

Chapter 3

THE ROLE AND ORGANIZATION OF PUBLIC HEALTH

The preceding chapter set out a brief chronology of the SARS outbreak as it affected Canada. The SARS experience illustrated a variety of issues, some to do with the health services system, but many others to do with public health and the interface between public health and clinical care. Except in cases of sudden threats to the health of communities such as Walkerton, North Battleford, or SARS, public health operates in the background and is often taken for granted. Many Canadians—including health care professionals and administrators—accordingly have only a limited understanding of what public health is and how it is organized in Canada. This chapter provides an overview of the evolution of public health, its organization and funding in Canada, selected comparisons with other industrialized nations, and some preliminary thoughts on domestic directions for change.

3A. What is Public Health?

3A.1 *The Origins of Public Health*

More than two thousand years ago, the authors of Greek mythology had already drawn a distinction between curative medicine and prevention or health promotion. Asklepios, the Greek god of medicine, was reputed to have had two daughters, Hygiea—the goddess of prevention and wellness, and Panacea, the goddess of treatment. Other distant origins of public health surface in Greco-Roman writings associating different diseases with possible causes, together with prescriptions for their avoidance.

Canadians today sometimes confuse public health with publicly-funded health care. However, until the late nineteenth and twentieth centuries, personal health care was left for individuals to arrange. Threats to collective health, in contrast, have been taken up as a matter for community control or regulation wherever mechanisms of governance emerged. In Biblical times, for example, communities isolated those with leprosy as potential

sources of contagion. Urbanization in medieval Europe lent momentum to concerns about sanitation and disease. The first English Sanitary Act was passed in 1388, dealing with offal, slaughterhouses, and “corrupting of the air”. Around 1348, the Republic of Venice appointed three guardians of public health to detect and exclude ships with passengers affected by pneumonic plague (Black Death). In Marseilles (1377) and Venice (1403), travellers from plague-infected areas were detained for 40 days to protect against transmission of infection; this is the origin of the modern term *Quarantine*.

From the outset, public health practice has depended on health information, and information in turn presupposes the existence of surveillance systems and organized data. One such source of data was the “bills of mortality” established in London, England in 1532. More than a century after this system of death records was initiated, John Graunt published his *Natural and Political Observations made upon the Bills of Mortality* (1662), examining deaths in London by age, sex, district and social class. By 1766, the Austrian physician Johan Peter Frank had advocated a comprehensive system of health surveillance as part of his proposed “medical police”. In 1790, Dr. Frank argued that curative and preventive measures had little impact on populations where people lived in abject poverty and squalor. This heralded a tradition of concern for living conditions and social justice that continues today in the public health ethos.

In 1842, England’s Edwin Chadwick similarly described urban squalor, lack of sanitation, and over-crowding; and he related these to the incidence of disease and death, as well as contrasting life expectancy in different social classes. His work heralded the beginning of the *sanitary movement in Britain*. The motives behind the sanitary movement were mixed as were the arguments for it by public health proponents. Some claimed that a more egalitarian society would be healthier and fairer. Others

pointed out the need for healthy labouring classes and soldiers, and the threat of both social instability and contagion spreading from the teeming industrial slums of Europe. By 1850, Lemuel Shattuck's "Report of the Massachusetts Sanitary Commission" also related living conditions to infant and maternal mortality and morbidity rates. As the sanitary movement spread, communities implemented proper disposal of waste, urban sewage systems, and supplies of pure water for all, with a dramatic improvement in population health.

The tool-kit of public health practice still had few individual-level interventions apart from measures such as vaccination against smallpox. Nonetheless, the science and information supporting public health was improving steadily. In England William Farr started to develop the General Registry Office in 1836, building on the introduction of a national census in 1801 by classifying causes of death. Formal medical certification of death and universal death registration commenced in England and Wales a year later. John Snow—the "father of epidemiology"—published his *On the Mode of Communication of Cholera* in 1849, famously removing the handle of the contaminated Broad Street pump from whence cholera was spreading. Snow's action was a landmark in public health intervention to contain a disease outbreak. A critical step forward occurred in 1856 when Louis Pasteur published his observations on the germ theory, allowing microbiology to advance rapidly. In 1867, Koch published his famous postulates for establishing a causal connection between a specific microbe and a disease. Such connecting threads in public health thinking have proven durable: only weeks before release of the present report, *The Lancet* published an article by Kuiken et al arguing that the novel SARS-associated coronavirus satisfies a modernized version of Koch's postulates.¹

In this country, Lower Canada established a Board of Health in 1832; Upper Canada followed suit a year later. Ontario passed the first provincial public health act in Canada in 1884, and other provinces soon passed similar legislation. These acts provided for the establishment of local boards of health with the authority to remedy hazards to health and to appoint medical officers of health. In these early years, boards often hired medical officers of health only when a disease outbreak struck, and dismissed them once the danger was over. Local boards of health were heavily involved in the mid-nineteenth century with quarantine and immunization as well as combating a series of epidemics of smallpox and cholera.

As medical science evolved, and local boards of health provided infrastructure for implementing inspection and regulation, local public health units in Canada took on other activities. These included pasteurization of milk, tuberculin testing of cows, oversight of isolation to contain spread of tuberculosis [TB], management of TB sanatoria, quarantine for diverse conditions, and the control of sexually transmitted diseases. The early twentieth century brought an increasing emphasis on maternal and child health. Public health physicians and nurses took a leading role in developing immunization clinics, well baby clinics, prenatal classes, postnatal visits, and education on parenting and childhood nutrition.

The activism of public health in individual- and family-level interventions was not without occasional territorial tensions. Some general practitioners voiced complaints that these salaried and subsidized personnel were taking away their livelihoods and interfering with the development of family-based practices. The First World War nonetheless saw a blush of enthusiasm for public health and the integration of preventive medicine into clinical practice. In 1919, the Government of Canada brought together several pieces of legislation pertaining to food, drugs and control of infectious diseases, and established a national Department of Health. This was the same year that the Liberal Party cautiously adopted national health insurance as a plank in its platform, and the British Columbia Social Welfare Commission began exploring the feasibility of a state-sponsored health insurance scheme.² But while Medicare was several decades away, public health measures were already well-established across Canada.

Following the Great War, mainstream medicine still had few specific remedies to palliate or cure disease. Surgical techniques were crude, and drugs limited to a handful of compounds such as digitalis for congestive heart failure, quinine for malaria, and arsenicals for syphilis. Insulin would not appear on the clinical scene until 1923. Public health, meanwhile, was progressing steadily. Toxoids were a key breakthrough in immunization strategies; a toxoid is a bacterial toxin treated to render it harmless but still capable of inducing immunity to the disease. On into the mid-1920s, diphtheria was the leading cause of death among children. The widespread use of antitoxin had only a minor impact on the incidence of the disease. After the discovery of diphtheria toxoid, the Connaught Laboratories in Toronto produced toxoid on a massive scale and proved its effectiveness with massive field trials of childhood immunization in Ontario starting in 1926. The same period saw pertussis toxoid introduced for case contacts and epidemics. Tetanus toxoid and a string of other triumphs for immunization

and vaccination—most notably the introduction of an effective vaccine for polio by Jonas Salk in 1956 and the eradication of smallpox—followed later.

Notwithstanding these triumphs, indeed perhaps in part because of them, public health was moving into a background role. The growing effectiveness and technological sophistication of clinical medicine captured the public imagination. After insulin came sulphur drugs and penicillin, and then a massive armamentarium of antibiotics, including treatments for tuberculosis. Surgical and related techniques blossomed. Open heart surgery, dialysis, joint replacement, pacemakers, kidney transplantation—these and other innovations featured prominently in the mass media of the 1950s and 1960s. Their marginal yields at a population level were meaningful but relatively small. Increasing societal prosperity and enlightened social policy accompanying economic growth were great catalysts for overall improvements in life expectancy. Across all industrialized nations, public health interventions also helped drive communicable diseases down the mortality lists through the middle and latter parts of the twentieth century.

Public health, as we have already seen, was not solely about control of infectious diseases. Pioneers of public health in the eighteenth and nineteenth centuries investigated the causes of, and advocated action against, nutritional (scurvy), occupational (cancer of the scrotum), and environmental (lead poisoning) diseases, and urged measures to limit inequalities in health across education and income levels. Public health practitioners remained at the forefront throughout the twentieth century in championing legislative and regulatory initiatives to reduce the burden of premature and avoidable deaths and injuries along with preventable diseases.

Nonetheless, the shift in mortality and morbidity profiles away from communicable diseases to chronic non-communicable diseases created challenges for public health practice. Coronary heart disease [CHD] is a useful example. The decline in incidence of CHD in Canada is unequivocal. The decline antedates introduction and widespread adoption of effective agents for treatment of dyslipidemias (e.g., high cholesterol), and the impact of improvements in physical activity profiles is uncertain. Some of the decline appears to be attributable to smoking cessation and adoption of healthier diets. To what can we attribute changes in those risk factors? Family physicians and other clinicians are actively engaged in counselling against smoking, and provide pharmaceutical supports to facilitate smoking cessation, but public health policy and education have also played a role through tobacco taxes, anti-smoking advertising campaigns,

production of education materials, and product labelling. Various stakeholders from different levels of governments to the Heart and Stroke Foundation are active in encouraging smoking cessation and promoting the adoption of healthier diets. Public health researchers unquestionably helped generate the epidemiologic evidence that linked CHD to these risk factors. But even for a clear-cut case such as prevention of heart disease, the positive influence of public health has been as much indirect as direct. Similar challenges arise in delineating the role of public health in areas such as injury prevention or, *a fortiori*, interventions to redress the profound and persisting variations in health status across socioeconomic strata in Canadian society.

Not surprisingly, even within the public health community, debates occur between those with more or less expansive views of the mandate of public health. But there is little disagreement on two points. First, existing levels—and allocations—of resources are suboptimal to permit the deployment of many interventions that have the potential to avoid premature death or disability. Second, public health has essential roles in areas such as health protection (food and water safety), disease surveillance, and outbreak management, and these functions must be given priority. As we have seen with SARS, questions now exist as to whether the Canadian public health system is minimally equipped and organized to deal with even a modest-sized outbreak of a new communicable disease.

In sum, for about a century and a half in Canada, there has been an organized public health presence, often little noticed, but nevertheless contributing to a steadily increasing life expectancy and quality of life for Canadians. Various analyses of the improvements in health during the twentieth century have highlighted that modern clinical medicine is important, but broad social changes and public health measures deserve the lion's share of the credit for the 25-year increase in life expectancy across industrialized nations, including the dramatic reduction of infant mortality from 20% to less than 1% in most developed countries.³ Influential social and economic changes have included smaller families, higher standards of living with better nutrition, and adequate housing. However, public health has played a huge role in securing safe food and water supplies, implementing pasteurization, and developing and delivering programs of vaccination and immunization. The re-emergence of infectious diseases, and the continued scope for prevention of the now dominant non-communicable diseases, both suggest that the yields of prudent new investments in public health may be substantial.

