality <ul style="list-style-type: none"> • Drinking • Recreational) 	Draft under development
Air Quality <ul style="list-style-type: none"> • Indoor • Outdoor 	Draft under development
Safe Food	Draft completed
Community Sanitation and Environmental Health	Evidence papers required
Health Emergency Management - Evidence papers required (to be developed with HEM)	
Population Health Assessment/Surveillance – Best practice review needed	

12.2 Benchmarks and Better Practices

Benchmarking is an ongoing, systematic process that seeks to identify and understand the best practices of others and customize such practices to one's own setting (Wilson & Beynon, 1998, p.183).

As we proceed with the process of identifying the evidence base for public health interventions, it becomes possible to identify provincial, national, or international 'benchmarks'; these become the standards against which quality public health services measure themselves. These benchmarks may define an outcome (such as the lowest level of infant mortality or teen smoking attained anywhere in the world), or a better (or best) practice. In Ontario, the Ontario Public Health Benchmarking Partnership²⁸ suggests the following benefits from adopting benchmarking:

- improved operational and strategic planning;
- accelerated and a sharper focus on continuous improvement;
- more effective networking;
- exposure to new ways of thinking and expanded possibilities;
- readjustment of goals;
- improved delivery of programs by importing management practices, and work processes;
- justification of programs to funders; and
- financial savings through eliminating duplication or unnecessary activities.

The concept of 'best practices' has become almost an article of faith in evidence-based medicine and public health. But it can be a troublesome concept, since it seems to imply there is a single "best" way to do something; this could discourage further progress, or adaptation to the local situation. In a recent report discussing better solutions for complex problems, Moyer et al. (2001) draw an important distinction between better practices, which are "actions and processes—plausible, appropriate, evidence-based and well-executed—that will reduce the current and future burden of disease", and best practices, which are "those actions—policies, research, programs and services—that will have the greatest impact on reducing the current and future burden of disease." In other words, better practices will have some effect, while best practices will have the greatest effect.

They suggest that 'best' practices are "subjective, situational, and time-sensitive" because new knowledge is always advancing our understanding of what constitutes 'best' and because what is best in one situation may not work well in another. They suggest that a 'better practices' approach is about an adaptive systems approach, not a prescriptive "one-size-fits-all" approach with a single endpoint. Their 'better practice' model combines "evidence-based, contextually appropriate activities" with the processes of research and evaluation which "inform, support and grow from these activities" and which adhere to the following core principles:

²⁸ www.benchmarking-publichealth.on.ca

- good solutions to complex problems draw upon both science and experience;
- they build on the past, make sense in the present, and contribute to better solutions in the future; and
- they are subjective, situational, and evolving.

In the field of public health there is often no single ‘best’ practice that can be universally applied. Rather, there are a number of practices for which we have some reasonable evidence (including evidence based on experience) of effectiveness. These better practices should be identified for public health staff and others so they can be adopted (if they seem feasible and appropriate), adapted to the local situation, and then evaluated.

As a first step, better (or best) practices should be identified within BC, on the grounds that if a particular ‘best practice’ and its related outcome can be implemented somewhere in BC, it ought to be implementable—with adaptations for different geographic, socio-cultural and other factors—elsewhere in BC. National and international ‘best practices’ and outcome measures not yet attained in BC then become the benchmarks for which BC strives.

12.3 Indicators and Information Systems

While it is not entirely true that ‘if you can’t measure it, you can’t manage it’, it is nonetheless likely that we will be able to manage—and improve—core functions in public health if we can measure performance.

The data and information systems needed to monitor the range of performance expectations to be developed are not currently available. These systems may diverge, as each health authority tends to develop its own system in isolation. It is therefore important to define and agree upon what is important to know for quality management and improvement in the field of public health. This should then drive the further development and/or reorganization of public health information systems across the province in a way that can ensure uniform and transparent accountability for the performance of public health programs.

Moreover, prevention can be said to have two components: a public health focus and a preventive clinical focus involving services by family physicians, nurse practitioners, midwives, obstetricians, and pediatricians, among others. While core functions in public health obviously deal with the former, they also include, to some extent, the latter. As we try to improve the application of effective preventive interventions across the broad spectrum of public health and clinical prevention, we will need to develop a prevention information system capable of telling us how well we are doing. This will require a significant investment of time and resources.

12.4 Towards Performance Expectations and Performance Improvement²⁹

The public has a right to expect that the public health sector, along with the rest of the health care system, is paying attention to the quality and effectiveness of the interventions it undertakes, and is working to improve that quality. Given the decentralized nature of public health in BC today

²⁹ A more comprehensive report on a systematic performance improvement process for core public health functions is currently being developed by the Population Health and Wellness Division, Ministry of Health Services.

and for the foreseeable future, and the different organizational arrangements for public health that now exist in the five regional health authorities, the delineation of core programs will be focused on the functions that health authorities need to perform in order to meet the twin goals of improving population health and preventing disease, disability, and injury. Health authorities will measure their success by how well they perform these functions and achieve performance targets.

Performance expectations for core public health functions should be seen as integral to the process of quality management that any conscientious organization puts in place. If the Ministry, the health authorities, the public health field, and the general public want to know how well we are performing in improving population health; preventing disease, disability, and injury; protecting people from environmental health hazards; preparing for and managing health emergencies; and assessing population health and conducting disease, disability, and injury surveillance, a mix of performance expectations and indicators is needed, using a combination of outcome and process measures.

The scope of performance expectations for most public health programs is much greater than for those related to medical care for a variety of reasons:

- the relationship between an intervention and a health outcome is often indirect;
- the period between an intervention and an outcome may be measured in decades;
- there are multiple factors in play at the same time, of which health-sector interventions—including public health interventions—are but one, and not necessarily the most important, intervention; and
- the major determinants of population health may be beyond the control of public health staff or health authorities.

It is interesting to note that in the future, the performance of some of these core public health functions will not be confined to traditional public health staff, or even to health authority staff. In the case of prenatal education and care, for example, providers include family physicians, midwives, obstetricians, and community organizations. The role of the health authority is to perform these functions, or through collaborative links with other organizations, ensure they are performed, and ensure that the agreed upon evidence-based standards of performance are met in a manner that is both effective and efficient. How this is achieved is up to the individual health authority.

It may be difficult to attribute an outcome to an intervention, and it may be difficult to hold a health authority accountable for an outcome over which it has limited control or even influence. Nonetheless, if we want to know how well we are performing the core public health functions described in this Framework, we do need measures of performance, linked to a system of continuous performance improvement.

A small proportion of these performance measures may end up as performance expectations in the Performance Agreements between the health authorities and the Ministry of Health Services. Those few might vary over time as one issue gets addressed and/or other issues move up the agenda due to emerging concerns, or as evidence emerges of problems that need to be addressed.

Quality management of the health authorities public health functions requires a far richer and more complex set of performance measures, and performance expectations based on those measures, than can be accommodated in the Performance Agreements. They may need to be tailored to each health authority and even to different communities within health authorities. These performance measures would be part of the learning and quality improvement process that any quality-focused system such as BC's health care system must embrace. This richer set of performance measures, which would have to be developed in a collaboration between the health authorities and the Ministry, would not be looked at all at once; perhaps a different set with a different focus would be chosen every few years, and perhaps the chosen indicators would differ from one health authority to the other as their priorities and concerns change, or as problems arise that need monitoring more closely.

In addition, it will be worthwhile in this interim period to develop provincial goals and objectives that relate to the core public health programs, so that it is clear how these performance expectations are related to improved population health. This might include looking at existing goals, objectives, and performance expectations in jurisdictions such as Saskatchewan and Ontario, as they have already undertaken some of this work.

Glossary

Addiction: “a harmful pre-occupation with substance use or other behaviours, generally accompanied by a loss of control and continued use or involvement despite negative consequences” (Ministry of Health Planning, 2004a)

Attributable Fraction: The proportion of all cases that can be attributed to a particular exposure. If the association is causal, this is also the proportion by which the incidence rate would be reduced if the exposure were eliminated. The attributable fraction may apply to exposed individuals or to the whole population (Last, 2001).

Attributable Risk: The rate (proportion) of a disease or other outcome in exposed individuals that can be attributed to the exposure (Last, 2001).

Burden of Disease: This is a term initially developed and applied in the context of a major World Health Organization/World Bank/Harvard School of Public Health report, *The Global Burden of Disease* (Murray & Lopez, 1996). In estimating the global burden of disease, a measure known as the Disability-Adjusted Life Year (DALY) was determined. A DALY is “one lost year of healthy life”, which includes both years of life lost and years lived with a disability of known severity and duration for each condition.³⁰

Cause: A **cause** is defined as “an external agent . . . that results in a condition or disease in a person who is susceptible” (Australia, Commonwealth Department of Health and Aged Care, 2000).

Causal Chains (or Webs): The concept of **causal chains or webs** is used to explain the complexity of the interactions of multiple risk factors—genetic, biological, behavioural, psychological, environmental, social, economic, cultural—that ultimately determine health status. There is seldom if ever a simple ‘single cause, single effect’ relationship in chronic disease.

Comprehensive Programs: Comprehensive programs mean “multiple interventions and levels of intervention on any particular risk factor” such as smoking, injury control or blood pressure control (Green, personal communication, 2001).

Comprehensive Health Emergency Management (CEM): An overarching process that addresses all hazards and encompasses mitigation, preparedness, response, and recovery. CEM reflects the premise that successful management of vulnerabilities, resources, and the environment will reduce the likelihood of an impact exceeding the disaster threshold. (Source: Health Emergency Management Program, Ministry of Health Services)

³⁰ Years of life lost are calculated based on national cause-specific mortality data. Years of life lost to disability are calculated based on the amount of time lived with each of 483 different disabling sequelae of diseases and injuries, in both treated and untreated states, and weighted for their severity—the global average severity weighting. These two categories are added to each other and then subtracted from the ideal length of life, which is considered to be that of life expectancy at birth in Japan, which is the world's longest living population.

Chronic: (1) referring to a health-related state, lasting a long time. (2) referring to exposure, prolonged or long-term, often with specific reference to low intensity. (3) the US National Center for Health Statistics defines a “chronic” condition as one of three months duration or longer (Last, 2001).

Chronic Disease: This is understood to mean non-communicable diseases that are chronic in nature (see “Chronic”). In a recent report on a strategic framework for chronic disease prevention in Australia (National Public Health Partnership, 2001) it is suggested—consistent with the United States Centers for Disease Control and Prevention (CDC) approach—that chronic diseases:

are usually characterized by complex causality, multiple risk factors, a long latency period, a prolonged course of illness, functional impairment or disability, and in most cases, the unlikelihood of cure.

The Australian report includes mental health problems in the definition, as well as the diseases and disorders that CDC considers to be chronic diseases (cardiovascular disease, diabetes, arthritis and other musculo-skeletal diseases, cancers, chronic lung diseases, and chronic neurological disorders). While injuries are a significant component of the burden of disease and may contribute to chronic or indeed life-long impairment and disability, they are not included in the definition used by the Australians on the grounds that many of the interventions and risk factors are very different than for the major chronic diseases—although there is overlap. This definition also excludes infectious diseases, including those that may indeed be chronic in the sense of long-lasting (e.g., AIDS, tuberculosis, etc.) This report adopts the same approach.

Determinant: “a factor that operates at the system, social, or community level to affect the likelihood that people will be exposed . . . or, when exposed, the likelihood of their developing the condition” (Australia, Commonwealth Department of Health and Aged Care, 2000). Therefore, determinants may be factors that affect the environment of the person and/or their behaviour, or that directly affect the resilience or vulnerability (psychological or physiological) of the person.

