University of Ottawa
Institute of Population Health

Promotion and Protection of Health and Wellbeing of the Population Vision of Federal/National Roles

J . Losos MD
DECH, FRCP(C), FACPM
Director
16 September, 2002

TABLE OF CONTENTS

Promotion and Protection of the Health and Wellbeing of the Population
Vision of Federal/National Roles

J. Losos, MD, MECH, FRCPC, FACPM
September 16, 2002

EXECUTIVE SUMMARY

The health and wellbeing of the Population depend on multiple medical and non medical factors. The practice of promotion of health, public health practices and the delivery of health services is carried out by various jurisdictions and organizations in Canada. Much can and must be done to better coordinate the significant expertise and capacity in Canada to prevent and manage better risks to health.

Public health operates in a global sphere in today's world of international commerce, travel and migration, information, creation of many new technologies and the emergence of changing biology of ecosystems such as deforestation, Lyme disease, overuse of antibiotics and building resistance to them.

A nationally coordinated approach with federal leadership is needed in areas of major risk especially where such an approach would result in prevention of needless suffering, death and excessive costs. This is the case with cancer, cardiovascular disease, diabetes, respiratory disease, mental health, injuries, nutrition and obesity, to name several.

The legislative map of Canada requires updating. Inequity of the health of some of the sectors of the population is a reality. Some of our legislation is dated (i.e. Food and Drug Act) and there is no adequate national legislation for public health. However, for many issues, national public health action is necessary and legislation should assist greatly.

Capacity in the health sector is significant in Canada. However coordination, a strong federal role and development of consortia to manage major risk areas are vital. Fragmentation of roles, multiple jurisdictions and incomplete legislative coverage is not tenable for issues which must be nationally coordinated. Such coordination would result in national initiatives of world-class quality which could be adapted provincially and locally for specific needs.

Health protection through strong federal legislation and leadership is a cornerstone of current first rate public health. In a global environment strong leadership and coordination is needed to ensure food and water safety, safe and effective therapeutic products and a safe sustainable environment.

Many international initiatives in public health prevention and management are being developed. Canada must participate in these initiatives and has much to offer with its expertise. To contribute and to be able to participate, we must unite into a consortium in major issues so that we do not present ourselves as multiple, fragmented jurisdictions and programs. If we achieve this collaborative cohesion and develop single, coordinated initiatives we will indeed be

significant international contributors and the Canadian public will benefit directly from such participation.

BACKGROUND

Public health is defined as "the practices, procedures, institutions and disciplines required to achieve the desired state of population health" (Last 1999). By definition, the practice of public health requires collaboration of multiple sectors, including health, agriculture, environment, finance, etc. Public health infrastructure often implements health promotion activities with the objective of empowering communities and individuals to live healthy lifestyles and prevent illness. Health protection through legislations such as the Food and Drug Act, Medical Devices Act, and Environmental protection Act also fall under this Public Health Sphere. These acts are integral to the health of the public and a clear legislative responsibility of the federal government.

As a major component of the concept of population health, public health systems and services are fundamental to health and wellbeing. Public health usually functions silently as the sentinel for health (monitoring, testing, analyzing, intervening, informing, promoting, preventing) until something happens unexpectedly. In such instances, (Walkerton, foodborne outbreaks, infectious disease outbreaks, increasing chronic disease clusters), the crisis and profile of public health incidents quickly reach major proportions. Often this occurs at a great cost in human suffering, possibly death and financial expense for what are often preventable occurrences. In many instances there is no clear lead, no clear accountability and there is an immediate need for strong federal leadership.

As well, because of its sentinel functions, public health is not regarded as highly as health care in the eyes of decision-makers and the public. This is quickly reversed in crises, as the public, ever better informed and involved, demands that protective safeguards be in place. Another burden carried by public health is that interventions, now for the purposes of prevention in the future, take a long time to demonstrate a benefit. Therefore, in the shorter timeframe of the political and bureaucratic systems, competition for resources against health care is difficult. Funding is low, often not stable or consistent and collectively, the result is that the public health infrastructure in Canada is under considerable stress (1). Local health authorities are often overburdened and the delivery of some priority programs is very difficult. When global budgets are introduced, public health is often what becomes the first cut. Health promotion is practiced at all levels of government and through large-scale efforts in the non governmental sector. Coordination is currently not optimal and there is a level of disagreement as to which jurisdiction has this role. It is extremely difficult to have homogeneity across disparate jurisdictions on issues which must be national in scope. There are no health goals nationally as there are in the United States (2), but provinces have developed them individually. National goals are needed as are national priorities and strategic plans for research. Some activities on strategic research priorities have been initiated by the Canadian Institute for Health Research and by the Canadian Strategy for Cancer Control. These should be linked to systems for national promotion and protection of health and well-being.