3A.2 Defining Modern Public Health Practice

Public health developed over the centuries as society's response to threats to the collective health of its citizens, and has an enviable record of contributions to population health status. How do we define public health practice today?

Public health can be described as the science and art of promoting health, preventing disease, prolonging life and improving quality of life through the organized efforts of society.⁴ As such, public health combines sciences, skills, and beliefs directed to the maintenance and improvement of the health of all people through collective action. The programs, services, and institutions involved tend to emphasize two things: the prevention of disease, and the health needs of the population as a whole.⁵ This population focus distinguishes public health from the clinical enterprise that is governed by the Hippocratic imperative with its focus on the individual patient. Indeed, delineation of the boundaries of public health in this regard has been made explicit in Quebec's 2001 *Public Health Act*, viz: "Public health actions must be directed at protecting, maintaining or enhancing the health status and well-being of the general population and shall not focus on individuals except insofar as such actions are taken for the benefit of the community as a whole or a group of individuals."⁶

This collective approach means that, as even the brief history above has illustrated, public health has long included a regulatory function. Regulation is an effective means of protecting the public from a variety of hazards, including carriers of infectious diseases, food, drugs, consumer products, pesticides, improper waste disposal, impure drinking water, recreational water, dangerous motor vehicles, unsafe workplaces, second-hand smoke, and many others. In Canada, all levels of government—federal, provincial/territorial, and municipal—are involved in the regulatory functions of public health.

The logic of a collective or population-based approach to traditional public health measures, such as communicable disease control, is self-evident. But a population approach can also be efficient in dealing with non-communicable disease prevention. As Geoffrey Rose⁷ has argued, risk factors for most diseases are typically distributed across a continuum. A preventive strategy focusing on high-risk individuals will deal with the margin of the problem, and has only a trivial impact on the large proportion of disease occurring in the majority of people who are at moderate risk. For example, the number of cardiovascular events arising in people with slightly raised blood pressure

or moderately abnormal blood lipids greatly exceeds those arising in the clinically hypertensive or dyslipidemic minority. Population-based strategies that seek to shift the whole distribution of risk factors have the potential to exert a much larger impact at a population level.

However, a preventive measure that brings large benefits to the community may offer little to each participating individual—this is Rose's 'prevention paradox'. Changing health habits through individual intervention can be difficult and inefficient; and the gradual adoption of new norms (e.g., in diet and exercise) becomes the logical way forward. At the same time, ethical concerns dictate that clinicians seek out and offer individualized treatment to the small minority of persons at greatly elevated risk. The population approach of public health and the individualized approach of clinical medicine are thus complementary: the opportunities for each will vary according to the disease and risk factor, and what interventions are available. Finding the right balance is important.

When the task of disease prevention and health promotion moves away from precisely identifiable risk factors, matters become even more complex. The health of populations and individuals is obviously shaped by a wide range of factors in the social, economic, natural, built, and political environments. These factors interact with each other and with innate individual traits such as genetics, sex, and age. As researchers have delineated the complex webs of causation that influence health-related behaviours and health status, they have articulated a *population health* approach that highlights the need for interventions such as regulation, education, community development and social policy. The extent to which particular public health units or professionals embrace these tools varies, but the population health framework has usefully integrated analytical perspectives in the public health field.

Public health practice relies heavily on intersectoral partnerships. Public health professionals must be able to work with a range of disciplines, and form coalitions to advocate for mitigation of health risks or implement health-enhancing changes in various environments. The voluntary sector is a key partner in public health today. This includes non-governmental agencies (such as health charities and professional associations), local associations of all kinds, community development groups, recreational associations, business groups, organized labour and other workplace collectivities, together with the governmental structures which partly support and fund them. These groups may be overtly health-oriented, or may have primary interests in related areas

such as child development and social welfare. In Canada, the voluntary sector partners with local health agencies, as well as federal and provincial/territorial [P/T] governments in various programs. Joint activities include health promotion initiatives, and the provision of services, advocacy and community development. These participatory approaches are particularly important for Aboriginal populations and other marginalized or hard-to-reach groups.

Over the past decade, many countries have tried to define the essential functions of their public health systems. In Canada, no single accepted list exists, although a report of the national Advisory Committee on Population Health (ACPH) recently recommended the following list of essential functions:

- **Health Protection.** This is a long-standing core function for all public health systems. The assurance of safe food and water, the regulatory framework for control of infectious diseases, and protection from environmental threats are essential to the Public Health mandate and form much of the body of current public health legislation worldwide. Included in this function is the provision of expert advice to national regulators of food and drug safety.
- **Health Surveillance** allows for early recognition of outbreaks, disease trends, health factors, and cases of illness which in turn allows for earlier intervention and lessened impact. Surveillance also assists in our understanding of the impacts of efforts to improve health and reduce the impact of disease. For example, a new strain of Salmonella occurring in many parts of the country over a short period of time may indicate contamination of a widely-distributed food product.
- **Disease and Injury Prevention.** More than a decade ago, the Centers for Disease Control and Prevention in the USA identified that as much as two-thirds of premature mortality was preventable through the application of available knowledge. Many illnesses can either be prevented or delayed and injuries can be avoided (e.g., bicycle helmet use). This category of activity also includes investigation, contact tracing and preventive measures targeted at reducing risks of outbreaks of infectious disease. It overlaps with health promotion, especially as regards educational programs targeting safer and healthier lifestyles.

- **Population Health Assessment** entails the ability to understand the health of populations, the factors which underlie good health and those which create health risks. These assessments lead to better services and policies.
- **Health Promotion.** Public health practitioners work with individuals, agencies, and communities to understand and improve health through healthy public policy, community-based interventions, and public participation. Health promotion contributes to and shades into disease prevention (see below) by catalyzing healthier and safer behaviours. Comprehensive approaches to health promotion may involve community development or policy advocacy and action regarding the environmental and socioeconomic determinants of health and illness.*

The Canadian Institutes of Health Research's [CIHR] Institute of Population and Public Health recently led a group of opinion leaders through a process to consider the future of Public Health, and identified some examples for each of these functions delineated in Table 1.

Last, public health also plays a key role in **Disaster Response**. Many natural disasters not only place immediate demands on the health care system, but may involve secondary threats to population health through contamination of food or water supplies or communicable disease outbreaks.

3B. Governance and Organization of Public Health in Canada

3B.1 Some Constitutional and Legislative Issues

Chapter 9 provides a more detailed treatment of constitutional and legislative issues. This introductory overview offers some general context.

Canada's *Constitution Act* (formerly the British North America Act of 1867) outlines the division of responsibilities between provinces and the federal government, and was created at a time when infectious disease and other public health concerns were everyday realities. The Act assigned responsibility for "quarantine and the establishment of marine hospitals" to the federal government, and (s. 92) the "establishment, maintenance and management of hospitals, asylums, and eleemosynary institutions in and for the province, other than marine hospitals" to the provinces.

* The more expansive aspects of health promotion occasionally draw criticism as forms of 'health imperialism' or 'social engineering'.

T A B L E 1

Examples of Programming for Essential Public Health Functions.

Essential Function	Programming Examples
Population health Assessment	<ul style="list-style-type: none"> • Population/community health needs assessment; • Health status report, system report card.
Health surveillance	<ul style="list-style-type: none"> • Periodic health surveys; • Cancer and other disease registries; • Communicable disease reporting; • Ongoing analysis of data to identify trends or emerging problems, (e.g., recognition of increasing syphilis cases); • Report to practitioners of increasing threat, what they need to look for, and intervention required.
Health promotion	<ul style="list-style-type: none"> • Intersectoral community partnerships to solve health problems; • Advocacy for healthy public policies; • Catalyzing the creation of physical and social environments to support health (e.g., bike paths, promoting access to social networks for institutionalized seniors).
Disease and injury prevention	<ul style="list-style-type: none"> • Immunizations; • Investigation and outbreak control; • Encouraging healthy behaviours (e.g., not smoking, healthy eating, physical activity, bicycle helmet use); • Early detection of cancers (e.g., organized programs for breast cancer screening).
Health protection	<ul style="list-style-type: none"> • Restaurant inspections; • Child care facility inspections; • Water treatment monitoring; • Air quality monitoring/enforcement.

Sections 92(13) and 92(16) of the Constitution give provinces responsibility, respectively, for property and civil rights and for matters of a local or private nature. Both are relevant to the primary authority that provincial governments claim in Canada to pass legislation concerning public health. Federal authority in public health derives from federal powers in diverse areas, such as the criminal law, matters of national concern as regards “peace, order, and good government”, quarantine and national borders, regulation of interprovincial trade and commerce, and international treaty-making. Jurisdiction, in short, is mixed.

In Canada, there are federal legislative provisions for the regulation of food, drugs, and pesticides. The titles of the *Quarantine Act* and the *Importation of Human Pathogens Regulations* of the *Department of Health Act* are self-explanatory, and these laws flow logically from the constitutional division of powers. The *Canada Health Act* sets out the conditions for receipt of funding for physician and hospital services, but does not cover public health. Indeed, only the *Department of Health Act* offers a

broader public health mandate, and, apart from the above-noted regulations, its wording is more permissive than prescriptive. It states that the Minister of Health is responsible for “the promotion of the physical, mental and social well-being of the people of Canada, the protection of the people of Canada against risks to health and the spreading of diseases, and the investigation and research into public health, including the monitoring of diseases.”

The uncertainty about federal powers in public health is underscored by the state of disease surveillance. While the *Statistics Act* and the *Department of Health Act* provide the Government of Canada with a mandate to collect information on public health risks of a pan-Canadian nature, Health Canada does not currently have a clear legal mandate to require provinces/territories to share health surveillance data with each other and the federal government. As was evident in the SARS outbreak, these transfers occur voluntarily.⁸

For the federal government to exert a stronger coordinating and supporting role, one logical avenue is through the use of federal spending power. That is, the federal government can involve itself in public health by providing conditional funding for public health programs or by entering into legal contracts to develop public health initiatives. The Population and Public Health Branch of Health Canada currently exerts only a limited steering effect through its program of grants and contributions. These grants and contributions are not directed to other levels of government, but to non-profit and non-governmental organizations. They target areas such as children's health, Aboriginal peoples' health, diabetes, HIV/AIDS, Hepatitis C, and tobacco control, among others. There is no legislative provision per se for Health Canada's role in these programs. Rather, they are established under the broad rubric of the Minister of Health's authorities in the *Department of Health Act*, and funded following Cabinet and Treasury Board decisions on policy and funding respectively.

Public health activities in each province and territory are governed by a public health act (or equivalent) and its regulations, as well as by other specific legislation (e.g., Ontario's *Immunization of School Pupils Act*). Some public health acts are decades old. Ontario (1983), Saskatchewan (1994), and Quebec (2002) all have modernized legislation, and British Columbia proposes to introduce a new act soon. The older acts tend to be mainly concerned with infectious diseases and specific in the powers given to public health officials, while the newer acts are more flexible. All public health acts have regulations; these vary from province to province. The planning and delivery of services is mostly devolved to regional/local structures, with responsibility usually assumed by elected and/or appointed boards.