Disaster: The interaction between a vulnerable community and extreme events in which the harmful effects exceed the impacted community’s ability to cope using its normal systems (Lindsay, 2003).

Disease (or Condition): includes physical disease or injury, mental illness and physical, mental, or developmental disability.

Economic Burden of Disease: One way to understand the total burden of disease, expressed in economic terms. The economic burden of disease includes all of the direct health costs associated with treatment and care within the health care system, as well as the indirect costs, which—depending on the researchers—may include lost productivity, foregone earnings as a result of premature death, an economic valuation of the reduced quality of life, and other less easily quantifiable costs. The indirect costs can often exceed the direct costs.

Health Emergency Management: The professional discipline and process of dealing with extreme harmful events where the management of the community's vulnerability, resources, and environment is a means of making the community safer. (Source: Health Emergency Management Program, Ministry of Health Services).

Extreme Event: Any occurrence that can cause severe damage within the community, including property destruction and personal injuries. (Source: Health Emergency Management Program, Ministry of Health Services).

Hazard: The potential for a negative interaction between extreme events (of a natural or technological origin) and the vulnerable parts of the population. (Source: Health Emergency Management Program, Ministry of Health Services)

Health Education: The process of changing knowledge, attitudes, and behaviour of people (including decision-makers) through educational strategies, which include social marketing.

Health Effects Pyramid: One important point to understand with respect to the burden of disease is the health effects pyramid. We often focus attention on mortality rather than on morbidity. This has led to an underestimate of the importance of a number of conditions, notably mental illness, which are not major causes of death but are very significant causes of disability days and thus have a major effect on overall health care costs.

A good example of the health effects pyramid is provided by the health impacts of air pollution. More often, air pollution makes people sick rather than kill them. This is vividly illustrated below: for a given rise in particulate air pollution (PM_{10}) that results in one death we can expect:

- 34 emergency room admissions
- 407 asthma days
- 6,085 reduced activity days
- 18,864 acute respiratory symptom days (Hamilton Air Quality Initiative, cited in Pollution Probe, 1998)

Health Promotion: “the process of enabling people to increase control over and improve their health. 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” (WHO, 1986). It is a process, or a style of working, that uses a combination of strategies (building healthy public policy, creating supportive environments, strengthening community action, developing personal skills, reorienting health services) to improve the overall health, well-being, and quality of life of the population and frequently focuses on the broader environmental, social, economic, political, and cultural conditions that determine health, using socio-political strategies to effect change.

Health Protection: A particular strategy that can be used to influence the behaviour of citizens and corporations to prevent disease or injury by invoking the power of the state to legislate, regulate, tax, inspect, enforce, sanction, and punish.

Initiative: An organized set of programs and activities at the local and provincial levels focused on a public health issue of particular concern. An initiative may be short-term or long-term, but it usually involves a broad coalition of actors beyond the public health sector, including other ministries, provincial non-governmental organizations, community groups, and appropriate private sector organizations. Examples include a Chronic Disease Prevention Initiative, Injury Prevention Initiative etc.

Integrated Programs: Integrated programs mean, “comprehensive interventions directed at various risk factors and risk conditions”, such as the North Karelia, Stanford, and other community cardiovascular programs (Green, personal communication, 2001).

Integrated Service Delivery System: “a network of organizations that provide, or arrange to provide, a coordinated continuum of services to a defined population, and is held fiscally and clinically accountable for the outcomes and health status of the populations served on” (Shortell, p.7).

Lifestyle: This term is used in the sense that the pioneering sociologist Max Weber used the term: “to designate the stylized modes of living (and consuming) that social groups adopted to express and sustain their identity in the social world” (Powles, 1992). In this sense, a healthy lifestyle is not something that is freely and independently chosen by individuals but is a collective lifestyle that becomes a social norm. Powles makes the point that campaigns to change social norms (such as improved cleanliness in the 19th century) are initially seen as coercive but over time become incorporated into the way of life of a community or society. A similar effect is seen today with respect to the normalization of non-smoking behaviour, the use of seat belts, or not driving while impaired.

Populations: Groups who, for one reason or another, may be at higher risk for certain diseases or condition (e.g. infants and children, women, Aboriginal peoples, seniors, people living in poverty, etc.).

Population Health: “refers to the health of the population as measured by health status indicators, and as influenced by social, economic and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development, and health services.

As an approach, population health focuses on the interrelated conditions and factors that influence the health of populations over the life course, identifies systematic variations in their patterns of occurrence, and applies the resulting knowledge to develop and implement policies and actions to improve the health and well-being of those populations.” (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996).

Prevention: “actions aimed at eradicating, eliminating, or minimizing the impact of disease and disability, or if none of these is feasible, retarding the progress of disease and disability” (Last, 2001). There are five levels of prevention:

- **Primordial Prevention:** “actions and measures that inhibit the emergence and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living, etc., known to increase the risk of disease” (e.g., improving housing availability, reducing child poverty). This is the task of public health policy and of health promotion. (Last, 2001)
- **Primary Prevention:** “protection of health by personal and communal efforts, such as enhancing nutritional status, immunizing against communicable diseases, and eliminating environmental risks, such as contaminated drinking water supplies.” This is the task of public health. (Last, 2001)
- **Secondary Prevention:** “a set of measures available to individuals and communities for the early detection and prompt intervention to control disease and minimize disability, e.g., by the use of screening programs.” This is the task of preventive medicine. (Last, 2001)
- **Tertiary Prevention:** “measures aimed at softening the impact of long-term disease and disability by eliminating or reducing impairment, disability, and handicap; minimizing suffering; and maximizing potential years or useful life.” This is the task of rehabilitation. (Last, 2001)
- **Quaternary Prevention:** Prevention of unnecessary and inappropriate diagnostic and therapeutic interventions and excessive and intrusive end-of-life treatment (Jamoulle, 1986), or “action taken to identify patients at risk of over-medicalization (and) protect them from new medical invasion . . . “ (Bentzen, 2000) as or “measures that relieve without curing the symptoms of terminal disease” (National Specialty Program in Public Health and Community Nutrition, Australia, n.d.). Quaternary prevention can also be thought of as the prevention of an unhealthy death or, more positively, as the promotion of healthy death.

For the purposes of this report, the focus is almost entirely on primordial and primary prevention, although it could be argued that some forms of secondary and even tertiary prevention in one condition are primary prevention for another. For example, early detection and appropriate treatment of hypertension (high blood pressure) is an effective means of delaying or even preventing the onset of cardiovascular and renal disease and stroke, while effective rehabilitation from stroke may reduce both the burden of the residual disability (and thus the burden of disease) and reduce the likelihood of resultant depression.

Primary Care³¹: This is:

health care provided at the first point of contact. It is considered to be the first-contact assessment of provision of continuing medical care through a broad scope of health services including diagnostics, treatment and management of health problems, promotion and prevention activities and ongoing support from professionals, family and community. (Canadian Medical Association, 1994)

³¹ Usually referred to in Canada as family medicine, but in the United Kingdom it is referred to as general practice.

In the United States, the Institute of Medicine in 1996 defined primary care as:

the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. (Donaldson et al, 1996)

The Ontario College of Family Physicians (1999) defines family medicine as follows:

Family Medicine in Ontario is the provision of integrated and accessible health care services by Family Physicians who are accountable for addressing the majority of their patients' personal health and healthcare needs through the development of a sustained partnership with patients, resulting in continuity of care and positive health outcomes. The focus of Family Medicine, practiced within the context of family and community, is on health promotion, disease prevention, community outreach and public education, illness and curative services, and rehabilitative and supportive services.

Primordial Prevention: See **Prevention**.

Primary Prevention: See **Prevention**.

Problem Substance Use: “use associated with physical, psychological, economic or social problems, or use that constitutes a risk to health, security or well-being of individuals, families or communities.” It is “not related to the legal status of the substance used, but to the amount used, the pattern of use, and the context in which it is used to and, ultimately, the potential for harm.” (MOHS, 2004a).

Program: An organized set of activities intended to achieve a defined purpose. A core program in public health has a measurable health status outcome, whereas a strategy does not, except in the context of a given program (e.g. immunization as a strategy only has an outcome in the context of e.g. an influenza immunization program. A set of programs may be organized into a program area and may be part of an initiative.

Determinants may act as either protective or risk factors. “Risk factors increase the likelihood that a particular individual or identifiable group of people will develop a disorder, while protective factors reduce that likelihood.” In the latter case, factors that enhance resilience and thus reduce the effect of exposure are termed compensatory protective factors (Australia, Commonwealth Department of Health and Aged Care, 2000).

Public Health: “the science and art of promoting health, preventing disease, prolonging life and improving quality of life through the organized efforts of society” (Committee of Inquiry, 1988, as cited in National Advisory Committee on SARS and Public Health, 2003). Public health's primary task is to prevent disease, injury, and disability and to improve the health of the population through health promotion, health protection, clinical prevention, and population health assessment.

There have been a number of definitions of public health over the years. Among the most frequently cited is that of C.E.A. Winslow first formulated in 1923.

“Public health is the science and art of:

- (1) preventing disease,
- (2) prolonging life,
- (3) organized community efforts for:
 - the sanitation of the environment,
 - the control of communicable diseases,
 - the education of the individual in personal hygiene,
 - the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of the social machinery to ensure everyone a standard of living adequate for the maintenance of health, so organizing these benefits as to enable every citizen to realize his birthright of health and longevity.”

More recent definitions include that of J.H.F. Brotherton (1967), whose Benthamite definition was: “The organized application of resources to achieve the greatest health for the greatest number.”

Two more recent American definitions are those of the report on Higher Education for Public Health (1976):

Public health is the effort organized by society to protect, promote and restore other people’s health. The programs, services and institutions involved emphasize the prevention of disease and the health needs of the population as a whole. Public health activities change with changing technology and social values, but the goals remain the same: to reduce the amount of disease, premature death and disease-produced discomfort and disability.

and the report of the U.S. Institute of Medicine’s Committee for the Study of the Future of Public Health (1988) in which the Committee defines the mission of public health as “the fulfillment of society’s interest in assuring the conditions in which people can be healthy”, and the substance of public health as: “organized community efforts aimed at the prevention of disease and promotion of health. It links many disciplines and rests upon the scientific core of epidemiology.”

As the Committee notes, “the common themes that run through these interpretations are reflected in the words “public” and “health”. What unites people around public health is the focus on society as a whole, the community and the aim of optimal health status.”

Public health is “public” because it involves “organized community effort.” It is not the outcome of isolated individual efforts. Its mission is to ensure that organized approaches are mobilized when they are needed. Thus, public health is concerned with the good of the community as a whole, rather than with the good of individuals, with assuring the social conditions that will protect people from harm and with organizing efforts that will prevent disease and promote health. Of particular note is that “public health activities change with changing...social values”.

Quaternary Prevention: See Prevention.

Resilience: Refers to the capacity of the individual to resist and recover from challenge. Can be both a physiological and a psychological concept.

Secondary Prevention: See **Prevention**.

Tertiary Prevention: See **Prevention**.

Settings: The places where people lead their lives. Settings such as homes, schools, workplaces, hospitals, neighbourhoods, communities and cities are both physical places and social spaces.

Strategy: A means of working or approach to achieving a purpose or carrying out a program or activity. Strategies such as advocacy or taxation or screening by themselves do not have measurable health status outcomes, except in the context of the specific program in which they are applied.