Health services are important and necessary determinants of health and well-being. Optimal, evidence-based health care, preventive public health services, community services, etc., all

would be included in this component. A national capability to set standards, quality assurance mechanisms and evaluation would be an important aspect of this area. The Canadian Strategy for Cancer Control is working to establish these, but requires the resources, structure and empowerment to succeed.

Health and wellbeing are influenced by many non medical determinants which, if addressed through promotion and intervention such as policy and legislation, can mitigate and prevent needless illness and hardship. This is true of investment in the absolutely vital first year of life, during which formative stages are adversely affected by deprevation, poverty and negative sociological/psychological influences, among others (3).

For optimal promotion of health and well-being and protection from risk the whole spectrum of determinants must be addressed and to the best of our ability linked and coordinated. We must inform (promote), prevent, monitor, research and intervene optimally, based on solid evidence of effectiveness. The coordination of this spectrum of activities is no small task. It will entail political will at the highest levels of first ministers, formal and committed coalitions of organizations in the health sectors and other relevant sector, optimal resources and at times a redefinition of the relationships between partners (governments, academic sector, non governmental organizations, private sectors, the public). Such a redefinition could be through voluntary collaboration, through creation of formal governance mechanisms (i.e. Negotiated National Agreements, not-for-profit corporations/agencies, etc) and possibly through legislative change (eg. updating of legislation related to regulatory programs of health protection). The federal government must take leadership and operational roles in this approach, even to the point of investment to ensure the initiatives. All look to the federal government for this leadership and public tolerance of unclear jurisdiction is low.

ISSUES

1) Globalization

The rapid changes produced by globalization are stressing all components of systems related to population health and well-being.

- International commerce results in global shipment of products, quickly making risk exposure potentially global (e.g. mad-cow disease, AIDS, dioxin spill in Belgium)
- Travel and migration moves populations and potential risks quickly, across countries and continents (e.g. antibiotic resistance, hepatitis B carriage)
- Behavioral and demographic changes occur with urbanization, changing the cultural fabric and sets parameters for possible risks (e.g. spread of HIV)
- Information age offers multiple opportunities for advancement but can also result in a myriad of messages, a confused public and action based on anecdotes rather than evidence

- Technology explosion is expanding the borders of all sciences, bringing marvelous promise but adding considerable complexity and cost to public health and services (eg. stem cell research, genetics)

- Biology of micro-organisms, environmental ecosystems are quickly changing leaving public health racing to keep pace (e.g. deforestation, West Nile Virus, spongeoform encephalopathy, antibiotic resistance)

2) The Burden of Illness and Presence of Risk Factors

Chronic diseases are the manifestation of the interplay of multiple determinants. Cariovascular/cardiovascular diseases, cancer, respiratory diseases, diabetes are major causes of suffering, disability, and death. They also result in a cost burden to society, which is, in significant part, preventable or which can be delayed (4). Some of the risk factors and determinants for much of this burden are the same (i.e. tobacco, nutrition and obesity, optimal care, exercise) and can be well addressed nationally through well configured national systems for promotion and protection. Multiple disciplines are needed especially to influence behaviour change necessary for prevention.

Injuries and violent death are a major cause of death, disability and lost productivity (5). Several, world-class institutions address the measurement of the injuries burden across the country and define the preventability of many such incidents. Federal leadership in coordination and effective, proactive federal-provincial collaboration in operations and financing are a must. Many injuries need not occur, yet Canadians must pay for their management in the health care system. Rather, basic logic dictates investments in prevention are clearly beneficial (eg. seat belts, legislation and social backlash against drunk driving, bicycle helmets, distress support centres). National programs, well resourced and executed will make injury prevention significantly systematic. Federal leadership is an important factor in achievement of such a goal.

Although an infectious disease, HIV is a viral infection which causes a chronic and virtually universally terminal outcome. Yet it continues, virtually out of control globally (6). In Canada, new waves of infection are appearing in subpopulations at risk, young gay men, street kids and drug users. We must not ignore an epidemic which will soon kill many millions internationally and again threatens to affect Canada internally through new and dangerous waves. Federal government and federal systems such as research funding councils must lead the way to ensure financial and operational support and coordination to ensure research, target interventions, ensure availability of medications which help to ensure that those at risk are helped rather than abandoned. This requires investment in science and strong, credible federal leadership in public health capacity to lead this field.