Environmental health illustrates the potential jurisdictional ambiguities. The federal and P/T governments all have legislation bearing on environmental health issues. P/T environment ministries may operate water purification facilities and test water. Municipal governments may pass by-laws, provide many environmental services, and be involved in enforcement. Local public health agencies and/or P/T health ministries are responsible for advising on human health impacts of environmental problems, for undertaking inspections and enforcement, and for investigations of environmental health hazards and health events thought to be environmentally caused. Public health laboratories undertake some testing, as also do various federal, provincial, university or contract laboratories. Other departments of governments such as natural

resources, transportation and recreation are inevitably involved. Lastly, emergency preparedness and response authorities, including P/T ministries of public security, will be involved in responding to environmental disasters.

3B.2 Organization of Public Health Services

The situation of primary responsibility for public health services at the municipal or local level is rooted in a tradition that dates back to the time of Elizabeth I. In Canada, primary legislative authority seems to rest with the provinces and territories, but local public health remains the front line for battling outbreaks such as SARS. The following overview accordingly moves from the local to P/T to federal levels.

There are four patterns of governance of local public health services in Canada.

- **Regional Health Authorities/Districts**

This is the most common pattern, especially in the West and increasingly in the Maritimes. Elected and/or appointed boards are responsible for the provision of health services within a defined geographical area. The governance for public health is thus combined with that for other health services. The boards are either elected by local residents, or appointed by the provincial government, or a mixture of both. The system is a product of the 1990s and still evolving: for example, the number of regions and their boundaries change frequently, there is sometimes tension between boards and provinces concerning powers, and there has been a swing away from elected to appointed members. Despite the instability of these arrangements, they have the major advantage of promoting the integration of clinical and public health services under unified governance that is locally responsive to some degree. Regional structures, however, have not solved the problem of under-investment in public health.

- **Regional/District Boards**

In this case, the boards are responsible for public health and/or other community-based services within an area, but do not have oversight of publicly-funded personal health services. This is the pattern in parts of Newfoundland, and until recently, in New Brunswick.

- **Quasi-municipal/County**

This is the earliest pattern, and continues in Ontario. Local boards are responsible for public health and some other community services. Boards serve either single or multiple municipalities and counties, and are appointed by the involved municipalities and the province. In large cities, the public health board is usually a committee of city council.

- **Provincial**

In Prince Edward Island, services are delivered at the provincial level.

Health Canada, through the First Nations and Inuit Health Branch [FNIHB], has a mandate from the federal parliament to provide certain public health services to First Nations communities on reserve. Communities with “transfer arrangements” with FNIHB have taken on responsibility for some or most health services which would otherwise be delivered by the federal government, i.e., public health services may be delivered by the communities themselves. These arrangements are supported through contribution funding provided by the federal government.

Local service delivery across Canada is through the health departments of regional health authorities or districts, or (in Ontario) through health units and municipal health departments. The populations served by the relevant units range from 600 to 2.4 million people, with catchment areas from 4 square kilometres to 800,000 square kilometres. There are approximately 139 such local/regional agencies serving urban, rural and isolated areas, covering the population of Canada, exclusive of some Aboriginal communities.

Each local/regional public health agency has a position for a medical officer of health [MOH] - a licensed physician with post-graduate training in public health. Smaller health units find it difficult to attract medical officers of health or provide the full range of services. In Saskatchewan, partly for this reason, adjacent districts have arranged to share either the medical officer of health or the entire public health agency.

Each province or territory has a chief medical officer of health [CMOH] or equivalent. The CMOH may also be the director of the public health branch of the P/T government, or these may be separate positions. The senior public health physician sometimes also holds an Assistant Deputy Minister position. In Quebec, the Assistant Deputy Minister for public health by law is a physician with a specialist qualification in community medicine. The reporting relationships of the CMOH within the P/T governments vary considerably, as provinces have balanced a desire to ensure the independence of the CMOH as a health advocate with the need to integrate his or her portfolio into ministries of health.

Each province and territory also has public health staff within the provincial government. These staff typically engage in planning, administering budgets, advising on programs, and providing assistance to local staff for serious incidents. The British Columbia Centre for Disease Control [BC CDC] was established in 1997 to take responsibility for provincial-level management of infectious disease prevention and control, including laboratories. Division directors and other key scientific and medical staff in the BC CDC hold appointments at the University of British Columbia, and have protected time to enable academic activities. A specific effort is made to ground practices in research evidence. The BC CDC’s budget flows through the provincial Health Services Authority.

Quebec established the National Public Health Institute in 1998 by transferring in staff from several regional public health departments and the ministry; it oversees the main public health laboratories and centres of expertise. Unlike the BC CDC, it has a general mandate that covers prevention, community development and health promotion, healthy living, workplace health, and chronic disease as well as infectious diseases. The Institute includes the Quebec Toxicology Centre, the Screening Expertise Centre, and the Poison Control Centre.

Many provinces have taken steps to ensure that the local administration of public health is not compromised by special interests and that provincial standards are upheld. These can be summarized as follows:

- Delivery of certain programs and services may be required for the province to flow funds to the local health unit. There may be lists of core or mandatory programs, together with a monitoring mechanism, with or without accompanying regulations. Nevertheless, the level of service provision varies both between and within provinces/territories.

- The chief medical officer of health may have the power to intervene anywhere in the province in an emergency.
- Medical officers of health at the local level may be provincial employees, reporting formally to the chief medical officer of health.
- Local boards of health may require the consent of the minister to hire and/or fire medical officers of health.
- The Minister of Health generally has the power to dismiss local boards of health.

At the federal level, the most relevant organization vis-à-vis public health is the Population and Public Health Branch [PPHB] of Health Canada. The Branch is headquartered in Ottawa, and has regional offices across Canada. Its components include Centres for Infectious Disease Prevention and Control, Chronic Disease Prevention and Control, Emergency Preparedness and Response, Surveillance Coordination, and Healthy Human Development. PPHB has oversight of the National Microbiology Laboratory in Winnipeg and the Laboratory for Foodborne Zoonoses in Guelph. Other branches in Health Canada, particularly the Health Products and Food Branch and the Healthy Environments and Consumer Safety Branch interact with local public health to a lesser extent. Federal agencies such as the Canadian Food Inspection Agency [CFIA] also have a role in public health.

In sum, the provincial/territorial presence predominates in public health, with most of the delivery of services occurring locally or regionally. The local/regional agencies have their own governance, but their activities are constrained by P/T law, regulations, policies, directives and conditions of funding. Various federal/provincial/territorial committees provide some elements of national coordination. These include the Advisory Committee on Population Health and Health Security reporting to the Conference of Deputy Ministers of Health, the Council of Chief Medical Officers of Health, the Canadian Public Health Laboratory Network, and many more technical groups. Domestically, the federal role, apart from specific areas of jurisdiction set out above such as quarantine at national borders or regulation of food and drugs, has been to support P/Ts and non-governmental organizations with technical advice, expert resources, advanced laboratory technology, and national surveillance and statistics. The federal government also funds research relevant to public health through various channels, including the CIHR and PPHB. Last, the federal government has a lead role in international liaison, as will be discussed in Chapter 11.

3B.3 The Challenge of Public Health in Rural and Remote Areas

As noted earlier, Canada was fortunate that SARS struck primarily in Toronto with its comparatively well-developed public health and health care infrastructure. In many parts of the country, capacity to battle public health threats is limited. The risk of communicable diseases, of course, is also contained by the low population density of these same areas.

Canada's northern territories, for example, comprise 0.3% of Canada's overall population, but 39% of its geographic area. In the far north, average life expectancies are lower than for the rest of Canada, owing to higher infant mortality rates in Nunavut and the Northwest Territories, higher lung cancer mortality rates in all three territories, and substantially higher rates of death from unintentional injuries and suicide. The territories have higher rates of infectious diseases such as tuberculosis and *Chlamydia*, higher teen birth rates, and greater incidences of smoking and other forms of substance abuse.

More generally, populations residing outside of large urban centres tend to have lower levels of education, employment, and income. Small local hospitals cannot maintain infection control with highly specialized staff as occurs in many urban hospitals. Rural hospitals seldom have rooms with respiratory isolation facilities. And in local public health units, staff multi-task as a matter of course. Public health nurses provide well baby and immunization coverage one day, community development and school visits the next. Similarly, public health inspectors deal with issues ranging across water safety, restaurant and event inspections for food safety, potential rabies exposures, enteric disease outbreaks, and environmental hazards. In these settings, no function can be abandoned to combat an outbreak for more than a few days without introducing new hazards. Most of these remote areas have a medical officer of health, but some positions go unfilled and others are managed by part-time clinical physicians. Public health inspector positions remain unfilled for long periods, and few smaller health units can afford to hire personnel with graduate training in areas such as health promotion or epidemiology. In short, Canadian geography poses special challenges in the organization and delivery of public health services.

3C. Public Health in the Background

We have seen that public health moved to the background as the technological capacity of clinical medicine grew through the latter half of the twentieth century. In parallel, Canada moved to organize universal prepayment of physicians' services and hospital care, initiating four decades in which funding of personal health services has taken ever greater priority over public health. Writing in the Royal Commission report that laid the foundations for Canada's universal medical care insurance system, Mr. Justice Emmett Hall and his fellow commissioners focused on plans to improve access to physician services, and offered only a passing reference to public health: "The efforts to improve the quality and availability of health services must be supplemented by a wide range of other measures concerned with such matters as housing, nutrition, cigarette smoking, water and air pollution, motor vehicle and other accidents, alcoholism and drug addiction."

In 1974, then Health Minister Marc Lalonde published an influential volume entitled *A New Perspective on the Health of Canadians*.⁹ Lalonde argued that health status was influenced not only by health services and genetics or biology, but also by environmental and lifestyle factors. While the "New Perspective" drew positive national and international responses, its legacy was clouded on two scores. First, by highlighting the limits to health care based on broad population health trends and aggregate mortality statistics, the volume understated the value of clinical services for relevant outcomes such as disease-specific mortality, function, and quality of life. In part, it re-opened the unhelpful divide between advocates of more clinical spending and champions of public and population health. Second, the 'lifestyle' terminology, with its emphasis on personal choices, was characterized by some critics as "victim-blaming" because it downplayed the social roots of unhealthy behaviours at the individual level. The "New Perspective" did lend momentum to health promotion efforts, presaged the need for intersectoral collaboration in public health, and foreshadowed the population health paradigm that now holds sway. However, it appears to have had little lasting effect on federal or provincial spending in public health.

Throughout the latter half of the 1980s, when economic recession was coupled with escalating health care costs, most provinces and territories published reviews of health and health care. Nearly all of these reports shared two recommendations: improved control over resources, through processes such as integration of services, alignment of incentives, regionalization, and utilization management; and an increased emphasis on prevention and health promotion. In every province, the first set of recommendations was operationalized; the latter received much less attention.