References

- Acheson, Sir D., et al. (1998). *Independent inquiry into inequalities in health*. London: The Stationery Office.
- Ad Hoc Working Group of the Conference of Principal Investigators of Heart Health. (2001). *Marketing the heart health vision: Delivering the “preventive dose”*. Ottawa, ON: Health Canada.
- Australia, Commonwealth Department of Health and Aged Care. (2000). *Promotion, prevention and early intervention for mental health: A monograph*. Canberra, Australia: Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care.
- Baker, G.R., Norton, P.G., Flintoft, V., Blais, R., Brown, A., Cox, J., et al. (2004). The Canadian Adverse Events Study: The incidence of adverse events among hospital patients in Canada” *Canadian Medical Association Journal*, 170 (11), 1678-1686.
- BC is putting its patients first*. (2002, March 13). *Times-Colonist*, p. A13.
- Bentzen, N. (Ed.). (2000). *WONCA Dictionary*. London: Oxford University Press.
- Birnbaum, D., & Scheckler, W. (2002). Beware of patient safety juggernauts. *British Journal of Clinical Governance*, 7(4), 282-285.
- British Columbia Injury Research and Prevention Unit. (2004, February 3). Presentation at Ministry of Health Services Policy Round
- Brotherton, J.H.F. (1967). *Public health objectives: The impact of social & technological change* [4th Thomas Parson Lecture]. Pittsburgh, PA: School of Public Health, University of Pittsburgh).
- Canadian Medical Association. (1994). *Strengthening the foundation: the role of the physician in primary health care in Canada*. Ottawa, ON: Canadian Medical Association.
- Centers for Disease Control and Prevention. (1999, April 2). Ten great public health achievements – United States, 1900-1999. *Morbidity and Mortality Weekly Report*, 48(12), 241-243.
- Christoffel, T., & Gallagher, S. (1999). *Injury prevention and public health*. Gaithersburg, MD: Aspen Publishers.
- Davies K. (1990). Human exposure pathways to selected organochlorines and PCBs in Toronto and Southern Ontario. In J.O. Nriagu, & M.S. Simmons (Eds), *Food contamination from environmental sources* (pp. 525-540). New York: John Wiley & Sons.

- Davis, P. (2004). Health care as a risk factor, *Canadian Medical Association Journal*, 170(11), 1688-1689.
- Department of Health. (2001, July). *Shifting the balance of power within the NHS: Securing delivery*. London: Department of Health.
- Donaldson, M.S., Yordy, K.D., Lohr, K.N., & Vanselow, N.A. (Eds.). (1996). *Primary care: America's health in a new era*. Washington, DC: National Academy Press.
- Federal, Provincial and Territorial Advisory Committee on Population Health. (1996). *Report on the health of Canadians*. Ottawa, ON: Health Canada Communications and Consultation Directorate.
- Federal/Provincial/Territorial Surveillance Integration Design Team. (1998). *A discussion paper on an integrated national health surveillance network for Canada*. Ottawa, ON: Health Canada.
- Food and Agriculture Organization of the United Nations. (n.d.). *The special programme for food security*. Retrieved from <http://www.fao.org/spfs/>
- Government of British Columbia. (2002). *Strategic plan 2002/03 – 2004/05*. Victoria, BC: Government of British Columbia.
- Guy, K. (Ed.). (1997). *Our promise to children*. Ottawa, ON: Health Canada/Canadian Institute for Child Health.
- Hancock, T. (1986). Public health planning in the City of Toronto – Part1: Conceptual planning, *Canadian Journal of Public Health*, 77(3), 180-184.
- Hancock, T. (2001). *Doing less harm: Assessing and reducing the environmental and health impact of Canada's health care system*. Toronto, ON: Canadian Coalition for Green Health Care
- Health Canada. (2002). *Economic burden of illness in Canada, 1998*. Ottawa, ON: Health Canada (For BC data, see the charting application at http://ebic-femc.hc-sc.gc.ca/home_e.php?Lang=e).
- Higher Education for Public Health*. (1976). New York: Millbank Memorial Fund Commission.
- Institute of Medicine. (2002). *The future of public health in the 21st century*. Washington, DC: National Academy Press.
- Institute of Medicine, Committee for the Study of the Future of Public Health. (1988). *The future of public health*. Washington, DC: National Academy Press.
- Jamoulle, M. (1986). *Information et informatisation en médecine générale in les informer-g-iciens*. Presses Universitaires de Namur.

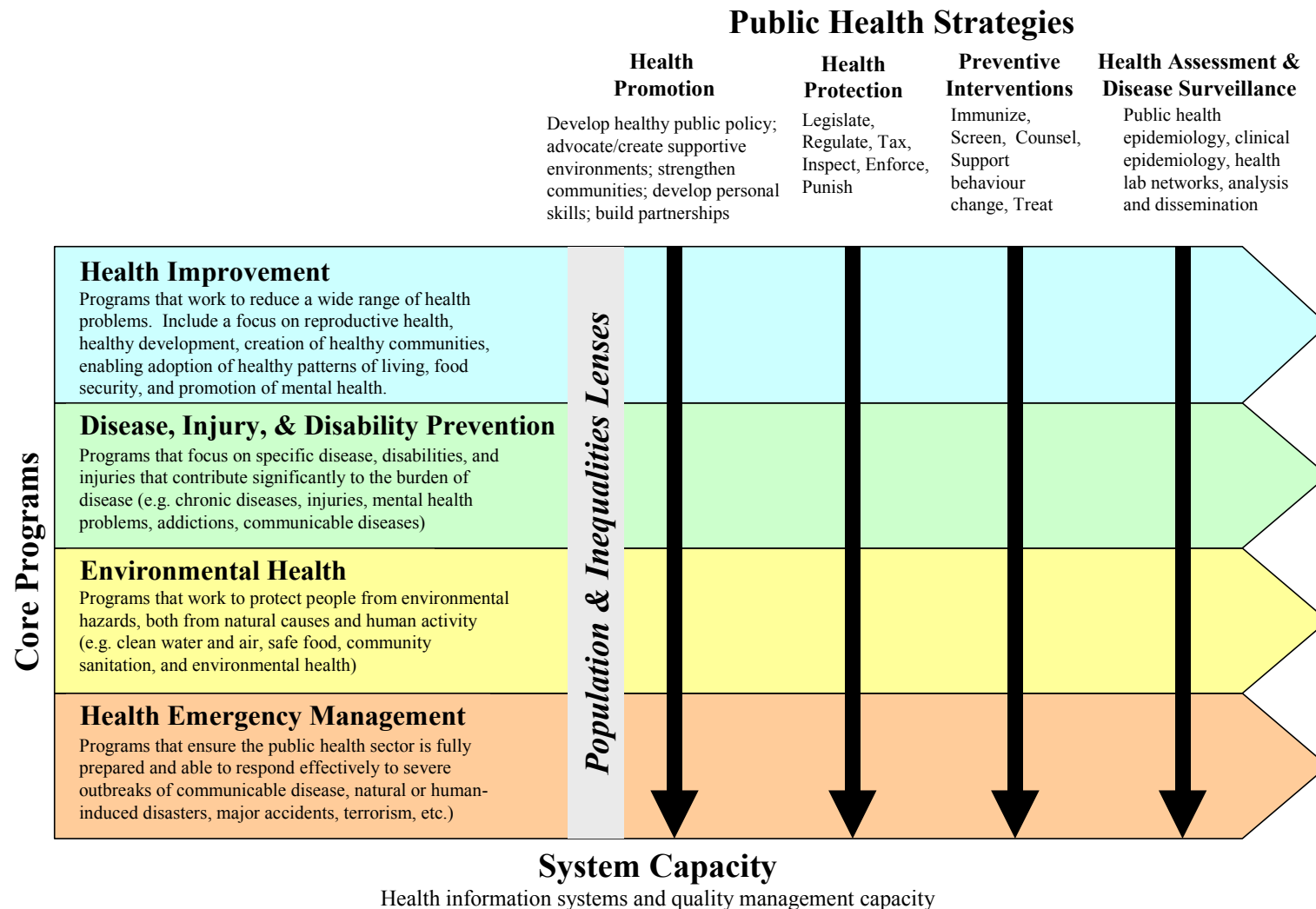
- Keating, D.P., & Hertzman, C. (Eds.). (1999). *Developmental health and the wealth of nations*. New York: The Guildford Press.
- Last, J. (2001). *A dictionary of epidemiology*. New York: Oxford University Press.
- Lindsay, J. (2003). The determinants of disaster vulnerability: Achieving sustainable mitigation through population health, *Natural Hazards*, 28, 291-304.
- Mangham, C., et al. (1995). *Applying resilience in health promotion: Environmental scan, detailed analysis and discussion paper*. Ottawa, ON: Health Canada.
- Ministry of Health. (2001). *Evaluation of the burden of disease in British Columbia*. Victoria, BC: Strategic Policy and Research Branch, Ministry of Health.
- Ministry of Health Planning. (2003a). *A framework for a provincial chronic disease prevention initiative*. Victoria BC: Population Health and Wellness, Ministry of Health Planning. Retrieved from http://www.healthservices.gov.bc.ca/prevent/preventing_cd.html
- Ministry of Health Planning. (2003b). *Prevention that works: A review of the evidence regarding the causation and prevention of chronic disease* [consultation draft]. Victoria, BC: Prevention and Wellness Planning, Population Health and Wellness, Ministry of Health Planning.
- Ministry of Health Services. (2002a). *Assessing the performance of the British Columbia mental health system: A provincial report 1999/2000* [draft]. Victoria, BC: Mental Health and Addictions, Ministry of Health Services.
- Ministry of Health Services. (2002b). *British Columbia's Provincial Depression Strategy – Phase 1 report*. Victoria, BC: Ministry of Health Services.
- Ministry of Health Services. (2004a). *Addictions and problem substance use planning framework for the health system in B.C.* [draft]. Victoria, BC: Ministry of Health Services.
- Ministry of Health Services. (2004b). *Targeting our efforts: B.C.'s tobacco control strategy*. Victoria, BC: Ministry of Health Services.
- Monitoring hospital-acquired infections to promote patient safety – United States 1990-1999. (2000, March 3). *Morbidity and Mortality Weekly Report*, 49(8), 149-153.
- Moyer, C. et al. (2001). *Identifying promising solutions for complex health problems: Model for a better practices process*. Unpublished manuscript, Canadian Cancer Society.
- Murray, C., & Lopez, A. (1996). *The global burden of disease (summary)*. Geneva: World Health Organization.
- Mustard, F., & Picherack, F. (2002). *Early child development in British Columbia: Enabling communities*. Toronto, ON: The Founders Network.

- National Advisory Committee on SARS and Public Health. (2003). *Learning from SARS: Renewal of public health in Canada*. Ottawa, ON: Health Canada.
- National Public Health Partnership (2000, June). *Public health practice in Australia today: A statement of core functions*. Australia: National Public Health Partnership.
- National Public Health Partnership. (2001). *Preventing chronic disease: A strategic framework* [background paper]. Melbourne: National Public Health Partnership.
- National Public Health Partnership. (2003, February). *A Memorandum of Understanding for a National Public Health Partnership for Australia*. Australia: National Public Health Partnership.
- Ontario College of Family Physicians. (1999). *Family medicine in the 21st century: A prescription for excellent healthcare*. Toronto: OCFP.
- Pollution Probe. (1998). *The air children breathe: Air quality and children's health* [conference proceedings]. Toronto, ON: Pollution Probe.
- Powles, J. (1992). Changes in disease patterns and related social trends. *Social Science and Medicine*, 35(4), 377-387.
- Provincial Health Officer. (n.d.). *Framework for health goals and a healthy population in BC*. Retrieved from <http://www.healthservices.gov.bc.ca/pho/hlthgoals.html>
- Provincial Health Officer. (2002). *The health and well-being of Aboriginal people in British Columbia*. Victoria, BC: Office of the Provincial Health Officer, Ministry of Health Planning.
- Provincial Health Officer. (2003). *The health and well-being of people in British Columbia: Provincial Health Officer's annual report 2002*. Victoria, BC: Office of the Provincial Health Officer, Ministry of Health Planning.
- Provincial Health Officer. (2004). *Prevention of falls and injuries among the elderly*. Victoria, BC: Office of the Provincial Health Officer, Ministry of Health Planning.
- Public Health Functions Steering Committee. (1994, Fall). *Public health in America*. Retrieved from www.health.gov/phfunctions/public.htm.
- Rutter, M. (2000). Resilience reconsidered: Conceptual considerations, empirical findings, and policy implications. In J.P. Shonkoff, & S.J. Meisels (Eds.), *Handbook of early childhood intervention* (Chapter 28). Cambridge: Cambridge University Press.
- Shortell, S. M., et al. (1996). *Remaking health care in America: The evolution of organized delivery systems*. San Francisco: Jossey-Bass.