Mental health is perhaps one of the most poorly addressed areas of public health. It ranks highly in causes of disability and suicide and places a major burden of families, caregivers and the health system. Yet we have little or no national surveillance system to measure this problem. Interventions and help are limited, leaving over-extended family care-givers and sometimes resulting in suicide. Canada must address a national approach to the problem, development of interventions and support systems and coordinate a research agenda to study medical and non-medical determinants of mental illness. The federal government is the natural leader for this type

of complex national problem and is expected to bring together the organizations often toiling alone to cope. A national initiative and national coordination should be a priority in mental health.

The health of Aboriginal people is a major problem in Canada. Rates of illness are unacceptably high and in some instances, such as with diabetes rates, are at epidemic proportions. A national Initiative for research, development of culturally acceptable preventive and treatment interventions are of high priority.

3) Legislation

Provinces and territories, under Public Health Acts, deliver core public health/population health programs (immunization, maternal/child health, some food safety, environmental safety), but not all. The Federal Government has direct statutory responsibilities for regulatory aspects of public/population health (Food and Drug, Devices, Biologics, some Environmental Health, Consumer Products). In national disease surveillance and control and health promotion, the role is less clear. Under the Health and Welfare Act, the federal minister of health is given responsibility only to lead and coordinate provinces in disease surveillance and control. Under the present legislative umbrella, equality for all in health is not achievable.

In practice, systems created by voluntary federal/provincial/territorial collaborations in Canada, therefore, must have buy in from thirteen jurisdictions and public health legislations. Although there is a conscious move toward some real collaboration (First Ministers Conference, September 2000, Social Union Framework Agreement, deputy ministers of health), the reality is one of complex negotiation and activity which requires more systematic coordination. Fragmentation results, the lead in outbreak control is often not clear, responsibility needs definition and efficient coordination is vital. For example, as a nation, our Federal Minister of Health cannot commit the country to the eradication, or elimination of a vaccine preventable disease, since provinces do not have to comply. In immunization, as in many public health issues, action is practiced in a global arena. Therefore our present situation is not tenable. The Canada Health Act does not address public health, so is not the answer to our public health dilema.

Under the Statistics Canada Act, some obligatory reporting of disease exists nationally. However, the system is under-resourced and in need of overhaul for meaningful anticipation and prevention to be possible. Contemporary and looming information technologies provide a golden opportunity for vast improvement in health surveillance, research and communication.

Health Canada is responsible for several major statutes of great relevance to public health. The Food and Drug Act was written in the 1950's and is grossly out of date (8). A federal initiative to update that and other pieces of legislation has not made significant progress over the last several years and should be reinvigorated and made a priority as a clear federal role and responsibility. Canada cannot hope to manage the wave of new technologies without proper legislative tools and the capacity to deliver them. The time has come for stronger national public health legislation in key areas.

Presently a vacuum exists in responsibility and sometimes accountability. The need for coordination of jurisdictions and the opportunity for the federal government to take the lead directly or through other appropriate governance mechanisms (eg. agencies) could provide vital coordination of action. An involved and informed public assumes roles and accountabilities are clear and that public health capacity is adequate.

4) Capacity/Healthy Public Policy

Considerable scientific expertise and infrastructure exist in Canada across jurisdictions (e.g. federal/provincial/territorial) and sectors. However, except for singular examples, these components do not currently work together systematically.

In order to address major priority areas, such as national health surveillance, promotion against, prevention of and health services for major risks (cancer, immunization, cardio and cerebralvascular, diabetes, sociological, etc.) consortia should be formed with the following components:

- The federal government must take on a clear role as leader and coordinator through agreement if possible
- Legislative change, if necessary, to ensure strong federal lead
- Resources
- Clear roles and responsibilities
- National programs with local flexibility and with strong international linkage
- Participation of all who are required, eg. federal/provincial/territorial resources, research funding councils, such as CIHR, SSHRC and others, other sectors, public and sub-populations at risk (e.g. Aboriginal peoples), non governmental organizations and many other stakeholders

The ideal coordinator is an optimally resourced and empowered federal capacity in Health Canada or other appropriate federal governance structure. In some instances, for example, other models could work (such as in blood safety assured through the Canadian Blood Agency through provincial/territorial non-profit corporation and Health Canada acting as regulator). Alternate approaches could be through creation of centres of excellence configured, empowered and resourced to carry out such major national rules. Canadian expertise is as strong as any in the world and must be mobilized and coordinated accordingly.