The scope and importance of the HIV pandemic became increasingly evident during the 1980s, sparking world-wide concern about infectious diseases. An expert panel of the US Institute of Medicine conducted an 18-month study, culminating in 1992 in a major report—*Emerging Infections: Microbial Threats to Health in the United States*.¹⁰ Health Canada's Laboratory Centre for Disease Control (later restructured inside the Population and Public Health Branch of Health Canada) also organized an Expert Working Group on Emerging Infectious Disease Issues. A multi-disciplinary group of 40 researchers and practitioners met at Lac Tremblant from December 7-9, 1993, producing a declaration whose opening sentences were prophetic:

"The HIV pandemic has demonstrated that the world is rapidly becoming a global community. Global interdependence, massive internal and external population movements, rapid transportation, increasing trade and changing social and cultural patterns expose large populations to new and different pathogens and pose new threats to their health and well-being. National boundaries no longer offer isolation or protection from infectious diseases, toxic chemicals and hazardous products."

In its long list of recommendations, the group called for "a national strategy for surveillance and control of emerging and resurgent infections," support and enhancement of "the public health infrastructure necessary for surveillance, rapid laboratory diagnosis and timely interventions for emerging and resurgent infections," coordination and collaboration in "setting a national research agenda for emerging and resurgent infections," "a national vaccine strategy," "a centralized electronic laboratory reporting system to monitor human and non-human infections," and strengthening "the capacity and flexibility to investigate outbreaks of potential emerging and resurgent infections in Canada."

Little action was taken apart from some organizational changes, and most of the Working Group's recommendations from 1993 remain entirely valid a decade later. Indeed, we essentially recapitulate many of them in this report.

Mr. Justice Horace Krever provided a more general call to action in his 1998 report of the "Commission of Inquiry on the Blood System in Canada." Krever wrote: "Public health departments in many parts of Canada do not have sufficient resources to carry out their duties...Continued chronic under-funding of public health departments is a disservice to the Canadian public...It is recommended that the provincial and territorial ministers of health provide sufficient resources for public health services."¹¹ Krever made specific reference to the need for better surveillance for infectious diseases, not least those that had contaminated the blood supply.

On September 11, 2000, the provincial premiers and federal government reached an agreement on new funding for health care. This agreement provided \$23.4 billion in additional funds over a six-year period (from 2000-01 to 2005-06) as set out in Table 2. There was no earmarked funding for public health infrastructure, although funds from the Canada Health and Social Transfer [CHST] could, of course, be directed to public health by the provinces.

At the provincial level, recent reports have begun to highlight the need for specific investments in public health. For example, in June 2000, the Quebec government created the Commission d'étude sur les services de santé et les services sociaux. The Quebec report defines the health system broadly, encompassing services to individuals, public programs aimed at prevention, and social policies aimed at improving health and welfare.¹² Of 36 recommendations, the first is "That prevention be the central element of a Quebec health and welfare policy." The report explicitly integrates recommendations about public health and preventive services with those focused on personal health and social services. *Healthier Together: A Strategic Health Plan for Newfoundland and Labrador* was released in September 2002 and focuses extensively on a population approach to health.¹³ The report outlines only three broad goals. The first is a wellness strategy, the second goal a healthy communities strategy, and the third "to improve the quality, accessibility, and sustainability of health and community services." Throughout the report, there are many references to health promotion, health protection, illness and injury prevention, child and youth initiatives, and the non-medical determinants of health. Five-year targets are listed in an appendix.

T A B L E 2

**Health care funding over six years
(beginning in 2000-01), as per the 2000 Health Accord.**

Area of funding	Amount
Canada Health and Social Transfer increases	\$18.9 billion
Medical Equipment Fund	\$1.0 billion
Health information technology	\$0.5 billion
Health Transition Fund for Primary Care	\$0.8 billion
Early childhood development	\$2.2 billion
Total	\$23.4 billion

From a national perspective, the *Commission on the Future of Health Care in Canada*¹⁴, under the direction of the Hon. Mr. Roy Romanow was asked to "recommend policies" that would strike "an appropriate balance between investments in prevention and health maintenance and those directed to care and treatment." The Romanow report devotes one chapter to primary care and prevention. His definition of primary care ("services ... provided not only to individuals but also to communities as a whole, including public health programs that deal with epidemics, improve water or air quality, or health promotion programs designed to reduce risks related to tobacco, alcohol and substance abuse") conflates general practice with traditional public health activities.

Three of Mr. Romanow's recommendations deal specifically with public health issues. He recommends a national immunization strategy, a physical activity strategy, and strengthening health promotion and prevention programs, focusing initially on obesity and tobacco use. Funding for these initiatives would come from a Primary Health Care Transfer. The proposed Health Council of Canada is to monitor these activities, establish common indicators, and set benchmarks. Mr. Romanow also recommends that the federal government take a more active role in international health, focusing on public health initiatives and the training of health care providers in developing countries.

One senior public health leader later commented:

“Sadly, the long-awaited Romanow Report did not entirely grapple with—or indeed even mention—the serious plight of public health services in Canada. Instead, it offered some suggestions for investments in disease prevention and health promotion, such as the creation of a central fund for harmonized immunization programs and a Centre for Health Innovation focusing on ‘Health Promotion’. Much of the report did not sufficiently differentiate the complementary roles of primary care and public health in achieving disease prevention and health promotion goals. As a result, it gives the impression that all such activities—even health protection from hazardous exposure, and the sort of community-based cultural change that we need to tackle the obesity epidemic—can be spearheaded from physicians’ offices and ambulatory care centres.”¹⁵

The Standing Senate Committee on Social Affairs, Science and Technology chaired by Senator Michael Kirby released *The Health of Canadians –The Federal Role* in October 2002 after a two-year study of the Canadian health care system.¹⁶ A chapter is devoted to the argument that healthy public policy must include health and wellness promotion, illness and injury prevention, public health and health protection, and population health strategies, and that the federal government can and should play a leadership role in these areas. Kirby et al focus on two areas of public health. The first is a National Chronic Disease Prevention Strategy that incorporates public education efforts, mass media programs, and policy interventions targeting lifestyle behaviours such as a poor diet, lack of exercise, smoking, excessive alcohol intake, and stress. Kirby et al suggest that the federal government should commit \$125 million annually towards chronic disease prevention. The second area of focus is the deficiency in public health infrastructure. The Senate Committee specifically cited inconsistent funding, fragmentation and poor coordination between jurisdictions, and an overall lack of accountability and leadership. Regarding health promotion efforts, Kirby et al mention poor coordination between government and non-governmental organizations and low funding relative to spending on health care. The Committee accordingly recommended additional funding of \$200 million annually to sustain, better coordinate, and integrate the public health infrastructure as well as relevant health promotion efforts.

The Senate Committee’s recommendations have yet to be operationalized, notwithstanding another major re-investment in health services by the federal government. Specifically, on February 5, 2003, the First Ministers and the federal government reached another agreement on incremental funding for health care. This agreement provided for \$34.8 billion in additional funds for health over a five-year period (2003-4 to 2007-8). Of these, \$30.9 billion represent new spending over and above the previous Health Accord. The funding has been directed as shown in Table 3 below.

T A B L E 3

**Health care funding over five years
(beginning in 2003-04), as per the 2003 Health Accord**

Area of funding	Amount
Canada Health and Social Transfer increases	\$12 billion
Health Reform Fund	\$16 billion
Diagnostic/medical equipment	\$1.5 billion
Health information technology	\$600 million
Research hospitals	\$500 million
Direct Health Accord initiatives	\$1.585 billion
Other health reform initiatives	\$1.364 billion
First Nations and Inuit Health	\$1.25 billion
Total	\$34.8 billion

The text of the 2003 Health Accord mentions “prevention” once. In a paragraph entitled “Healthy Canadians”, the Accord acknowledges that there is a “collective responsibility” to deal with issues like exercise and obesity and to promote better public and environmental health.¹⁷ The 2003 Accord directs health ministers to continue working on initiatives to reduce health status disparities, and to pursue a National Immunization Strategy. Funding for these activities appears to come from the “direct Health Accord initiatives” and “other health reform initiatives” line items. Other programs within these line items include patient safety, health human resources, and technology assessment.

The Accord proposes that health ministers develop a set of performance indicators by September 2003, and suggests indicators for the ministers to consider. These indicators are divided into four groups: timely access, quality, sustainability, and health status and wellness. Although two of the suggested wellness indicators deal with obesity and physical activity, public health activities are generally overlooked. For example, none of the suggested indicators discuss vaccination rates, surveillance of communicable diseases, disease screening, breastfeeding rates, or childhood nutrition. The 2003 federal Budget provides \$45 million over five years for the National Immunization Strategy and a further \$45 million for "Wellness-Sport Participation".

The record of the last several decades is depressingly clear. Even the presence of a major new infectious disease such as HIV was insufficient to galvanize new investments in and reorganization of public health infrastructure in Canada. Notwithstanding the drumbeat of disease prevention and health promotion, governments have steadily committed virtually all new health spending to areas other than public health. We turn accordingly to a brief examination of the funding of public health in Canada.

3D. Funding Public Health in Canada

Tellingly, reliable information on expenditures on public health in Canada is not even readily available. The data published by the Canadian Institute for Health Information [CIHI] are not suitably disaggregated and therefore unhelpful. The public health category includes administrative spending for many other parts of the health care system. For example, the amount shown for Ontario includes the province's contribution to the Canadian Blood Services and the operating costs of the provincial breast cancer screening program. Some other provinces provide no breakdown at all. CIHI intends to publish public health expenditures data separate from general administrative costs of government ministries, but this will not solve the problem of inconsistencies in categories of expenditure included in the public health envelope.

3D.1 National Spending on Public Health

For a view of federal data, Health Canada's "Budget Quick Facts" document does list expenditures by branch and business line. Various branches also provided internal estimates of expenditures on communicable diseases. Expenditures for infectious diseases inside PPHB were calculated from budgets for individual centres.

For provinces and territories, we were able to obtain information on public health budgets from a few provinces and prorated these expenditure data to the entire country. Thus, the national estimates provided here are fairly crude approximations. Data were not available for all subcategories. Data for vaccine costs were taken from a survey of provinces and territories undertaken by Health Canada last year; costs for that year were unusually high as a result of a mass campaign of meningococcal vaccination in Quebec.

Expenditures were estimated for both a narrow definition of public health (roughly corresponding to the activities of official P/T and local public health organizations) and a broader definition (including activities of non-governmental organizations [NGOs] and regulatory functions).

Table 4 provides a summary of estimated public health expenditures in Canada. Total public health expenditures in Canada (2002 - 2003) are estimated at \$2.8 billion by the broad definition, and \$2 billion by the narrow definition. This corresponds to per capita expenditures of \$88 and \$65, respectively. CIHI has forecasted 2002 health expenditures of \$79.4 billion for the public sector alone and \$112.2 billion for the public and private sectors combined. Public health by the broader and narrower definitions therefore amounts to 2.5% and 1.8% respectively of total health expenditures (public and private) or 3.5% and 2.6% respectively of publicly-funded expenditures. Public health expenditures for infectious diseases specifically, are estimated at \$787 million or \$25 per capita. This corresponds to 1.0% of public health care expenditures.