- St. Leger, L., & Nutbeam, D. (2000). "Settings 2 - Effective health promotion in the schools" in International Union for Health Promotion and Education, *The Evidence of Health Promotion Effectiveness: Part 2*. Brussels: European Commission.
- Waddell, C., & Shepherd, C. (2002). *Prevalence of mental disorders in children and youth*. Vancouver, BC: Mental Health Evaluation and Community Consultation Unit, University of British Columbia.
- Wadsworth, M. (1999). Early life. In M. Marmot, & R. Wilkinson (Eds.), *Social determinants of health*. Oxford: Oxford University Press.
- Wallander, J. (2000). *Social emotional competence and physical health. A report prepared for the Collaborative to Advance Social and Emotional Learning (www.casel.org/health.htm) and the Center for the Advancement of Health (www.cfah.org)*. Available from their websites or from Professor Wallander at Civitan International Research Center, University of Alabama at Birmingham (wallande@uab.edu).
- Wilson, V., & Beynon, C. (1998). Introducing benchmarking to Ontario health units. *Public Health & Epidemiology Report Ontario* 9(8), 183-185.
- Winslow, C.E.A. (1923). *The evolution and significance of the modern public health campaign*. New Haven, CT: Yale University Press.
- Woolf, S. (2004). Patient safety is not enough: Targeting quality improvements to optimize the health of the population. *Annals of Internal Medicine*, 140, 33-36.
- World Health Organization. (1986). *Ottawa charter for health promotion*. Copenhagen: WHO Regional Office for Europe
- World Health Organization, Western Pacific Regional Office. (2002, July). *Essential public health functions: The role of ministries of health*. World Health Organization.

Appendix 1: Core Functions Framework

CORE FUNCTIONS FRAMEWORK



Appendix 2: Essential Functions in Public Health: International Studies

In Australia, the National Public Health Partnership (2000) identified the following core functions for public health:

- assess, analyze and communicate population health needs and community expectations
- prevent and control communicable and non-communicable diseases and injuries through risk factor reduction, education, screening, immunization and other interventions
- promote and support healthy lifestyles and behaviours through action with individuals, families, communities and wider society
- promote, develop and support healthy public policy, including legislation, regulation and fiscal measures
- plan, fund, manage and evaluate health gain and capacity building programs designed to achieve measurable improvements in health status, and to strengthen skills, competencies, systems and infrastructure
- strengthen communities and build social capital through consultation, participation and empowerment
- promote, develop, support and initiate actions which ensure safe and healthy environments
- promote, develop and support healthy growth and development throughout all life stages
- promote, develop and support actions to improve the health status of Aboriginal and Torres Strait Islander people and other vulnerable groups.

In the USA, a working group comprised of leading public health agencies identified essential public health services as follows (Public Health Functions Steering Committee, 1994):

Public health:

- prevents epidemics and the spread of disease
- protects against environmental hazards
- prevents injuries
- promotes and encourages healthy behaviours
- responds to disasters and assists communities in recovery
- assures the quality and accessibility of health services.

The same working group also identified 10 essential public health functions:

- Monitor health status to identify community health problems
- Diagnose and investigate health problems and health hazards in the community
- Inform, educate, and empower people about health issues
- Mobilize community partnerships to identify and solve health problems
- Develop policies and plans that support individual and community health efforts

- Enforce laws and regulations that protect health and ensure safety
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable
- Assure a competent public health and personal health care workforce
- Evaluate effectiveness, accessibility, and quality of personal and population-based health services
- Research for new insights and innovative solutions to health problems

In England, as part of the reform of the NHS, outlined in *Shifting the Balance of Power* (Department of Health, 2001), the scope of a modern public health system was described as:

- health surveillance, monitoring and analysis.
- Investigation of disease outbreaks, epidemics and risks to health
- establishing, designing and managing health promotion and disease prevention programs
- enabling and empowering communities and citizens to promote health and reduce inequalities
- creating and sustaining cross-governmental and inter-sectoral partnerships to improve health and reduce inequalities
- ensuring compliance with regulations and laws to protect and promote health
- developing and maintaining a well-educated and trained, multi-disciplinary public health service
- ensuring the effective performance of NHS services to meet goals in improving health, preventing disease and reducing inequalities
- research, development, evaluation and innovation
- quality assuring the public health function

Through collaborative work undertaken with Fiji, Malaysia, and Vietnam, the Western Pacific Regional Office (WPRO) of the World Health Organization has derived nine essential public health functions that it also considers to be relevant and practical for other Member States in the Region to consider (WHO, 2002).³² The nine functions are:

- Health situation monitoring and analysis
- Epidemiological surveillance/disease prevention and control
- Development of policies and planning in public health
- Strategic management of health systems and services for population health gain
- Regulation and enforcement to protect public health

³² The nine essential public health functions were developed after considering studies and work conducted by WHO; the US Department of Health and Human Services; the Centers for Disease Control and Prevention (CDC), United States of America; Centro Latino Americano de Investigacion en Sistemas de Salud; the Pan American Health Organization (PAHO) and the National Public Health Partnership Group in Australia.

- Human resources development and planning in public health
- Health promotion, social participation and empowerment
- Ensuring the quality of personal and population-based health services
- Research, development and implementation of innovative public health solutions.

By way of illustration, this list contains a number of functions that are not unique to public health, although they may be essential for public health, like the rest of the health system or other large public systems, to perform their functions – see Table.

Essential Public Health Functions	Unique to Public Health?
Health situation monitoring and analysis	Yes, but overlaps with personal health care system and services management
Epidemiological surveillance/disease prevention and control	Yes, but overlaps with personal health care system and services management
Development of policies and planning (in public health)	No, applies to all public systems
Strategic management of health systems and services for population health gain	Yes, but overlaps with personal health care system and services management
Regulation and enforcement (to protect public health)	No, applies to all public systems
Human resources development and planning (in public health)	No, applies to all public systems
Health promotion, social participation and empowerment	Yes, but social participation and empowerment are wider goals of democratic systems
Ensuring the quality of personal and population-based health services	Yes, but overlaps with personal health care system and services management and wider public service management goals
Research, development and implementation of innovative (public health) solutions	No, applies to all organizations, public or private.

Appendix 3: Health Acts in Other Provinces

Ontario

Ontario introduced the *Health Protection and Promotion Act* in 1983 and identified the following mandatory health programs and services:

- community sanitation;
- control of communicable diseases, including immunization;
- preventive dentistry;
- family health including counseling services; family planning; identification of high-risk pregnant women; provision of health services to infants, high-risk pregnant women, and the elderly; provision of preschool and school health services; and collection and analysis of epidemiological data;
- home care services;
- nutrition services; and
- public health education.

Over time, these programs have been reviewed and amended. New service guidelines, issued in 1997, included general standards for:

- equal access to public health services;
- identification and investigation of health hazards; and
- programs to be based on community health status information and evidence of effectiveness and efficiency.

Program standards were established for:

- chronic diseases and injuries (chronic disease prevention; early detection of cancer; and injury prevention, including substance abuse prevention);
- family health (sexual health; reproductive health; and child health); and
- infectious diseases (control of infectious diseases; food safety; infection control; rabies control; safe water; sexually transmitted diseases including HIV/AIDS; tuberculosis control; and vaccine preventable diseases.)

Saskatchewan

In 1994, Saskatchewan introduced a new *Public Health Act* that did not specify public health programs. In response to concerns raised by health districts regarding public health programs, Saskatchewan Health convened a committee to identify public health and population health services. The committee's report (October 2001) identifies activities that, based on the power of the Minister under the *Public Health Act* to establish goals and standards, are mandatory for health districts. These areas of activity are:

- Healthy Families (Healthy Birth Outcomes; Healthy Child Development; Dental Health; Food Security; Abuse Prevention; Risk Behaviour Reduction in Teens; Teen Pregnancy Reduction; and Reduction of Seniors' Isolation);
- Chronic Disease Prevention (Physical Activity Promotion; Tobacco Reduction; Good Nutrition; Substance Abuse Prevention; and Stress Reduction);
- Safe Environments/Communities (Healthy Environment Goals; Food and Water; Recreational Water; Public Accommodation; Safe Housing; Environmental Hazards; Sustainable Communities and Environments; Hazardous Wastes; and Emergency Response);
- Injury Prevention Goals (Farm Injuries; Motor Vehicle Injuries; Child and Youth Injuries; Falls in Seniors; and Community Violence); and
- Communicable Disease Control (Institutional Infection Control; Vaccine Preventable Disease; Anti-microbial Resistant Organisms; Sexually Transmitted Infections and Blood Borne Pathogens; Travel Related Disease; Specific Communicable Diseases; Tuberculosis; Zoonotics and Vector Borne Disease; and Outbreak Control)

For each specific issue, mandatory goals are identified. Health districts have flexibility in deciding how to achieve those goals, and are expected to develop plans that include locally attainable objectives and take into account local resources and community expectations.

Quebec

A new *Public Health Act* was passed in Quebec in 2001. The Act requires the Minister to establish a public health program, which in turn provides a framework for regional and local public health activities that include the following:

- ongoing surveillance of the health status of the population and of health determinants;
- the prevention of diseases, trauma and social problems that have an impact on the health of the population;
- the promotion of systemic measures capable of fostering the enhancement of the health and well-being of the population; and
- the protection of the health of the population and the relevant health monitoring activities.

The Act also requires the Minister to pay particular attention to “actions capable of having an influence on health and welfare inequalities in the population and actions capable of decreasing the risk factors affecting the most vulnerable groups of the population.” The Act calls for regional boards to develop and regularly update a regional public health action plan and to make regular public reports on population health status in their region.