The Ministers of Health, federally and provincially, should take on the role of "champions for public health" and advocate health to be a major consideration in all initiatives, irrespective of the sector (9). If investment is to be made at a political level in relevant social and other sectors, health impact assessment should be a routine component. Health is one of the highest factors of importance on the public agenda in public opinion poll after public opinion poll.

The governmental, non governmental, academic sectors and funding councils must develop systematic consortia to target priority areas. The increasingly strong academic sector provides promotion and protection capacity with major resources and expertise, which would provide major added value to population health and wellbeing.

A formal partnership between the federal government and the increasingly strong academic sector in health will be a necessity in the short and long term future. Major technological advances in genomics, for example, investments in research councils, the creation of Genome Canada and the fundamental mandate of Health Canada to regulate product/therapeutic efficacy and safety make a partnership vital. Genetically targeted therapeutics and new immunizations will require that federal-academic partnerships be well configured so that the public, an investor in both components, gets maximum "public good" from these scientific capacities. Similar statements could be made for genetically modified food, environmental hazards and the prevention and management of major diseases. Formal participation of academic science capacity, organized to supplement and assist the federal promotion, public health and protection role would provide a major step forward in science infrastructure for the public. Without such a coalition federal capacity can not hope to keep pace with the technology explosion. Such coalitions should also include other partners (eg. associations) and of course the public as stakeholders.

5) Human Resource Development

Canada's expertise and capacity in population/public health/health services require strengthening. More professional programs are needed to increase the cadre of experts in the field, to create expertise able to create and lead multi-disciplinary, multi-sectoral teams and to ensure that decision-makers are provided with the appropriate information for short and long-term policy formulation. We are short physicians, nurses, and multiple other disciplines in health and well being. Training in all disciplines is needed and should include interdisciplinary sciences and program delivery. Recruitment and retention at all levels is an ongoing problem. Also, the public, is a vital resource in the health of the population and should be constantly informed and consulted.

6) Informatics / Communication

The information age, technology advancement and the recently created Canada Health Infoway Inc., provide a major opportunity for the advancement of national promotion, prevention and health services capacity. Present information/computer systems have arisen by happenstance and local needs. Until now (with creation of InfoWay by the federal, provincial and territorial governments) no coordination seemed possible. Now it should be. The national health surveillance system should become a priority for Canada Health Infoway Inc. We must be able to monitor risk using contemporary systems commonplace in other sectors (eg. finance sector). Also, electronic health records should encompass and serve the needs of the national immunization strategy through an electronic immunization registry, cancer registries and other databases and data sources for priority health risks. Major public health and protection programs must quickly be brought to contemporary levels of information technology giving Canada the ability to anticipate and prevent risk.

While ensuring that privacy is completely secure, a system of electronic health records would provide a powerful public health analytic and research tool to identify outbreaks, clusters of disease and to analyze disease trends and system performance. As well, expansion of information to the professionals and the public is a highly desirable and necessary dimension.

7) Health Protection

The Federal Government has clear roles and responsibilities in Canadian public health protection through several pieces of legislation (the Food and Drug Act, Medical Devices Act, health aspects of the Canadian Environmental Protection Act, Product Safety, Radiation Emitting Devices Act, etc.). Some responsibility is shared with other legislation in sectors relevant to Public Health (i.e. Environment Canada, Agriculture Canada, the Canadian Food Inspection Agency). As previously stated, some of these pieces of legislation are in urgent need of updating, some being written decades ago (i.e. Food and Drug Act). In a quickly changing world cohesion and complementarity between pieces of legislation is needed. The federal initiative to make these acts current and complementary should be a priority for the federal government. Relevant to this need is the looming threat of risk to health and wellbeing from several major priority areas affected tremendously by globalization, which are and of extreme concern to the professionals and public (food safety, mad cow disease, antibiotic resistance). Legislation must allow for effective action.

Food safety is one such major concern. Genetically modified foods, accepted (perhaps with growing reluctance) in Canada and rejected elsewhere (European Union) are likely an irreversible reality in the world today. Science supports their safety given our present state of knowledge. However, long term research, monitoring and surveillance of possible outcome is not yet established and must be. National and international collaborations and systems will be needed and the federal role in this issue should be to lead and bring together Canadian capacity to ensure high impact, expert research and also to ensure that Canada is a credible, significant component of international efforts in this area. Transparency with the public is and will be vital. The public must participate often in debate and decisions on the benefits and potential risks in biotechnology.