3D.2 Expenditure Trends in Ontario

We attempted to examine public health system funding trends in more detail for the Province of Ontario. Our interest was piqued by the fact that Ontario has a set of mandatory programs for local public health units and measures compliance with them. The programs represent a solid foundation for public health, and thus the relationship between program compliance and funding seemed to offer a potential benchmark for analysis.

T A B L E 4

Summary of Estimated Public Health Expenditures - Federal and Provincial/Territorial Departments of Health, 2002.

	Total Expenditures (\$ million)	Per Capita Expenditures \$	As Proportion of Health Care Expenditures	
			Total	Publicly-funded
Broad definition	2,762.4	88	2.5%	3.5%
Narrow definition	2,047.0	65	1.8%	2.6%

T A B L E 5

**Breakdown of Estimated Public Health Expenditures by Federal and Provincial Departments of Health in Canada, 2002*
(\$ millions)**

	Direct Spending	Grants & Contributions for Community-based Interventions	Total Broad definition ^{1,4}	Total Narrow definition ²
Federal [Health Canada] only				
PPHB	186.8	200.3	387.5	225.0 ⁴
Other Branches	497.9 ³		497.9	75.0 ⁵
Vaccines	25.3		25.3	25.3
Subtotal	710.0	200.3	910.7	325.3
P/T				
Ontario	443.7 ⁶	-	528.3 ¹⁰	443.7 ⁶
B.C.	234.8 ⁷	-	246.5 ⁹	234.8 ⁷
Nova Scotia	28.4 ⁸	-	29.8 ⁹	28.4
Manitoba	43.0 ⁸	-	45 ⁹	43.0
Prorated to Rest of Canada ¹¹	622.8		653.3	622.8
Vaccines	349		349	349
Subtotal	1721.7		1851.9	1721.7
Total	2431.7	200.3	2762.6	2047

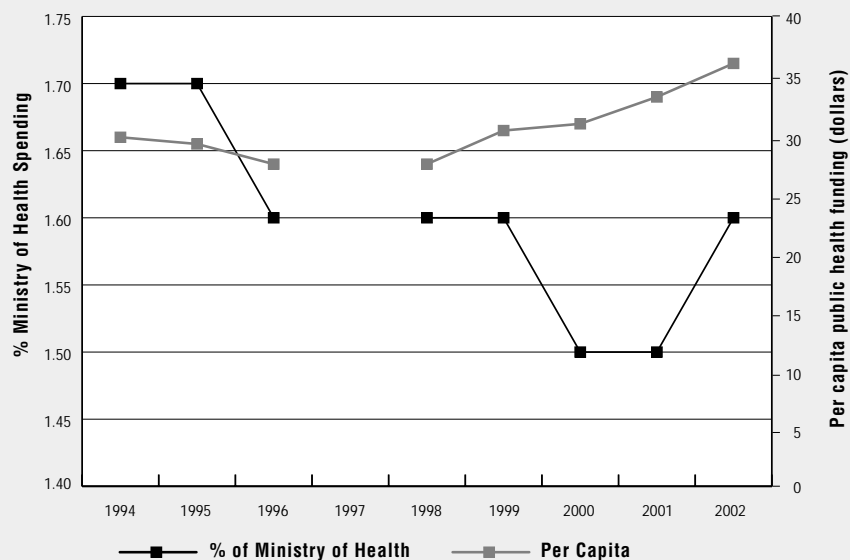
Notes:

- 1 Local public health plus regulatory functions and grants and contributions for community-based interventions
- 2 Functions corresponding to work done by local official public health agencies
- 3 Healthy Environments and Consumer Safety Branch [HECS], Health Products and Food Branch [HPFB], Pest Management Regulatory Agency [PMRA], expenditures for the 'protection & promotion of health' business line, plus the public health portion of First Nations and Inuit Health Branch [FNIHB] expenditures
- 4 Direct spending + estimated portion of grants and contributions
- 5 Estimated public health-like expenditures by FNIHB
- 6 includes municipal portion + provincial public health branch
- 7 BC CDC plus Ministry and transfers to regions minus public health labs and vaccines
- 8 Ministry plus transfers to regions (Nova Scotia: +10% for food safety and related health inspection services)
- 9 Estimate - approximately 5% allowance for health promotion grants and regulatory work
- 10 Addition of health promotion transfer grants + Healthy Babies, Healthy Children Program
- 11 Prorated on a per capita cost basis by region: Manitoba for Alberta and Saskatchewan, Nova Scotia for Maritime provinces and territories, British Columbia for Quebec.

* Best available data as of May 2003.

FIGURE 1

Local Public Health Funding in Ontario — Percentage of Ministry of Health Spending and Per Capita Estimate



Local public health funding is based on provincial and municipal contributions to public health departments in Ontario. The provincial component coincides primarily with the “Official Local Health Agencies” line item in Public Accounts. Data are missing for 1997 due to the time-limited downloading policy of the provincial government.

Unfortunately, examining funding trends for the public health system in Ontario was problematic for several reasons. Substantial funding by municipalities is not captured by provincial public accounts or estimates. In the transition to the current 50:50 cost sharing with municipalities, there was a brief period of 100% funding of local programming by municipalities. The province has also introduced a large and expanding Healthy Babies, Healthy Children Program. Further, non-public health budget lines appear to be embedded in the public health vote.

The Ontario Association of Local Health Agencies (alPHA) has tried to track funding for local public health departments. Data were available for selected years from 1994-2002. These figures combine provincial and municipal funding of local public health departments. Figure 1 above suggests that local public health funding lagged the growth in overall provincial health care spending during the period of 1996-2001. Funding as a percentage of total health spending increased in 2002, but remains below levels observed in 1994 and 1995. Per capita spending, unadjusted for inflation, has clearly increased from 1998 through 2002. The total public health budget net of revenue and excluded items plus unorganized areas (\$3.3 million) was \$304.4 million in 1998 and \$435.9 million in 2002. Per capita spending appears similar to Manitoba but lower than British Columbia; however, interprovincial comparisons must be drawn cautiously given limitations of the data.

Funding trend data do not address the broader issue of whether current funding is sufficient to fulfill the mandate of the public health system. As noted, Ontario’s Mandatory Health Programs and Services offered a potential benchmark. The Program standards and requirements are reasonably detailed and have a strong service delivery perspective. Starting in 1998, the Public Health Branch developed a series of indicators to facilitate local health departments’ reporting on the extent of compliance with the Mandatory Programs. The Public Health Branch annually compiles information from a Mandatory Program Indicator Questionnaire [MPIQ]. Provincial averages for overall compliance as evidenced by MPIQ results are reported to have increased from 70.9% to 82.6% from the period of 1998 to 2001. The extent to which the additional funding is responsible for rising compliance is unclear.

3D.3 A Modest Investment by Any Measure

CIHI data report that public health and administration together account for 6% of health care spending. The investment in public health is clearly the smaller part of that percentage. Convergent validation of the estimates developed above is derived from Alberta data. As noted earlier, Alberta’s regional health authorities [RHAs] are responsible for the delivery of both acute and chronic care, as well as public health programs. In 1999-2000, RHA spending on “promotion, prevention, and protection” accounted for 2.9% of their budgets. This number is consistent with our estimates that public health spending amounts to approximately 2% of total health spending. These estimates are also in a range familiar to public health practitioners, i.e., between 1.5% and 3% of health spending. Only by using the broader definition of public health and the smaller denominator of public spending alone does the figure move slightly outside that range to 3.5%. The good news is that, because public health remains a very small part of total health spending, relatively modest investments could have a transformative impact. The bad news is that there are clearly inconsistencies in public health programming and spending within and between provinces and territories, with the result that uniform conditional transfers by the federal government to reinforce capacity will be difficult to operationalize.

Overall spending targets are difficult to set as there are limited data on spending trends and outputs, let alone health status outcomes. The Ontario data are consistent with the common opinion that absolute levels of public health funding have generally increased, but lagged behind spending on health care in general. This latter point has been supported in a submission to the Committee by the Canadian Medical Association. Comparisons of expenditures across jurisdictions are also difficult, as no two provinces seem to include exactly the same activities within the public health funding envelope. For example, in several western provinces, most or all of immunization, including vaccine and delivery costs, is provided through public health, whereas in Ontario and Quebec most immunizations are given in physicians' offices and delivery is funded through the medical insurance plan.

If one takes British Columbia as a benchmark, and calculates the incremental funding required to bring all provinces up to the per capita spending apparent for British Columbia, governments would need to spend an additional \$408 million per annum. But this figure is imprecise. Some services included in the British Columbia public health envelope may be funded through different envelopes in other provinces, and we have no way of being certain that British Columbia's spending in any way represents a 'gold standard' for public health. The incremental spending proposed does not consider the potential differences in delivery costs due to geographically-dispersed populations, variable proportions of higher needs populations, or fixed system costs that are partly independent of population size. We turn therefore to international comparisons for additional enlightenment.

3E. International Comparisons

For comparative purposes, the Committee asked Health Canada to obtain information on the organization, governance and funding of public health in selected foreign countries, with an emphasis on national agencies. We have reviewed material on the USA, the United Kingdom, Australia, New Zealand, Sweden, Finland, and Norway. We found the organization and governance of public health to be particularly informative for the USA, United Kingdom, and Australia, and review these below.

3E.1 United States of America

The USA combines a large population (297 million), the highest average per capita income on the globe, dramatic income-related and ethno-racial health status disparities, geographic challenges that are only slightly less daunting than those in Canada, and a federal system of government that includes 57 separate governments at the state/territorial/district level.

The Institute of Medicine has recently published a comprehensive and critical review of public health infrastructure in the United States.¹⁸ As the Institute's report highlights, the health care context is different from other developed countries: the Department of Health and Human Services, through its Medicare and Medicaid programs (the latter a joint venture with the states) is the largest insurer in the country. However, absent universal health care insurance, the majority of Americans obtain insurance privately, with about 40 million uninsured, relying on a patchwork of state, local and voluntary programs for service. This tends to confuse the public health picture, as public health programs at the state and municipal level are often an amalgam of population health and clinical prevention programs and curative care for the indigent and uninsured populations.

The US constitution gives states primary responsibility for health. The federal government has a limited role in the direct delivery of public health services, but does provide leadership, has some regulatory authority, and contributes operational and financial resources. The ultimate authority for public health in the USA rests with the Secretary of Health and Human Services. The Assistant Secretary for Health is the principal advisor to the Secretary on public health and related scientific issues. Presently, the Acting Assistant Secretary is Dr. Richard Carmona, who is also the Surgeon General. There is also an Assistant Secretary for Public Health Emergency Preparedness.

The lead agency for public health activity at the federal level is the **US Department of Health and Human Services** [DHHS] (see Appendix 3.1 for an organizational chart). The DHHS oversees several key agencies including the Centers for Disease Control and Prevention [CDC], referenced in the two previous chapters. Numerous committees in both the House of Representatives and Senate have jurisdiction over HHS activity. The roles of DHHS include:

Policy making: For example, the DHHS, through its Healthy People initiative, sets goals and objectives for health promotion and disease prevention.