Appendix 4: A More Detailed Review of the Burden of Illness in Canada

Data on the economic burden of illness in BC were obtained using the charting application from the website for the Health Canada report on the Economic Burden of Illness in Canada in 1998 (http://ebic-femc.hc-sc.gc.ca/home_e.php?Lang=e)

In comparing the BC data with Canada as a whole, several interesting issues emerge that may have importance for the development of core programs in public health:

- Compared to Canada, in BC musculo-skeletal disease, injuries and nervous system disorders are relatively more important than cardiovascular disease, cancer and respiratory disease respectively. Indeed, musculo-skeletal diseases are the largest single ‘total economic burden of disease’ category for BC, ahead of cardiovascular disease, injuries and cancer.
- The indirect costs of musculo-skeletal disease in BC are very high—21 per cent of the total indirect cost—and 92 per cent of this indirect cost represents “the value of economic output lost” through long-term disability.
- Similarly, injuries are the second highest indirect cost in BC - between them they account for 35 per cent of all indirect costs in BC, a total of almost \$3.9 billion.
- Mental disorders are the second highest direct cost³³ (and it is direct costs that the Ministry of Health Services pays for) after cardiovascular disease, injuries are third and digestive disorders are fourth; surprisingly, cancer comes in 9th, after genito-urinary disease. This has implications for where the province’s preventive effort needs to be placed.
- Endocrine diseases, which include diabetes, are only 1.7 per cent of direct costs, with diabetes being the main contributor; in Canada (no BC data seem to be available in sub-categories), diabetes accounts for 42 per cent of hospital costs and 22 per cent of drug costs for endocrine diseases.
- Only 43.9 per cent of direct costs in BC could be attributed to specific disease categories; 45 per cent is ‘unattributable’, 3.1 per cent is for ‘ill-defined conditions’ 2.4 per cent for ‘well patient care’ and 5.6 per cent for ‘others’.
- The largest single cost component in BC is long-term disability (22.4 per cent versus 20.2 per cent for Canada as a whole), followed by mortality (19.7 per cent versus 21.0 per cent), hospital care (15.8 per cent versus 17.3 per cent), physician care (7.7 per cent versus 7.3 per cent), short-term disability (7.0 per cent versus 6.2 per cent), drugs (5.6 per cent versus 7.8 per cent), and other institutional care (5.1 per cent versus 5.0 per cent).
- Compared to Canada, BC incurs a much greater share of costs from long and short-term disability (29.4 per cent versus 26.4 per cent - or 11 per cent higher as a proportion), but lower costs for drugs (only 72 per cent as a proportion) and hospital care (91 per cent as a proportion). The higher proportion attributable to disability is consistent with the relatively greater importance of musculo-skeletal diseases and injuries in BC.

The economic burden study is also useful because, unlike the BC study of burden of disease, it provides some information on diagnostic sub-categories, although only for Canada to this point.

³³This does not include dental disease, which is the second highest direct cost in Canada, but is not included in the Health Canada data at the provincial level

This enables us to identify some of the specific diseases or conditions in Canada—and presumably in BC—that deserve particular attention in addition to those that are already well established (cardiovascular diseases, cancer, injuries and mental disorders), or to provide additional detail within those categories. For example, using 2 per cent as a cutoff for inclusion in this analysis, in Canada as a whole:

- Ischaemic heart disease contributes to 4.6 per cent of hospital care costs and 7.1 per cent of drug costs, while ischaemic heart disease and acute myocardial infarction combined account for 14.5 per cent of the costs attributed to premature mortality.
- Stroke accounts for 2.6 per cent of hospital costs and 3.7 per cent of the costs associated with premature mortality.
- Treatment of high blood pressure accounts for 7.1 per cent of total drug expenditures while treatment of acute respiratory infection (3.6 per cent), asthma (2.4 per cent), arthritis (2.1 per cent), and depressive disorders (2.0 per cent) are other important contributors to drug expenditures.
- Lung cancer contributes 8.3 per cent of the costs attributed to premature mortality, while breast cancer (3.2 per cent) and colorectal cancer (2.9 per cent) are also important contributors to these costs.
- Suicide accounts for 6.5 per cent of the indirect costs related to premature mortality, while motor vehicle traffic accidents (4.6 per cent), chronic obstructive pulmonary disease (2.3 per cent) and diabetes (2.2 per cent) are other important contributors.
- Back and spine problems account for 14.7 per cent of the indirect costs related to long-term disability, with arthritis (10.5 per cent), lower limb disorders (4.4 per cent), upper limb disorders (2.7 per cent), asthma (2.1 per cent), hearing disorders (2.1 per cent) and sight disorders (2.0 per cent) make important contributions to these costs.

Appendix 5: Participants in Consultation Process

- Health Officers Council, October 8th
 - Semi-annual meeting, approximately 15 to 20 Medical Health Officers
- Vancouver Island Health Authority, October 17th
 - Chief Medical Health Officer, other senior public health staff
- Fraser Health Authority, October 21st
 - Vice president, primary health; 2 Chief Operating Officers; Chief Medical Health Officers; other senior public health staff
- Fraser Health Authority, October 22nd
 - Chief Medical Health Officer, approximately 20 other public health management staff
- Vancouver Coastal Health Authority, October 21st
 - Prevention Committee, includes vice president, planning; 2 Chief Operating Officers; 2 Medical Health Officers, other senior public health staff
- Canadian Institute of Public Health Inspectors-BC (Board teleconference), October 22nd
- Public Health Association of BC, October 26th (Board meeting)
- Public Health Nursing Leadership Council (Board teleconference), October 25th
 - Approximately 10 Public Health Nursing leaders
- Community Nutritionists Council, October 28th
 - Annual meeting, approximately 30 to 40 Community Nutritionists
- Richmond Population Health, October 28th
 - Director of Prevention, eight other public health management staff
- Public Health Dentistry Group, October 29th
 - Semi-annual meeting, Ministry consultant, senior dental hygienists, and a public health dentist
- BC Center for Disease Control and Prevention, October 29th
 - Director, Medical Director, Director of Food Protection, Brian Copley
- Canadian Mental Health Association-BC, October 29th
 - President, policy consultant
- Interior Health Authority, October 31st
 - Public health leadership team: includes Chief Medical Health Officer, 3 Medical Health Officers, Directors of prevention and early intervention, directors of health protection, licensing officers, etc.
- Northern Health Authority, November 12th
 - Chief Medical Health Officer, two area Medical Health Officers, senior public health nursing, environmental health and licensing staff, audiologists etc.
- Public Health Audiology Council, November 12th (teleconference)
- Public Health Nursing Leadership Conference, November 21st
 - Annual conference, about 100 participants
- Environmental Health Officers and Licensing Officers Directors Councils, November 21st
 - 10–12 senior Environmental Health Officers and Licensing Officers, and one Health Canada representative
- Adult Services Branch, Public Sector Speech-Language Pathology Council, December 11th
 - Teleconference with the Council members

Appendix 6: Summary of Comments Received During Consultation Process

1. The *Public Health Act* and the public health system

Given that the organization of public health differs considerably from one health authority to another, a key point to emerge is that the new *Public Health Act* and core programs have to be written for the public health function of the health authority, rather than addressing specific organizational units or structures. The Act also has implications for the province in terms of resources to support public health is (addressed later under the topic of system capacity) and more broadly in terms of provincial legislation and leadership. Concern was also raised about the possibility of losing some aspects of current powers of inspection and enforcement as a result of Charter rights that have come into being since the Act was first formulated in the 1930s.

The advocacy role: there was widespread support for the need to ensure that Medical Health Officers (and perhaps others, in particular Directors of Environmental Health, Licensing, and Public Health Nursing) retain the ability to act as advocates and to speak out on issues importance to the health of the population. (The recent firing of Dr. David Swann, an Alberta medical officer of health, for speaking out on the issue of the Kyoto Accord, may have served to highlight concern here.) One suggestion was that senior public health management in each health authority be given duties, powers, and protection similar to that of the Provincial Health Officer. One specific concern that was raised was the difficult position that some licensing officers might find themselves in if they had to make orders with respect to facilities owned by their employers.

The public health function: Several organizations stressed the need to protect the unique public health function and role (with its focus on prevention and community development and community-based care) in the face of growing pressures to conform to a clinical or acute care model.

Intersectoral action: The need for public health to address issues well beyond the jurisdiction of the Ministry of Health was raised, and at least two groups suggested the need for a provincial-level mechanism or structure to develop intersectoral policy.

Municipal linkages/Boards of Health: A related concern at the local level was the importance of public health maintaining its links with municipalities, as well as the need to maintain the functions carried out by Boards of Health. This enables public health to take action beyond the health sector at the local level

The role of the Provincial Health Services Authority (PHSA)/BC Centre for Disease Control and Prevention: the need for a strong provincial structure to act as a support and resource for health authorities led to suggestions for integrating the Provincial Health Office with the PHSA and in other ways strengthening links between the public health field and CDCP.

2. Comments on Core Programs

The development of core programs was universally seen as beneficial; in some cases there was a real sense of urgency. Among the key issues to emerge was the importance of evidence, evaluation, indicators and information systems; the need to strengthen public health's capacity, infrastructure and staff competency; and the importance of ensuring accountability. In addition, a number of comments were made with respect to specific core programs.

Evidence, evaluation, indicators and information systems: The development of evidence to support core programs was widely seen as important, although a discussion of what is considered to be "reasonable evidence" in public health - and how this differs from evidence in clinical medicine - was seen to be important. Some problems with the current health information system were identified, as were the important implications for the further development of PHIS if it is to provide useful information and indicators for the evaluation of core programs.

Capacity, infrastructure and competence: It was widely recognized that if core programs are to be developed and implemented, public health capacity and infrastructure needs to be strengthened. Key aspects of public health capacity and infrastructure that need to be strengthened include the development of public health information and indicator systems; the ability to undertake research, policy analysis, advocacy and community development; and the need to recruit well-trained staff and to undertake staff development in the unique set of skills and competencies that are characteristic of public health.

Accountability: If health authorities are to be held accountable for their performance and for public health outcomes, those outcomes need to be clear and they need to be within the capability of health authorities. In particular, health authorities need to be accountable for addressing and reducing inequalities in health and in access to public health services.

Specific core program issues: Most of the issues raised with respect to specific programs focused on environmental health and licensing programs, infant and child development, mental health, oral health, and hearing health.

- **Environmental Health and Licensing:** Environmental health programs should focus on air, water, food, community sanitation and vector control, and reducing exposure to toxic substances. Environmental health and Licensing staff play an important role with respect to "healthy living conditions"/settings (including hospitals, day care and other care facilities), and are also involved in injury prevention, prevention of communicable diseases and prevention of cancer. Emergency preparedness should also be included.
- **Infant and child development:** Preventive services encompass much more than clinical and one-on-one interventions, and include a focus on the health of the family and groups of people. More focus needs to be placed on the importance of healthy infant and child development, including prenatal care (which should be considered a public health program), prenatal education, folic acid supplementation and good parenting.
- **Mental-health:** Promotion of mental-health in the workplace, in schools, and in families is an important issue.

- **Oral health:** This issue is much more than simply the prevention of dental caries; moreover, dental disease may be a good example of the “potential” burden of disease, and one that it is under-counted because it is mainly in the private system.
- **Hearing health:** Prevention and early detection of hearing loss is of great importance for preventing long-term developmental delay.