Financing public health activities: Whereas much of the CDC budget flows through to the states and territories, the Institute of Medicine [IOM] notes that other spending by DHHS in the public health sphere goes not to public health activities as we understand them, but to personal health care services through Medicaid.

Public health protection: The federal government is heavily involved in this area through the Food and Drug Administration [FDA], and the Centers for Medicare and Medicaid Services which regulates health care providers and laboratories.

Collecting and disseminating information: Numerous federal agencies collect key health data.

Capacity building for population health: The federal government is expected to ensure that state and local governments have the resources (human, financial, organizational, etc.) to carry out their responsibilities. In practice, state public health agencies are chronically under-funded. When states do receive additional funds from the federal government, they sometimes use these resources to reduce the proportion of state expenses directed towards public health activities, i.e., the funds substitute for, rather than increase, existing state-level public health spending.

Direct management of services: These allocations include Medicaid, Medicare, funding of the Indian Health Service, and some community health centres.

Faced with a constitutional division of powers similar to that in Canada, the DHHS must work with State, Local and Tribal governments to fulfill its mission of protecting the health of all Americans. The **US Public Health Service** [PHS] combines eight HHS agencies with the Office of Public Health and Science [OPHS] that houses the Office of the Surgeon General. The Surgeon General directs the PHS Commissioned Corps—a quasi-military unit of 6,000 uniformed public health professionals.

The federal government has constitutional responsibility for preventing entry of disease into the USA and, under the Interstate Commerce clause of the Constitution, for preventing the interstate spread of disease. The USA has specific legislation (the Public Health Threats and Emergencies Act, 2000, also known as the Frist/Kennedy Act) aimed at countering bioterrorism through the improvement of public health infra- and infostructure at

state and local levels. Other relevant legislation governs immunization and vaccine purchase, and includes several long-standing “categorical” programs to fund specific nationwide programs, usually with an emphasis on the poor or on children and youth, often in partnership with states.

Apart from the CDC, other agencies under the umbrella of the DHHS in the USA are listed below. The list shows their 2002 HHS budget authority in parentheses; these agencies may receive additional funding from non-HHS sources:

- Food and Drug Administration (US\$1.3 billion)
- Health Resources & Services Administration (US\$6.2 billion)
- Indian Health Service (US\$2.9 billion)
- National Institutes of Health (US\$23.6 billion)
- Substance Abuse & Mental Health Services (US\$3.1 billion)
- Agency for Healthcare Research & Quality (US\$0.3 billion)
- Centers for Medicare & Medicaid Services (US\$388 billion)
- Administration for Children & Families (US\$47.3 billion)
- Administration on Aging (US\$1.3 billion)

The **Centers for Disease Control and Prevention** [CDC] was founded in 1946 to combat malaria, typhus and other communicable diseases. As noted in Chapter 1, CDC initially stood for “Communicable Disease Center.” The CDC was renamed the Center for Disease Control in 1970, and added “Prevention” to its name (but not the acronym) in 1992. It is an operating division of the Department of Health and Human Services, and the largest federal agency outside Washington, D.C. The CDC has always been based in Atlanta, but over 2,000 of the approximately 8,600 full-time equivalent employees work elsewhere; this includes postings in 47 state health departments, with 120 CDC employees overseas. Some CDC staff are also members of the Commissioned Corps of the PHS. The CDC’s current mission is “to promote health and quality of life by preventing and controlling disease, injury, and disability.” The federal government created the Agency for Toxic Substances and Disease Registry [ATSDR] in 1980. The director of the CDC also serves as the administrator of the ATSDR; the CDC and the ATSDR submit a joint budget request.

The CDC has 12 centres, institutes and offices. The Director is always a public health physician and the senior staff are predominantly health professionals and scientists. The CDC maintains a very high public profile, and has a strong 'corporate brand'. Its director reports to the Secretary for Health and Human Services through the Deputy Secretary.

The CDC exerts considerable influence at state and local levels. In part this is due to the CDC's Epidemic Intelligence Service [EIS]. The EIS was a forerunner of similar programs in Canada and elsewhere. The EIS is at once a training program in field epidemiology, surveillance and disease control, and a significant part of the CDC's ability to respond rapidly to outbreaks anywhere in the USA or abroad. It helps to ensure that the CDC can dispatch teams to assist or lead local investigations into disease outbreaks.

Many of the state and local staff were trained in the CDC EIS. Most states also have CDC staff stationed in key state agencies.

The CDC is the clear international leader in the areas of surveillance systems, databases, outbreak investigation, and communicable disease epidemiology. The speed with which the CDC and the PHS Corps can respond to an emergency infectious outbreak is unmatched globally.

The programs of the CDC are directed towards two major functions. It provides infrastructure support to the states and local health agencies. It also serves as the national command centre for health emergencies, including new or re-emerging infectious diseases and bioterrorism. The CDC engages in research, offers technical advice to multiple nations, and helps with program development in the USA and around the world.

The infrastructure programs are set out below:

The National Public Health Standards Program develops capacity and performance standards, provides for evaluation against these standards and provides grants and technical assistance to state and local health authorities to address deficiencies. Although states are free to reject the CDC's performance standards, the CDC's funding of state-level programs gives it substantial influence.

The Health Alert Network links all state and local health departments to secure communication systems through the development of architecture, technical assistance and grant-supported projects.

The Public Health Workforce Development Initiative includes a comprehensive strategy for life-long learning for public health practitioners, and has two arms: the Public Health Training Network and the National Laboratory Training Network.

The National Public Health Laboratory System, beginning with standardization and enhanced testing, aims to develop policies and public-private partnerships that would enable improved and more timely reporting of laboratory results.

The Public Health Information Network is the architecture for a comprehensive system for the capture and exchange of surveillance information. It provides desktop access to important information for public health practitioners.

The Public Health Emergency Fund is available for federal action on public health emergencies.

The situation with surveillance in the USA is not dissimilar to Canada with respect to legal authority. Mandatory reporting of infectious diseases occurs at the state or even local level in the USA. Although the CDC and the Council of State and Territorial Epidemiologists jointly maintain a list of nationally notifiable infectious diseases, reporting to the CDC is voluntary. On the other hand, the CDC performs a crucial role in disease surveillance, offering leadership and coordination, education, laboratory testing, and information technology, as well as direct funding. In the last category, for example, the National Center for Infectious Diseases distributed US\$31.2 million to states in 1998 through various grants for surveillance. Other CDC departments also provide funding to states for surveillance. In 2002, bioterrorism funding enabled the CDC to disburse almost US\$1 billion to states, of which approximately US\$183 million was for surveillance and epidemiology. In short, given constitutional limits and recent legislation that prevents the imposition of unfunded mandates on states by federal regulators, the CDC essentially purchases a national surveillance system through earmarked state-level funding and partnerships.

In the USA, the Healthy People 2010 Objectives (published every ten years) contain quantifiable objectives, and progress towards them is measured. This stands in contrast to Canada, where an overarching public health strategy for the nation has never been articulated.

Essential public health services have been defined. The CDC offers programs and funding to review state/local performance; a framework for organizing, assessing and developing public health staff care competencies; and a potential framework for new/revised public health legislation. Again, the contrast to Canada is striking. Direct transfers to P/T governments earmarked for public health do not occur in this nation, leading to inter-jurisdictional inconsistencies along with limited national coordination. The federal presence in public health is also much reduced.

The enacted CDC budget for the 2002 fiscal year (FY 2002) is outlined in the CDC's budget request for FY 2004. Allocations for 2003 had not been formally enacted at the time of the 2004 budget request; nevertheless, as 2004 requests are generally similar both in total and by category to actual 2002 and expected 2003 enactments, this report presents data for 2002 only.

The CDC's total 2002 budget of approximately US\$6.5 billion excludes approximately US\$1.2 billion transferred from the CDC's terrorism budget to the Department of Homeland Security for accumulation of a "strategic national stockpile" and the smallpox vaccination program. The CDC receives funding via several mechanisms (e.g., the Labor-Health and Human Services-Education regular appropriations bill, the Veteran Affairs-Housing and Urban Development regular appropriations bill, the Public Health and Social Services Emergency Fund, etc.). Budget details are presented by program in Table 6.

Although responsibility for public health rests with the states constitutionally, the degree of commitment to public health by states and territories varies greatly. A few states invest heavily, and others hardly at all. State health departments are usually headed by a professionally-qualified director or commissioner. However, this official may have responsibility not only for public health, but also for Medicaid, professional licensing and other health care matters, and perhaps child welfare and some social services as well. In the interests of brevity, we shall not review state-specific arrangements in detail here. Suffice it to say that the provision of local and regional public health services appears more variable in the US than in Canada. While some larger cities have very effective public health units, there are also several thousand local (usually county-based) agencies, many too small to be effective or attract qualified staff. Resources are constrained by local ratepayer interest, as a substantial portion of the funding for local agencies comes from municipal or country-level taxes and revenues.

T A B L E 6

Budget for the Centers for Disease Control and Prevention, USA, 2002 (US\$).

Program	Expenditure (US\$, 000)	Percent
<i>Birth Defects and Disabilities</i>	\$89,946	1.4%
<i>Chronic Disease Prevention and Health Promotion</i>	\$746,731	11.4%
Heart Disease and Stroke	\$37,378	
Diabetes	\$61,683	
Cancer	\$268,627	
Arthritis and Other Chronic Diseases	\$20,812	
Tobacco	\$100,973	
Nutrition, Physical Activity, and Obesity	\$27,505	
Health Promotion	\$15,235	
School Health	\$58,443	
Safe Motherhood/Infant Health	\$50,697	
Oral Health	\$10,814	
Prevention Centers	\$26,176	
Youth Media Campaign	\$68,388	
<i>Environmental Health</i>	\$153,397	2.3%
<i>Epidemic Services and Response</i>	\$80,156	1.2%
<i>Health Statistics</i>	\$126,750	1.9%
<i>HIV/AIDS, STD and TB Prevention</i>	\$1,156,826	17.6%
HIV/AIDS – Domestic	\$689,169	
HIV/AIDS – International	\$168,720	
STDs	\$166,534	
TB	\$132,403	
<i>Immunizations</i> <i>(state programs, public health clinics)</i>	\$627,239	9.6%
<i>Infectious Disease Control</i>	\$348,181	5.3%
<i>Injury Prevention and Control</i>	\$149,502	2.3%
<i>Occupational Safety and Health</i>	\$275,808	4.2%
<i>Preventive Health and Health Services Block Grant</i>	\$134,958	2.1%
<i>Public Health Improvement</i>	\$148,306	2.3%
<i>Emergency Response and Recovery</i>	\$12,000	0.2%
<i>Office of the Director</i>	\$49,077	0.7%
<i>Buildings and Facilities</i>	\$296,000	4.5%
<i>ATSDR</i>	\$78,203	1.2%
<i>Terrorism (Nonbuildings and Facilities)</i>	\$1,101,439	16.8%
Upgrading State and Local Capacity	\$940,174	
Upgrading CDC Capacity	\$143,225	
Anthrax	\$18,040	
<i>Vaccines for Children</i> <i>(Medicaid, uninsured, native, etc.)</i>	\$989,535	15.1%
<i>User Fees</i>	\$2,226	0.0%
Total	\$6,566,280	100.0%

The first line for outbreak management remains at the local and then state level in the USA. The CDC must be invited to offer support, but thereafter it plays particularly strong roles in outbreak investigation and strategic advice. The CDC's influence and surveillance systems also ensure that, with few exceptions, it enters the fray early in any serious outbreak. Just as in Canada, jurisdictional tensions occur. However, the conspicuous position of the CDC in US outbreaks arises from its own firepower, its funding of activities by other governmental jurisdictions, the role that it plays in training and capacity-building, direct secondments of federal personnel into state/territorial agencies, and, not least, limits in capacity at the local or regional level.

3E.2 United Kingdom

Although the United Kingdom does not have a federal constitution, three separate health systems are in operation for England and Wales, Scotland, and Northern Ireland. Each is a variation on the basic model of the National Health Service [NHS].

Britain was a pioneer in many aspects of public health during the nineteenth century. Its strong municipally-based public health programs were largely absorbed into the NHS when the latter was created in 1948. Since then, public health has been closely integrated with other NHS functions. Furthermore, public health physicians in the United Kingdom have wide-ranging roles. They are not only engaged in public health as we understand it, but also in planning, commissioning and managing the quality of the NHS clinical services.

The basic organizational unit of the NHS is the *Primary Care Trust*. Many public health services are provided at this level. Since April 2002, the trusts are accountable to 28 *Strategic Health Authorities*, each with a regional director of public health. The public health directors in the Strategic Health Authorities are charged with the development of a cross-governmental and cross-sectoral approach to the determinants of health. Public health policy informs and is informed by regional work on economic regeneration, education, employment and transport. The directors give high priority to partnerships with primary care physicians. They are accountable for health protection (including control of communicable diseases and environmental hazards) across the region, and play a role in emergency and disaster planning and management. The public health directors are also often a point of contact for concerns about clinical standards. In essence, serious lapses in clinical quality are regarded as tantamount to iatrogenic disease outbreaks, and may

be investigated accordingly in tandem with clinical governance. Each region has its own characteristics and public health priorities.

Intriguingly, the Cabinet includes not only a Minister of Health but a *Parliamentary Under Secretary of State for Public Health*, essentially a junior minister, with specific responsibilities for a strategy to improve the health of the public and for policies on issues such as tobacco control and food safety. The government published a green paper and subsequent white paper (*Saving Lives: Our Healthier Nation*) setting out the government's strategy for public health policy. In contrast to the Canadian situation, the white paper identified five priority areas for reducing mortality and morbidity and 25 quantified targets for achieving reductions in mortality and morbidity over given timescales. Work in progress is addressing targets for addressing health inequalities and tackling some of the social and environmental determinants of health. Public health activities are subject to national health frameworks: each Strategic Health Authority measures the performance of the primary care trusts within its boundaries, and the performance of Strategic Health Authorities in turn is assessed centrally. In sum, Britain is making an effort to create an accountable hierarchy of performance measurement in public health, a structure parallel to its innovative system of performance measurement for clinical or personal health services.

The UK government recently formed a *Health Protection Agency*. It drew together the Public Health Laboratory Service (including the Communicable Disease Surveillance Centre), the Centre for Applied Microbiology and Research, NHS staff responsible for communicable disease control and emergency planning, and units responsible for chemical exposures and poison control. The staff in this agency number 2,700 in 9 regional offices. This second line of defence against outbreaks is an important innovation to which we shall return.

The government operates other agencies designed to drive a research agenda in public health and translate evidence into action. The *Health Development Agency* has an annual budget of about C\$23 million. Focused on knowledge translation, the agency finances systematic reviews, gathers evidence and makes it available to public health authorities, advises on good public health practice, and supports the information needs of front-line public health workers. It has a particular interest in health promotion and works closely with both local public health agencies and community groups. The Department of Health also funds the Policy Research Programme to help ensure that public health policy, plans, and practices are based on reliable evidence about population needs and

effective interventions. All of the research is directly commissioned (costing around C\$67 million per annum). More generally, the Department of Health will spend approximately C\$1.21 billion in 2002/03 through the Policy Research Programme and NHS R&D Programme. While the NHS R&D Programme has a strong applied clinical and health services focus, a meaningful proportion of the research spills over to inform public health issues. The British Medical Research Council is funded separately for investigator-initiated research across the full range of health research.

3E.3 Australia

Australia is similar to Canada with its vast land mass, modest population (now about 19 million), and federal system of government. Australia's federation is comprised of six states and two territories. The Commonwealth (federal) government has a broad policy leadership and financing role in health matters, while the states and territories are largely responsible for the delivery of public hospital and community services. Australia has moved back and forth with various configurations of private-public mix in financing and delivering personal health services. Currently, it operates a national compulsory tax-based system of public health insurance (known as Medicare), graduated on the basis of income and general taxation, that provides access to medical and hospital services for all Australians. The Commonwealth has recently introduced a number of key policy initiatives to increase participation in parallel private health insurance. The Commonwealth also provides management and control of communicable diseases, and regulates food, therapeutic goods, and chemicals.

The Commonwealth Department of Health and Aged Care coordinates surveillance, prevention, management and control of communicable diseases, and regulation of food and therapeutic products. However, funding of public health differs from funding of hospital and medical services. While the Commonwealth (under the Australia Health Care Agreements) pays 75% of total funding for public hospital services, it pays for half of the public health services funding (30% via direct expenditure and 22% via payments to States and Territories). The states and territories contribute the remainder. Based on 1999/2000 data, A\$931 million was spent on core public health activities (less than 2% of health expenditure in Australia).

Joint public health activities conducted by the Commonwealth and State/Territories Health Authorities are coordinated through the *National Public Health Partnership*, a sub-committee of the Australian Health Minister's Conference. States and territories vary in the organization of their public health services, with differing numbers of local and regional public health units, variable integration with community health centres, and considerable variation in the role of NGOs or stand-alone foundations.

In February 2003, all Health Ministers signed a memorandum of understanding to continue the National Public Health Partnership [NPHP] for the period 2003-2007. The memorandum sets out the objectives of the NPHP, clarifies the roles and responsibilities of the respective parties to the multilateral agreement and describes the arrangements for implementation. The NPHP Group is comprised of a senior representative from Commonwealth, State and Territory Health Departments (voting members), senior representatives of the Australian Institute of Health and Welfare and the National Health and Medical Research Council (non-voting members) and two observers (the New Zealand Ministry of Health and the NPHP Advisory Group). The NPHP has already established subgroups in areas such as communicable diseases and AIDS.

The Program priorities for the NPHP are clearly identified. They include: 1) improving public health practice; 2) developing public health information systems; 3) reviewing and harmonizing public health legislation; 4) implementing public health workforce initiatives; 5) strengthening national public health research and development capacity; 6) improving the coordination of national public health strategies; 7) developing standards for the delivery of core public health strategies; and 8) improving Aboriginal and Torres Strait Islander health. Lessons for Canada from these collaborative arrangements with explicit priorities are self-evident.

The Commonwealth contributes towards the capacity of states and territories through *Public Health Outcome Funding Agreements [PHOFAs]*. Base funding is provided for major national health priorities. PHOFAs include specific outcome reporting requirements. This year, the Commonwealth Department of Health & Welfare provided funds for SARS screening at airports, vaccines, and improved prevention in primary care.

The NPHP has made substantial efforts to integrate the preventive work of general practitioners with other primary care services and community services. These steps should help to integrate the personal service continuum with broader public health programming. In particular, the NPHP is working with the General Practice Advisory Committee to improve the adoption of preventive and early intervention approaches by general practitioners, thereby rationalizing the complementary role of clinical and population strategies for prevention. Research on population health issues and epidemiologic study is supported at the Commonwealth level through two mechanisms. The National Health and Medical Research Council [NHMRC] provides independent, expert advice to government in health issues and research grants. As well, the *Public Health Education and Research Program* funds Australian tertiary institutions to strengthen post-graduate education and training, including preparation of public health practitioners and research training in population health.

3F. Some Reflections and Conclusions

SARS is simply the latest in a series of recent bellwethers for the fragile state of Canada's federal/provincial/municipal public health systems. The pattern is now familiar. Public health is taken for granted until disease outbreaks occur, whereupon a brief flurry of lip service leads to minimal investments and little real change in public health infrastructure or priorities. This cycle must end.

Canadians have seen high-profile disease clusters arising from the contamination of water supplies in Walkerton, Ontario and North Battleford, Saskatchewan. Both had tragic effects. Last year, the nation faced an outbreak of West Nile virus. West Nile virus is another zoonosis, arising from a reservoir of infected birds and transmitted to humans by mosquito bites. The virus appeared in North America in New York City in 1999, and was detected in Canada by the summer/fall of 2001. Canada recorded about 300 confirmed cases in 2002, some with severe or fatal effects. Variant Creutzfeldt Jacob Disease (the human form of Bovine Spongiform Encephalopathy or BSE) has also sparked public anxieties and exacted an economic toll.

The SARS outbreak was moderate in size, in part because effective actions were taken to contain its spread and also because the causative agent is actually less contagious than some other respiratory and enteric viruses. Its social and economic impact, however, was enormous, and its collateral clinical consequences are still being measured.

SARS has highlighted how communicable diseases, particular those caused by hitherto unknown agents, can tap primal anxieties, prompt enormous interest on the part of the media, and provoke some unsavoury public responses (e.g., incidents of harassment and scapegoating of the Asian community in Toronto). The SARS outbreak thereby underscores the need for public health to play a leadership role in analyzing risks and communicating effectively about them. Yet, as the chronology in the last chapter demonstrated, neither the analytical capacity nor the communications strategies were anywhere near optimal.

Many involved have acknowledged the potential consequences of two public health crises happening simultaneously. What if SARS had struck just as public health staff were fully engaged in coping with a bioterrorism attack or an accelerated caseload of infections with West Nile virus? In the absence of a robust public health system with built-in surge capacity, every crisis forces trade-offs—attention to one infectious disease at the expense of others, or infectious disease prevention at the expense of food safety, chronic disease prevention, and other public health responsibilities. In the latter respect, if Canada expends most available public health resources on relatively rare events such as SARS or West Nile virus, we run the risk of winning a few high-profile battles while losing the war for health. A host of partially preventable non-communicable diseases continue to exact a tremendous toll on the health of Canadians, while avoidable injuries cost the nation billions of dollars in direct health spending and indirect costs. Public health has much to contribute apart from containment of communicable diseases.

The chronology in Chapter 2 highlighted the impact of SARS in Canada's richest and largest city in the nation's richest and largest province. Globe and Mail columnist Margaret Wenthe has tartly commented: "Thanks to near-heroic efforts by public health officials, we managed to fight off a SARS fire spreading at lightning speed with an organization about as sophisticated as an improvised bucket brigade."¹⁹ Support to fight the outbreak was required from other jurisdictions, including scores of volunteers from the USA.