Appendix 7: Participant List, Public Health Core Functions Workshop, October 14-15, 2003

Professional Advisory Group	
Health Authorities	
Sylvia Robinson Manager, Chronic Disease Initiatives Vancouver Island Health Authority	Debbie Ryan Director, Prevention and Promotion North Shore Health Services Area Vancouver Coastal Health Authority
Lydia Drasic Director, Health Planning and Systems Development Fraser Health Authority	Anne White Director, Prevention & Early Intervention, Public Health Interior Health Authority
Lorna Medd Chief Medical Health Officer Northern Health Authority	Robert Brunham Medical Director, BC Centre for Disease Control Provincial Health Services Authority
Layton Engwer Director, Information Management BC Centre for Disease Control Provincial Health Services Authority/PHIS	
Organizations	
Victoria Barr President Public Health Association of BC	Roger Parsonage CIPHI-BC (Environmental Health Officer, Interior Health Authority)
Nelson Ames Health Officer's Council (Medical Health Officer Kootenays and Interior Health Authorities)	Cindy Anderson Chair, PHN-LC (Manager, Primary Prevention Services, Vancouver Island Health Authority)
Joanne Houghton CNC (Community Nutritionist, Northern Health Authority)	Tim Shum BC Health Protection Directors Council (Director, Health Protection, Fraser Health Authority)
Kim MacDonald Licensing Leadership Council (Manager, Community Care Licensing, Vancouver Island Health Authority)	Anita Vallee Regional Dental Hygienist Public Health Dental Representatives Vancouver Island HA
Carol Oosthuizen Chair, Government Affairs BC Assoc Speech-Language Pathologists and Audiologists	Margery McRae Chair First Nation's Chiefs Health Committee
Ann Pederson Women's Health (Manager, Research and Policy, BC Centre of Excellence for Women's Health)	Marjorie MacDonald Professor of Nursing UVic – School of Nursing
Jane Buxton Director, Community Medicine Program Health Care and Epidemiology, University of BC	

Ministry of Health Services	
Perry Kendall Provincial Health Officer	Andrew Hazlewood Director General, Population Health and Wellness
Shaun Peck Deputy Provincial Health Officer	John Phillips Executive Director, Prevention and Wellness Planning
Kersteen Johnston Executive Director, Health Protection Planning	Tom Gregory Executive Director, Business Planning, Surveillance and Epidemiology
Deb Schwartz Special Advisor, Aboriginal Health	Tessa Graham Special Advisor, Women's and Seniors' Health
Doni Eve Policy Analyst, Women and Seniors Health	Dr. Bob Fisk Director, Epidemiology, Business Planning, Surveillance and Epidemiology
Dr. Brian Emerson Medical Consultant, Prevention and Wellness Planning	Warren O'Briain HIV/AIDS Specialist, Disease and Injury Prevention
Effie Henry Executive Director, Vancouver Island, North and Interior, PMID	Val Tregillus Director, Strategic Initiatives, Medical Services Plan
Heather Davidson Director, Strategic Policy and Research	Gerrit van der Leer Manager, Adult Mental Health Division
Other Ministries	
Betsy Mackenzie Population and Public Health Branch BC/Yukon Region, Health Canada	Jennifer Perzow Policy Analyst, Policy and Intergovernmental Relations BC/Yukon Region, Health Canada
Wayne Mitic Project Manager, Research, Office for Children and Youth	Susan Kennedy Manager, Student Transitions Branch Ministry of Education
Elise Wickson Director, Women's Policy Ministry of Community, Aboriginal and Women's Services	
Other Stakeholders	
Rick Cuttle Executive Director BC College of Family Physicians	Darrell Thomson BC Medical Association
Brian Holmes Public Health Audiology Council	Julie Cullen Provincial Coordinator First Call: BC Child and Youth Advocacy Coalition
Carol Matusicky Executive Director BC Council for Families	Jan Christilaw Obstetrician Children's and Women's Hospital
Jonathan Down Vice-President, BC Pediatrics Society	Harriet Permut Union of BC Municipalities
Bobbe Wood (Day 1), Executive Director Heart and Stroke Foundation (Diego Marchese, Day 2)	Lucy Buller Manager of Policy, Planning, and Evaluation Canadian Cancer Society

Other Stakeholders continued	
Ronnie Phipps Coordinator BC Health Promotion Coalition	Janice MacDonald Executive Director Dietitians of Canada, BC and Yukon Division
Nadine Johnson Family Health Coordinator Interior Health Authority	Marianna Brusoni Associate Director BC Injury Prevention Research Unit
Jo Wearing Director, Policy Division Registered Nurses Association of BC	Greg Smith Executive Director Planned Parenthood Association of BC
Elizabeth Torr Program Director BC Reproductive Care Program	Jean Moore Past President Canadian Mental Health Association – BC
David Hultsch Director Centre for Aging, University of Victoria	John Millar Executive Director, Population Health Provincial Health Services Authority
Roger Tonkin McCreary Centre <docrst@shaw.ca>	Andrew Gage Staff Lawyer West Coast Environmental
Kristine Larsen Coordinator, Speech-Language Pathology Prevention Services Public Health, Interior Health	Shirley Morven Nisga'a Nation 'jclayton@nisgaahealth.bc.ca'
David Butler-Jones former Chief Medical Health Officer, Saskatchewan, and former President, Canadian Public Health Association of BC	
Facilitators	
James Leslie	Nora Whyte
Tracee Schmidt Ministry of Health Planning	Sue Yeats
Heather Pattullo	Lynn Buhler

Appendix 8: Core Functions in Public Health: A Planning Workshop

**Core Functions in Public Health:
A Planning Workshop
Report of the Proceedings, November 2003**

**Public Health Association of BC
Consultants James Leslie and Nora Whyte**

INTRODUCTION

This paper is a report of a workshop on Core Functions in Public Health that was held at the Richmond Conference Centre October 14-15, 2003. Over sixty invitees attended; they represented a quite broad array of the stakeholder groups with an interest in Public Health in British Columbia.

The workshop followed from the work conducted by Dr. Trevor Hancock for the Ministry of Health Planning, Population Health and Wellness. Dr. Hancock had consulted many of the workshop invitees in the drafting of his working paper, A Framework for Core Functions in Public Health. All invitees had received Draft #3 of this document revised September 30, 2003.

The goals of the workshop were to present the consultation paper to an audience of highly knowledgeable leaders, policy makers and practitioners in Public Health, listen to their observations and incorporate what was learned into a further revision of the paper.

The workshop was an important step in continuing development towards a new Public Health Act for British Columbia. In comments delivered to the workshop the Deputy Minister, Dr. Penny Ballem, stated that the core functions framework can be established and utilized in advance of the passage of the new Act. The workshop participants expressed a sense of urgency to move ahead with the framework and complete the many tasks required to build the capacity for Public Health as proposed in the working paper.

This report was written by the consultants based on the flipchart notes taken by the facilitators of the small group discussions and by notes taken during the plenary sessions. Because of the knowledge and skills of the participants, the discussions were rich in substance and provided sophisticated analyses and critiques. Your writers faced a formidable challenge; we hope that we have captured the essence of the two days you gave to Public Health in BC.

The comments given by Trevor Hancock and David Butler-Jones in plenary sessions are well summarized in their PowerPoint presentations that were circulated to all participants; accordingly, this report will focus largely on drawing together the group discussions.

OPENING PRESENTATION

Dr. Trevor Hancock opened the workshop with a presentation on the underlying concepts for the Framework for Core Functions in Public Health. Most importantly for the two days of discussion that followed, he outlined the structures and process within which the core functions would determine the implementation of Public Health activities throughout BC:

- Core **programs** have to be developed for the Public Health functions of the health authorities
- **Functions** include the programs and strategies that are unique to Public Health as well as the capacity functions that are essential for all large complex organizations.
- Programs are directed towards measurable health outcomes
- Public Health functions are in the area of prevention:
- Primordial prevention—the area of Public Health policy and health promotion
- Primary prevention—the task of Public Health
- Early Secondary prevention—the task of preventive primary care medicine

- The determination of core program functions in Public Health is to be made with reference to a set of criteria pertaining to the impact of programs, their evaluability and their effectiveness. The Public Health system must have the capacity to monitor and measure programs from a population health perspective.

Dr. Hancock reminded his audience that all models are wrong and asked that in their discussions they ask ‘is the model before them usable?’

DAY ONE SMALL GROUP DISCUSSIONS

Participants worked in five facilitated groups to comment on the proposed core program areas: Health Improvement; Prevention of Disease, Injury and Disability; and Environmental Health. For each category, groups offered suggestions for inclusion of new items, critiqued terminology and raised questions for consideration.

Health Improvement

Questions/Comments:

- Where does personal health practice fit?
- Change Healthy Living Conditions to Healthy Communities: social support networks & strengthening resilience (individual, family, community). Strategies for this theme are: partnerships, participation, empowerment and engagement
- Several groups mentioned that the document should emphasize a lifespan approach—it is important for Public Health to use a lifespan approach to healthy development (focus on key transition periods in lifecycle that have a major impact on health outcomes)

CURRENT LIST	SUGGESTED CHANGES
(Women’s) Reproductive health <ul style="list-style-type: none"> ▪ Reproductive choice ▪ Prenatal care and education 	Remove ‘women’— the heading should be reproductive health [strong consensus on this] Family planning Prenatal care encompasses medical care and societal support e.g., workplaces supporting healthy pregnancy Is pre-conception guidance/education implied? Add: Postpartum care/support for mothers e.g., depression
Healthy infant and early child development <ul style="list-style-type: none"> • Breastfeeding and infant nutrition • Parenting skills • Developmental assessment and screening 	What about development in other life stages youth, adults, and seniors? This should include vision, speech and hearing screening plus early intervention [strong consensus on this] Add: Early childhood education

CURRENT LIST	SUGGESTED CHANGES
Healthy living conditions <ul style="list-style-type: none"> • Healthy homes • Healthy schools • Healthy workplaces • Healthy care facilities • Healthy communities 	<p>The social and cultural aspects of healthy living need to be emphasized in document This is similar to the settings lens—is this list necessary? Remove ‘families’</p> <p>Should reflect new legislation Add: Healthy recreational facilities and built environment bike paths, etc.</p> <p>Emphasize ways of doing intersectoral work and ways of working with communities as partners. Other: social environments that are not permanent living situations e.g. recovery homes, correctional facilities People that are homeless need to be “defined in” somewhere</p>
Healthy living <ul style="list-style-type: none"> ▪ Smoking/tobacco control ▪ Healthy eating ▪ Active living ▪ Moderate alcohol use ▪ Healthy/safe sexuality 	<p>Stress management as an important aspect of healthy living</p> <p>Much discussion in groups about this term—change to ‘appropriate alcohol use’ or ‘reducing problem substance use’, include prescription and non-prescription drug use Healthy sexual practices or safe sexual behaviours</p>
Mental health promotion <ul style="list-style-type: none"> • Strengthen resilience • Strengthen social networks/support 	<p>Add:</p> <ul style="list-style-type: none"> • Social/cultural identity • Spiritual and emotional health • Resilience/coping strategies • Competency throughout the lifespan, intellectual stimulation
Food security <ul style="list-style-type: none"> • Reduce hunger • Increase access to healthy food 	<p>Access to healthy food—must be culturally and personally acceptable and access must be dignified Supply/need balance</p>

Prevention of Disease, Injury and Disability

Questions/Comments:

- How is this list of chronic diseases determined and refreshed?
- There will be new/emergent priorities
- What is the evidence for the prevention of psychoses and neuroses?
- Is screening for a specific disease a Public Health function?
- There is considerable overlap with activities in Health Improvement e.g., substance abuse prevention as part of Healthy Living
- Appropriate assessment/screening e.g., nutrition, comprehensive developmental screening, is an important prevention activity
- Provide good definitions in glossary for non-intentional injury & substance abuse

Chronic disease prevention (High risk populations; specific diseases) <ul style="list-style-type: none"> • Cardiovascular disease • Cancer • Neurological and sensory • Musculo-skeletal • Chronic respiratory • Digestive • Diabetes 	
Non-intentional injury prevention <ul style="list-style-type: none"> • Motor vehicles • Falls • Burns • Drowning • Poisoning • Other 	Include other types of transportation, snowmobiles, bicycles, boats Include workplace injuries Recreational and sports injuries
Violence and abuse prevention <ul style="list-style-type: none"> • Domestic violence • Child abuse • Bullying and harassment in schools, workplaces, etc. • Violence in the community 	Interpersonal violence Abuse/neglect of vulnerable adults Racism Suicide Homicide
Prevention of mental disorders and addictions <ul style="list-style-type: none"> • Neurosis (mood disorders?) • Psychoses • Alcohol abuse • Prescription drug abuse • Illicit drug use 	Include “new” addictions (TV, computer), food addictions, gambling and others Stress Non-prescription drug use and other substances
Prevention of disability <ul style="list-style-type: none"> • Sensory (hearing, vision) • Mental • Physical • Developmental 	Add early intervention Add voice to sensory Consider role of Public Health in rehabilitation following trauma
Prevention of dental/oral diseases	
Communicable disease prevention and control <ul style="list-style-type: none"> • Vaccine-preventable diseases • HIV/AIDS, STDs, blood-borne • TB • Vector-borne • New emergent diseases 	
Prevention of the adverse health effects of the health care system <ul style="list-style-type: none"> • Nosocomial infections • <i>Adverse drug events</i> • Medical error • Unnecessary/inappropriate provision of services 	Add: <ul style="list-style-type: none"> • Inadequate treatment and “sins of omission” • Environmental problems caused by health facilities Does this include “private” health care?