The capacity of other provinces varies but Ontario is assuredly not the 'weakest link' in the P/T public health chain. In this respect, an F/P/T report on Public Health Capacity was prepared for the Conference of Deputy Ministers at their request, and presented in June 2001.²⁰ It was never formally accepted for publication and dissemination. Some of the key findings highlight potential areas of concern for all Canadians including:

- an overall erosion of the public health system, with survey respondents in key positions noting the reduced capacity to address ongoing and emergent challenges to public health such as water quality safety and management of infectious diseases;
- significant disparities in public health capacity now exist across Canada;
- concerns that the relative low priority given to longer-term disease and injury prevention strategies is increasing threats to the health of Canadians and undermining the sustainability of the health care delivery system;
- a lack of written multi-year plans covering the five core areas of public health practice in more than half the jurisdictions;
- insufficient efforts in staff development and growing recruitment/retention difficulties;
- uncertain capacity of jurisdictions to deal with more than one emergency at a time, or to deliver some core programs, particularly to northern and Aboriginal communities; and
- limited access to health information and eroding leadership on key public health issues.

The SARS outbreak has affirmed these observations. It illustrates an urgent need to strengthen not only the federal role, but also the P/T public health infrastructure. The effectiveness of the public health system depends critically upon capacity at local and provincial/territorial levels. In turn, this demands a well-trained, adequate, and fully prepared workforce, and information and surveillance systems that can detect health threats rapidly, analyse and interpret data and communicate the resulting information to health care providers and the general public as needed. The same infrastructure that will help combat the next outbreak of SARS or a similar communicable disease will also provide Canadians with enhanced health protection and preventive capacity to reduce the burden of non-communicable diseases.

The 2000 and 2003 Health Accords provided major transfers of funds to the provinces for health spending. These transfers offer provinces a resource base that, if they choose, can be tapped to enhance public health infrastructure [PHI]. And, given the very small percentage of publicly-funded health spending directed to public health functions, the levels of investment that would have a transformative effect on public health capacity are comparatively small—ranging by province from tens of millions to the low hundreds of millions annually. A new allocation or re-allocation equivalent to the budget

of a single mid-sized general hospital could hugely augment PHI for larger provinces. However, the Committee is under no illusions about the continuing competitive spending pressures on provincial and territorial governments. In the chapters that follow, we are recommending that a substantial majority of the new federal spending on public health be directed to initiatives and programs that will create a seamless, strengthened, and collaborative F/P/T public health system.

In shaping new programs and structures, what general lessons can Canadians learn from public health systems in other countries?

First and foremost, the US, the UK and Australia each have a coherent chain of policy, stretching from legislation, national goals and priorities, national strategies, programs to sustain the public health infrastructure (including human resources), means of reaching agreement between stakeholders, and specific funding programs. There are quantifiable targets with timelines, and accountability mechanisms. In contrast, Canada does not have national health goals or strategies. Even the extant national indicators arising from the Health Accords are focused on the personal health care system.

Second, many countries have agencies for public health led by a recognized expert in the field. Embedding public health functions inside the usual bureaucracy may enhance the crosswalk to other health activities, but tends to blur the professional career path for those with special training in the relevant disciplines, impede the agility of responses to public health emergencies, and augment the politicization of inter-jurisdictional activity. A distinct agency can still be held to account through a variety of mechanisms, and its credibility, for better or worse, is enhanced by its distance from the usual machinery of government. Furthermore, these agencies in other nations help build PHI by continually and generously investing in the training and continuing education of skilled personnel. This must be a high priority for any Canadian public health agency.

Third, the scope of public health agencies varies. Some are focused on infectious diseases alone; others have a general mandate. We see the rationale for single-focus agencies, and commend the work of British Columbia's Centre for Disease Control as a provincial exemplar in the infectious disease field. Federally, Canada already has a Centre for Infectious Disease Prevention and Control under the auspices of PPHB. The Committee believes that any new national agency must encompass a full spectrum of public health activities through a variety of component centres, as exemplified by the USA's CDC,

and intriguingly, Quebec's National Institute of Public Health. The scope of the agency nonetheless requires careful assessment as we shall show in the next chapter.

Fourth, the Committee has been struck by the fact that other federations, such as Australia and the USA, also face challenges from the divergent capacity of different provinces or states and territories. The Australian and US response is to confront the challenges of regional pluralism with earmarked funding, mechanisms to foster inter-jurisdictional collaboration and coordination, and agreement on explicit performance standards. Canada needs a more consistent public health system with maximum inter-jurisdictional collaboration on essential functions. Governments in other nations have provided examples of steps that can be taken to meet this need for our citizens.

In seeking to foster a stronger and more integrated national public health system, the Government of Canada can variously use legislation and regulation, provide information and advice, deliver programs itself, or make transfer payments to individuals, organizations, and other levels of government. Each of these has a role to play.

As summarized in Chapter 9, new legislation and regulation could be dovetailed with the recognized need for Ottawa to revise and consolidate all of its public health and health protection legislation. A national public health system would also be facilitated by a stronger national presence, established arm's-length from Health Canada but accountable to the Minister of Health and Parliament, that would provide credible information, advice, and technical support to provinces and territories. The USA's CDC is exemplary in these respects. SARS has shown that an outbreak in one province (or nation) affects all others. Every province and territory would benefit from more effective support for and coordination of public health activities. A strong federal presence is particularly important in supporting smaller provinces faced with epidemics, and is critically important in international liaison.

Direct program delivery by the federal government avoids skirmishing over cash transfers and accountability, but the federal government cannot effectively deliver local public health services nor does it have jurisdiction to do so. As in the USA, the federal government in Canada could instead become more directly involved in surveillance in support of provinces and territories. The Committee is also impressed by the ability of the US CDC to maintain a highly mobile, professionally-trained emergency response structure capable of reacting rapidly to outbreaks of infectious disease or other health emergencies. In an ideal world, a new Canadian agency

would support a network of expertise, have sufficient credibility, enjoy collegial relations, and move swiftly across bridges of inter-jurisdictional agreements to help in local outbreak investigations and management. This is one reason why, as will be elaborated in Chapter 5, we envisage a network focused on infectious diseases along with a system of secondments and sharing of personnel designed to create a culture of collaboration.

Transfers are the other policy instrument in the federal tool-kit. As noted above, the federal government currently operates a program of grants and contributions through PPHB. This system moves approximately \$200 million per annum primarily to NGOs, and aims at addressing various determinants of health through programs in areas such as prenatal nutrition, Aboriginal early childhood development, healthy living, and prevention of various non-communicable diseases. This set of transfers should be aligned with a new national public health strategy. But what is clearly needed as well is a serious investment directed at the support of provincial, territorial, and municipal public health infrastructure. To this end, both the American and Australian examples are important. Their systems of grants and related agreements with states and territories, incorporating clear targets and reporting mechanisms, exemplify the approach that a new Canadian agency could use to build capacity in accordance with both a national public health strategy and the needs of specific P/T jurisdictions.

The Committee is concerned that new funding for provinces and territories not displace current spending, and end up transferred within provincial health budgets to become another drop in the ever-leaking acute care bucket. New funding should neither preferentially underwrite those provinces that have chosen to invest at levels much below others nor disadvantage provinces such as British Columbia and Quebec that have innovated and invested in public health. Instead, we recommend that a new federal agency allocate these funds in such a way that program expenditures roll up to reflect, with some allowance for year-over-year variation, approximate population size, consistent with the Social Union Framework Agreement.

The national agency should be free to set floors for dovetailed provincial activity or matching conditions before a particular provincial public health branch can receive earmarked program funds. The agency may also choose to underwrite all costs for particular provincial/municipal programs. What the Committee views as crucial, however, is that there be no bulk transfer or passive payments. The monies should be disaggregated into separate program grants, and different provinces

should receive funds for different purposes to promote achievement of a stronger and more consistent public health infrastructure. Overall target setting for inter-jurisdictional division of funds thereby becomes a mechanism whereby provinces are both assured of receiving a reasonably fair share of support for their own priorities, and given incentives to set priorities for re-investment in concert with the national agency.

Fifth, the areas of infectious disease surveillance and outbreak management need specific support and attention. Ideally, outbreak management should be harmonized with other provisions for health emergencies and these arrangements in turn dovetailed with broader strategies for emergency preparedness and response. To ensure that these areas receive priority and avoid F/P/T tensions, it seems intuitively appealing to create a new network with earmarked funding inside the agency's envelope for P/T contributions. This would be a uniquely Canadian approach to reconcile some of the inter-jurisdictional uncertainties that arise with public health not just in our federation, but in other federal states as well.

Sixth, Australia, the UK, and the USA all have embedded a strong research and science component in their public health activities. These countries provide a solid foundation in epidemiology, surveillance and health statistics, to inform public health practice. The UK is the international leader in its efforts to ground public health policies and services in solid evidence. Canada needs more applied public health research and evaluation, more systematic reviews and public health practice guidelines, better training in the generation and interpretation of public health evidence, and better means of storing, maintaining and accessing the relevant knowledge for public health practice. These issues have been highlighted in a document produced by the Institute of Population and Public Health within the CIHR. Any new agency must have a combination of in-house capacity alongside funding to contract out R&D functions to partners such as the CIHR. The challenges go beyond public health and demand a review of our scientific capacity with respect to infectious diseases research; further comments on this matter follow in Chapter 10.

Last, in one nation after another, we see efforts made across jurisdictions to exchange and share data and information. Public health practitioners were pioneering users of health information in the eighteenth and nineteenth centuries. More recently, public health, like the personal health care system, has been unable to take full advantage of innovations in information and communication technologies. Three levels of government are involved in public health, and as the SARS outbreak demonstrated, public health must be connected to what is happening in clinics, hospitals, and other parts of the health enterprise. Thus, information must move rapidly to and from the clinical and public health frontlines. Both professionals and the media have been strongly and justifiably critical of the difficulties in sharing information across levels of government that became evident in the recent outbreak of SARS. Special efforts must be made not only to invest in information technology, but also to generate the intergovernmental agreements and information standards that will give Canada a leading-edge public health information system. These must be an integral part of rolling out any new funding, whether for general public health renewal, or earmarked for infectious disease surveillance and outbreak management. Alongside these more informal agreements, and notwithstanding any federal legislative renewal, one can also envisage a process to upgrade and harmonize public health legislation across Canada, facilitating the function of a truly seamless system to protect and promote the health of our citizens, wherever they live.

These are not tall orders. They presuppose in the first instance only a visible and continuing commitment on the part of all those who govern us to the principle that, whatever other differences may inevitably separate us in this sometimes-fractious federation, the health of Canadians is paramount. Beyond that, the investment of new monies needed to transform public health is modest compared to numerous other spheres of public spending, not least the personal health services sector. The single question that the Committee would put to all health ministers, finance ministers, and first ministers is accordingly simple: If not now, when?

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Appendix 3.1

US Department of Health and Human Services Organizational Chart