Environmental Health

Questions/Comments:

- The macro-categories should be based on lists from international documents.
- Do we need a made-in-BC solution?
- This category should capture the way in which human impingement is making us unhealthy e.g., as in Kyoto Protocol
- The positive or health promotion piece of environmental health is missing, need to go beyond protection to enhancement.
- Perhaps Environmental Health should be a level 2 category under Health Improvement.
- Why was “exposure to toxics” removed?
- Does Emergency Preparedness (and Response) belong in its own category?

C RR	IST	SUGGESTED CHANGES
Food safety and hygiene <ul style="list-style-type: none"> • Microbial • Toxic • Other 		Include: noise, soil quality, built environment, radiation
Water quality <ul style="list-style-type: none"> • Drinking water • Recreational water 		
Air quality <ul style="list-style-type: none"> • Indoor air quality • Outdoor air quality 		
Community sanitation <ul style="list-style-type: none"> • Vector control • Hazards/nuisances 		Impact of health system facilities on environment Sewage disposal
Emergency preparedness		Disaster preparedness and response Add: <ul style="list-style-type: none"> • Reduction of exposure to toxins, carcinogens, teratogens • Global issues: climate change, nuclear war, bioterrorism

IMPORTANT POINTS AND REFLECTIONS FROM DAY ONE

General Comments on Framework

- Reducing health inequities (should this be another strategy area or another level one function? It needs to be flagged more strongly in document.
- The document should include discussion about support for people living with developmental disabilities.
- Inter-ministerial co-operation and collaboration—how does this fit?
- The connecting piece of civil society work is important.
- Roles and responsibilities of all involved in Public Health, PHSA, Health Ministries, health authorities, municipalities, individuals, should be well defined.
- Need to link with provincial health goals.
- Where does Public Health begin and end?
- Integration needs to be highlighted in the Framework, for instance, how to describe the integration/mutual effort and complementary activities of health promotion and environmental health.

Process

A recurring question throughout the first day's discussions was how to envision the move from the core programs functions outlined in the document to an evaluable program being delivered in a particular locality. It was difficult to analyze one aspect of the framework if one was not fully conversant with all aspects of the system and their inter-relationships. It was not easy to define and develop a taxonomy of core program functions when people were unable to place these programs within the system. The small groups spent time proposing a different conceptual order rather than giving a 'test drive' to the proposed model.

In retrospect, it might have been worthwhile to begin the small group work with exercises in the use of the framework to test drive the core functions as they are moved through the system proposed in Figure 3, perhaps using scenarios to involve the groups in considering different core program areas, applying lenses and selecting appropriate strategies.

Small group discussions on the topic of Healthy Living captured the dilemma of the difficulty of attaining precision in Public Health language:

- Is it a program or a strategy?
- Is it separate from Mental Health Promotion where the solutions are in the area of resilience, social cohesion and as such is a healthy community the outcome of healthy living?
- Does the action of healthy living by individuals result in a healthy community?
- Is there not a circular interaction here—where indicators could include:
 - Schools' performance (literacy levels, completion rates, drop-outs)
 - Adequate, fulfilling employment in healthy workplaces
 - Active participation in numerous civil society organizations

Policy development and advocacy are distinct from Health Promotion as it is typically understood and practiced within the health system today. Policy and advocacy work is carried on, in general, by those outside the formal health system.

Throughout the discussions, groups emphasized the need to base core Public Health functions on a set of principles and values that would guide administrators and practitioners in ways of working with communities, acknowledging clients & communities as experts, developing inter-cultural competence in health authorities and reducing disparities.

DAY TWO SMALL GROUP DISCUSSION

The small discussion group discussions around Performance Management were lively and elicited diverse, wide-ranging explorations of system issues. Although most day one participants stayed on for day two, two of the discussion groups joined forces. In the following section the discussions of the remaining four groups are summarized in point form.

Green and Orange Group

- Performance Agreements must be made reciprocal, based on true partnering but there is no mechanism for reciprocity
- No proportionality of workload and complexity – service agreement level must be proportional to cost
- Need to infuse process with “meta” goals or shared goals to promote mutuality and reciprocity
- No credibility for Performance Agreements unless there is a mechanism to link to:
 - Community needs

- Service plans
 - Strategic plans
- Agreements need to be in context of health system and community groups
- Schism in regard to Provincial Health Goals used by health authorities to shape local policy while goals are ignored by government as a whole—advisory input on goals is gone
- There are allies in other sectors and levels of government; they should be worked with and we need collaboration among and between ministries
- Aboriginal communities have multiple accountabilities—more than “paper”; primary one is to community
- Need to provide for evaluation by citizens
- Note example of U.S. Veterans Administration’s use of indicators and sub-indicators as information feeding a learning organization
- Include qualitative data and stories that validate contribution and effort of health workers and others
- It is important to rebuild relationships outside of health system, stakeholder champions such as municipalities
- Public Health must tell its stories in the media and other venues to raise broad awareness on its centrality in health sector
- Health Goals can be used as levers to obtain support for programs
- Example to consider is the Vancouver Agreement safe injection site—where strength was found through synergy of multiple partners, covering all stakeholders
- Language barrier with the term “performance indicators” - perceived as alien administrative process, punitive rather than helpful in learning what works
- Resistance effects compliance in reporting and the reliability of the data reported
- Data collection methods/instruments can be offensive or misunderstood in communities for cultural and historical reasons
- Therefore, who deals with gathering data and the methods used will have to vary for some populations
- Community development in Public Health is varied and constantly changing; it is difficult to measure but necessary to prove worth—use formative evaluation technique
- Outcomes measures and indicators should be a combination of:
 - Things you can count
 - Surrogates – indirect measures
 - Descriptors
- An example of success: elements of Planned Parenthood Association’s evaluation framework
 - Intended outcomes
 - Unintended outcomes
 - Remediation and development action plan
 - Value for money compared to alternatives
 - Sustainability through a base of support and partners
- Can try a different approach to counting—use of indirect measures e.g.: tax receipts to track referrals
- Staff must feel indicators are achievable, useful, useable, not cumbersome
- Staff should help develop indicators to ensure ownership
- Multiple indicators to meet multiple needs: planning, learning, accountability—essential for learning organizations

Blue Group

- What is performance management in a learning organization?
 - Realistic expectations
 - Quality improvement process
 - Mission, goal, outcome measures
 - Learning—subject to public scrutiny for reward or punishment
 - Not static—moving target because if learning has feedback loop, may change priorities based on results
 - A sense of ownership of the performance management process—a way of past the attitude of rigid walls between jobs to one system of thinking where attitude is “what can I contribute to our solution of our shared problem?”
 - A Community Development Approach—bring people together to identify what we are going to do and how
 - Shared goals—need generalists, out of the box systems thinking; has been part of the Public Health approach
- Organizations should be committed to including front line workers, consumers and community in the process of performance management
- Note that there has never been a formal process of accountability – many do not want this to change
- How do we engage Public Health in this process:
 - Ask practitioners how they would measure success – their minimum data set and a peer review process
 - Active front line staff integral
 - Keep it simple
 - Feedback and follow-up critical to create a loop to enable work units to be proactive
 - The formal/hierarchical leaders must invest resources in this system of performance management if it is to be a dynamic learning process
 - Local champion will evolve if there is commitment and involvement from senior levels
- Culture of learning
 - Leadership – someone is supported to get it going and make it matter
 - Qualities of leadership: welcoming, open approach, not top down, listens, willing to change and is at all levels of organization
 - Formal leadership must support and provide resources; let go of some power and reward risk taking
- Embracing change
 - Focus on what works
 - Solution focused
 - Appreciative inquiry
 - Constructive approach
 - Forward looking results, forward outcomes – how are we going to get there?
 - Create solutions that are immediate, doable – small steps to success
- Establish values which include at a minimum: participatory; inclusive; and respectful
- Continuously check to make sure process aligns with values
- Process indicators/qualities

- Keep it simple; it has to feel real
 - Engagement
 - Achieves success with small increments
 - Allows decision making at the front line
 - Builds a commitment to public's health
 - Uses meaningful indicators
 - Invests in measuring the right things
 - Includes a cycle of feedback leading to action
 - Anticipates barriers and points to ways to get past them
- Thoughts on Reward and Punishment
 - Comparison between health authorities is not always useful – might be better to compare self to self
 - Larger group of indicators gives a broader perspective and helps to analyze variation
 - Indicators can be the engine of improvement
 - Solicit criticism and provide thank you for feedback
 - Language – particular use of words is important
 - Use “negative” information to articulate and argue for improvements

Yellow Group

- Elephants in room
 - Cuts are our life
 - Board chairs only care about the Contract
 - Reward system is contrary to learning
- Performance Management is the Performance Agreement with the health authorities
- Public Health performance management system
 - Management tool
 - Monitoring
 - Planning
 - Front line
 - Required for complex analysis
- Contradiction: business model driven one-way, Public Service Model driven another
- PHSA should be the home/administrator/maintainer of the global databases/information sources
- The province should play facilitator role to get at the data sets/research – at policy level, province responsible to clarify roles
- Sorting out roles of PHSA and ministries of health is problematic – between health authorities and government
- Complex relationships but lack of understanding between health authorities and ministries of health – a barrier to an effective performance management system
- The province should articulate the principles of accountability
- Need a means to share and coordinator data pulls, analysis and dissemination and common data definitions and common approaches to use of data
- Establish a shared approach to deciding: what we need to know; how we collect it; and how we use it
- Agreement necessary among data users about: what, when, who and how to cooperate

- We see the ministries of health leading this endeavour and making it a priority
- Need a mechanism to make clear the underlying assumptions of Public Health work – a logic model perhaps
- We need to have the right skills and to respect the skills/art of data analysis
- Looking for one-stop shopping, but how do you manage the virtual “Mall of America”
- The process of determining what we need to know and how we are going to get it is as important as getting there

Red Group

- Comments on Framework
- It becomes clearer with discussion
 - Captures majority of elements involved in Public Health
 - Could use some graphics to show the feedback loop and planning processes built from the capacity box
 - It is difficult to envision it “standing alone” – helpful to use principles and criteria with it
- Suggest possible next step is to look to BC Health Goals as the place to start in developing performance expectations
- Q: What other goals are being used in health authorities across BC?
 - Do not reinvent the wheel e.g. Manitoba’s work on early childhood development, logic models of the Ministry of Children and Family Development
 - Guidance should be given to health authorities on what data to collect and on ways to pool data and show and analyze regional variation
 - Provinces should share high level indicators – feds to provide integrated databases for provincial use
- Q: How do we respond to public “voice” and still maintain core services
 - Need performance measurement for public involvement – note precedent smoking by-laws
 - Use different vehicles to elicit information from public e.g.: the internet, public meetings
 - Define performance management – need best or “better” practices information - note loss of consultants in this area
 - Use the term elements rather than programs
 - Important to promote formalized interministerial collaboration and cooperation in funding programs where have a shared responsibility
 - Need to hear the perspective of NGOs
 - How to track the effect/effectiveness of partnerships? What evidence and is it worth it?
 - We know the evidence is in the area of blending mandates and sharing expertise
 - Citizen involvement needs to be supported by money and resources – can not be done off the side of the desks of already busy people
- Public Health services in BC are being fragmented – concept of integration is taking away ability to provide distinctive Public Health programs and services
- We need measures of capacity included in performance measures – must look at human resources when generating expectations for what can be achieved
- Role of Health Canada and Canada Health Council
 - Best practices

- National, research-based indicators
- Facilitate national discussion to enable learning exchange
- Cost sharing for national initiatives e.g.: SARS, drug addiction

FINAL PLENARY

The final plenary session provided an opportunity for closing comments and suggestions for next steps in the process:

Professional Advisory Group (PAG)

- Ensure adequate resources and time for participation in the PAG with responsibility shared among Ministry of Health Planning, health authorities and Professional Councils.
- Retain existing PAG and use invitees to this workshop as a larger reference group to respond to next document.
- Health Authority representatives should take information back to each HA for further input and development.
- Information Systems Workgroup should work on standards.
- It is a challenge for the whole PAG to work effectively on specific issues—it would be useful to work in small task groups, suggestion to take one core area and work through from step one to end.
- Hold a PAG teleconference within one-two months.

Development and Dissemination of Work on Indicators

- A clearinghouse function is important as evidence papers are developed and more work is done on indicators (Bob Fisk volunteered to help with coordination).
- Ask health authorities to share their work on indicator development when they have carried out specific projects that relate to Public Health core functions.
- In addition to content experts, it is important to involve experts in managing data sets.
- Indicators may be required for Strategies and Capacity functions.

Role of Public

- It is important to involve the public in this process—start in one specific area.
- Be mindful of the timing of marketing the core functions to the public—to prevent unreasonable expectations.

Additional Comments on Framework

- Portray the Capacity box as a cycle to show that it is a dynamic process.
- Revisit core functions every 3-5 years - must ensure that there is an accepted process for this.

IN CONCLUSION

Trevor Hancock summarized the next steps in the progress towards a new Public Health Act for BC in the presentation he made to the Workshop:

Our process after this workshop

- Take the results and synthesize
- Revise and finalize the core programs paper
- Move through Ministry for final approval

Key activities

- Summer 2004 – completion of evidence and best practices papers
- Fall 2004 – first draft set of indicators
- Fall 2004 – identify national and international benchmarks
- January 2005 – first draft set of performance indicators
- March 2005 – new Public Health Act
- Ongoing – develop and maintain website, information systems

David Butler-Jones' Presentation

In his presentation to the Workshop and in his participation in the small group discussions, David Butler-Jones provided many helpful insights based on his experience at various levels of the Public Health System, from the local to the international. He left us with his set of guidelines for survival in our age of continuous Health Reform:

- Embrace the Forest
- Engage in Reflective Practice
- Current Problems Were Once Solutions
- The Simple Answer is: There Are No Simple Answers (But There Are Answers)
- Focus on Application and Dissemination
- We are More Likely to Get What We Expect
- Do Something

Appendix 9: Professional Advisory Group Members

Health Authorities	
Sylvia Robinson Manager, Chronic Disease Initiatives Vancouver Island Health Authority (250) 519-7071 smrobinson@caphealth.org	Debbie Ryan Director, Prevention and Promotion North Shore Health Services Area Vancouver Coastal Health Authority debbie.ryan@nshr.hnet.bc.ca
Lydia Drasic Director, Health Planning and Systems Development Fraser Health Authority Lydia.Drasic@fraserhealth.ca	Anne White, Director, Prevention & Early Intervention, Public Health Interior Health Authority 813 - 10 th St, Castlegar BC V1N 2H7 (250) 365-4300 Fax (250) 365-4303 anne.white@interiorhealth.ca
Lorna Medd Chief Medical Health Officer Northern Health Authority (250) 565-7461 XT:HLTH Medd, Lorna	Robert Brunham Medical Director BC Centre for Disease Control Provincial Health Services Authority 2065# - 655 12 th Ave West Vancouver BC V5Z 4R4 (604) 660-1840 robert.brunham@bccdc.ca
Layton Engwer Director of Information Management BC Centre for Disease Control Provincial Health Services Authority/PHIS Vancouver (604) 660-6198 Fax (604) 775-1566 Victoria (250) 642-3391 Fax (250) 642-3059 layton.engwer@bccdc.ca	Alternate Ted Bruce Regional Director, Health Systems Policy (604) 875-4673 tbruce@vrhb.bc.ca
Public Health Discipline Organizations	
Victoria Barr President Public Health Association of BC Victoria_Barr@telus.net	Roger Parsonage, EHO Interior Health Authority CIPHI-BC (250) 549-5714 roger.parsonage@interiorhealth.ca
Nelson Ames Medical Health Officer, Kootenays Health Officer's Council Nelson.Ames@kbchss.hnet.bc.ca	Cindy Anderson Chair PHN-LC (250) 744-5177
Joanne Houghton Community Nutritionist, Northern Health Authority CNC (250) 565-7390 joanne.houghton@northernhealth.ca	Tim Shum Director, Health Protection Fraser Health Authority BC Health Protection Directors Council (604) 949-7262 Tim.Shum@fraserhealth.ca

Public Health Discipline Organizations continued	
<p>Greg Ritchey Community Care Facilities Coordinator Vancouver Coastal Licensing Officers (604) 233-3177 Greg_Ritchey@rhss.bc.ca</p>	<p>Anita Vallee Regional Dental Hygienist Vancouver Island Health Authority Dental Public Health Representative Committee (250) 755 3332 anita.vallee@cvihr.bc.ca</p>
<p>Trina Haynes BC Assoc Speech-Language Pathologists and Audiologists (604) 952-3551 Ext. 3519 Trina.Haynes@fraserhealth.ca Previously Carol Oosthuizen, Chair, Government Affairs</p>	
Alternates	
<p>Anne George Vice President BC Centre for Children's and Women's Health ageorge@interchange.ubc.ca</p>	<p>Alan Kerr (250) 544-2426 alan.kerr@caphealth.org</p>
<p>Domenic Losito Director, Health Protection Vancouver Coastal Health Authority (604) 714-5677 Domenic_Losito@vrhb.bc.ca</p>	<p>Lynn Guest Regional Dental Hygienist Fraser Health Authority (604) 476-7013 Fax (604) 476-7077 lynn.guest@fraserhealth.ca</p>
<p>Sandra Baker Audiology Chair (604) 736-7391 Fax (604) 736-4381 sbaker@widhh.com</p>	<p>Margery McRae Chair First Nation's Chiefs Health Committee marj.mcrae@ggc.gitxsan.com [or Donna Johnson - djohnson@fnchc.ca (604) 913-2080]</p>
<p>Ann Pederson Manager, Research and Policy, Women's Health British Columbia Centre of Excellence for Women's Health (604) 875-3715 Fax (605) 875-3716 apederson@cw.bc.ca</p>	<p>Jane Buxton Director Community Medicine Program Health Care and Epidemiology, University of BC (604) 822-2772 or (604) 822 5391 jane.buxton@ubc.ca</p>
<p>Marjorie MacDonald Professor of Nursing School of Nursing, University of Victoria (250) 472-4265 Marjorie@uvic.ca</p>	<p>Nadine Johnson Family Health Coordinator Interior Health Authority Healthy Beginnings Contact (250) 868-7743 XT:HLTH Johnson, Nadine</p>

Appendix 10: Inappropriate Medical Care

There is considerable evidence of unnecessary investigation, inappropriate prescribing and other inappropriate interventions. For example:

- a review of studies of inappropriate laboratory utilization found that estimates varied widely, from 4.5 per cent - 95 per cent, although methodological standards are weak (van Walraven & Naylor, 1998).
- an American study of the care provided to seniors found that “Virtually every study included in this review found at least double-digit levels of inappropriate care. Perhaps as much as one-fifth to one-quarter of acute hospital services or procedures were felt to be used for equivocal or inappropriate reasons, and two-fifths to one-half of the medications studied were overused in outpatients” (Brook et al., 1990).
- one Canadian study found that “38 per cent of elderly people who received antidepressants, 19 per cent of those who received oral hypoglycemics, 18 per cent of those who received sedative hypnotics and 13 per cent of those who received non-steroidal anti-inflammatory drugs were defined as having received a potentially inappropriate drug” (Anderson, Beers, & Kerluke, 1997).
- A study of the management of low back pain found that while in nine out of ten cases this condition is self-limiting within a month with conservative management, one-third of family and general practitioners surveyed in Ontario “reported that they order x-rays within the first week of an episode of low-back pain, in the absence of any ‘red flags’ “(symptoms suggesting more serious underlying problems). Moreover, “roughly 50 per cent of respondents reported that they had ordered muscle relaxants instead of more conservative medications for acute low-back pain”, even though muscle relaxants are no more effective than non-steroidal anti-inflammatory drugs and “cause side-effects in a significant minority of people who take them” (Back before you know it, 1995).
- the Caesarian section rate in the United States ranges from a low of 8 per cent to a high of 35 per cent, depending on location, while per capita hospital costs “are twice as high in Boston as they are in New Haven, similar cities only 100 miles apart. Hospital admission rates correlate with the number of available hospital beds per capita rather than the prevalence of illness.” (Fries, Koop, Sokolov, Beadle, & Wright, 1998).
- In the US, “70 per cent of people do not desire aggressive, invasive technical treatments when they are dying and 85 per cent express a desire for living wills and other advance directives, yet only 9 per cent of the population have executed such directives” (Fries et al., 1998).

Also in the US, it is estimated that 18 per cent of total life-time health care costs are incurred in the final year of life (Fries et al., 1998), and Fries et al. cite what they consider to be conservative estimates that reducing the demand for unwanted and unnecessary treatment in irreversible terminal illness could reduce the costs of total lifetime care by 3 per cent.

Appendix 10: References

- Anderson, G.M., Beers, M.H., & Kerluke, K. (1997). Auditing prescription practice using explicit criteria and computerized drug benefit claims data. ” *Journal of Evaluation in Clinical Practice*, 3(4), 283-294.
- Back before you know it: The management of acute low back pain. (1995, June 1). *Informed (ICES)*, 1(3).
- Brook, R.H., Kamberg, C.J., Mayer-Oakes, A., Beers, M.H., Raube, K., & Steiner, A. (1990). Appropriateness of acute medical care for the elderly: an analysis of the literature. *Health Policy*, 14(3), 225-242.
- Fries, J., Koop, E., Sokolov, J., Beadle, C., & Wright, D. (1998). Beyond health promotion: Reducing need and demand for medical care. *Health Affairs*, 17(2), 70-84.
- van Walraven, C. & Naylor, C.D. (1998). Do we know what inappropriate laboratory utilization is? A systematic review of laboratory clinical audits. *Journal of the American Medical Association*, 280(6), 550-558.

Appendix 11: Core Competencies for Public Health Professionals

All public health professionals should have skills in

- Analytic Assessment
- Basic Public Health Sciences
- Cultural Competency
- Communication
- Community Dimensions of Practice
- Financial Planning and Management
- Leadership and Systems Thinking
- Policy Development/Program Planning.

Source: Competencies Feedback Project, Council on Linkages Between Academia and Public Health Practice. (www.trainingfinder.org/competencies/list_nolevels.htm)