Antibiotic resistance in human pathogens (germs) and those in other species is rising. This is occurring because of a number of influences such as natural biological evolution of organisms, (perhaps) the unnecessary use of antibiotics in some aspects of health care, sometimes unbridled use of antibiotics in animal feeds, to name some major problems. The federal government regulates approval of antibiotics for use and convenes a National Expert Committee on the subject, but cannot dictate medical practice. Many gaps in a comprehensive program against the occurrence, spread, and prevention of antibiotic resistance exist. Once again fragmentation of the system is a problem with several federal jurisdictions (Health, Agriculture/Canadian Food Inspection Agency). Provincial Health Care, limited monitoring systems and no clear lead all add to the lack of clear roles and responsibilities. Issues such as this, of international concern, must have a clear federal lead, utilizing and mobilizing other sectors (i.e. agriculture) to address as many aspects of antibiotic resistance as necessary to decrease the risk.

Water safety has been a concern with the public since the Walkerton tragedy. Jurisdiction around water safety is provincial, although through federal-provincial-territorial voluntary mechanisms, standards are set and the national situation is monitored. The federal government is the coordinator, but does not have jurisdiction. Services are provided as provinces and territories request (i.e. assistance with outbreak investigation). The Water Material Safety Act proposed by Health Canada did not proceed parliament. It would have mandated more strict standards.

Water quality is assumed by the public. However, many of Canada's water plants vary in age and quality. Eventually a major, coordinated national initiative to upgrade will be inevitable.

Health and environment are inexorably linked both in fact and in the perception of the public. Degradation of the environment, sustainability of the environment and healthy environments are dimensions requiring close collaboration between federal departments (Health, Environment, Agriculture) as well as provinces, territories and international initiatives (i.e. because of international migration of toxins and the global nature of the risk). Federal leadership is a given and will increase in importance as other environmental stresses increase (eg. greenhouse gases, deforestation, climate change, endocrine disruptors in the ecosystem). Much interdepartmental coordination exists federally. Still more systematic mechanisms for collaboration and lead are possible and would ensure considerable progress in forming coalitions.

8) National Systems

The promotion against, prevention of, and management of major risks to health and well-being are best done by national lead and cooperation, with flexibility to adapt to regional or local conditions (eg. A National Immunization Strategy). The following is a description of a hypothetical model for a National Cancer Initiative, and borrows from the excellent start provided by the Canadian Strategy for Cancer Control (10). Similar models could be built for other priority risks.

Background/Assumptions

- Much capacity exists in all disease areas
- Presently fragmented, not coordinated
- No legislative base for consortia
- Optimal management must be delivered by consortia of relevant partners coordinated by one body
- Costs can be shared
- Prevention is preferable to often avoidable disease

Cancer Example

Objective:

- Optimal prevention
- Optimal care
- Research/surveillance
- Informatics/information systems, promotion for the public
- Databases to service the above (e.g. registries, electronic health records, surveys, studies)
- National goals, standards and quality systems
- Advocacy

Collaborators

1) Health Care

- Provinces/hospitals

- Cancer Care Provincial Systems (CAPCA)
- NGO/associations eg. National Cancer Society/National Cancer Institute
- Regulator
- Federal government (funding, coordination)
- Canada Infoway Inc.
- Canadian Strategy for Cancer Control

Functions
- Leadership, Coordination
- Delivery
- Standards, quality
- Databases Surveillance Evaluation
- Regulation

2) Promotion/Prevention

- Public Health/Provinces/Federal/Territorial
- Promotion, Protection, Prevention Initiatives (Federal/Provincial/Territorial)
- Public
- Professional Associations, Non Governmental Organizations
- Aboriginal organizations

3) Research

- Research Councils (Canadian Institutes for Health Research, Social Services and Humanities Research Council, Canadian Health Services Research Foundation and others, as well as the academic sector)
- Non-Governmental Organizations (National Cancer Society, National Cancer Institute, other)
- Government (basic research (eg. National Research Council), Public and Population Health research)
- International systems and collaborations
- Evaluation research
- Private Sector

4) Information/Informatics

- Surveillance
- Provincial registries
- Canada Health Infoway Inc.
- Surveys, studies
- Canadian Institute for Health Information/standards development
- Public (consumer of information)
- Statistics Canada

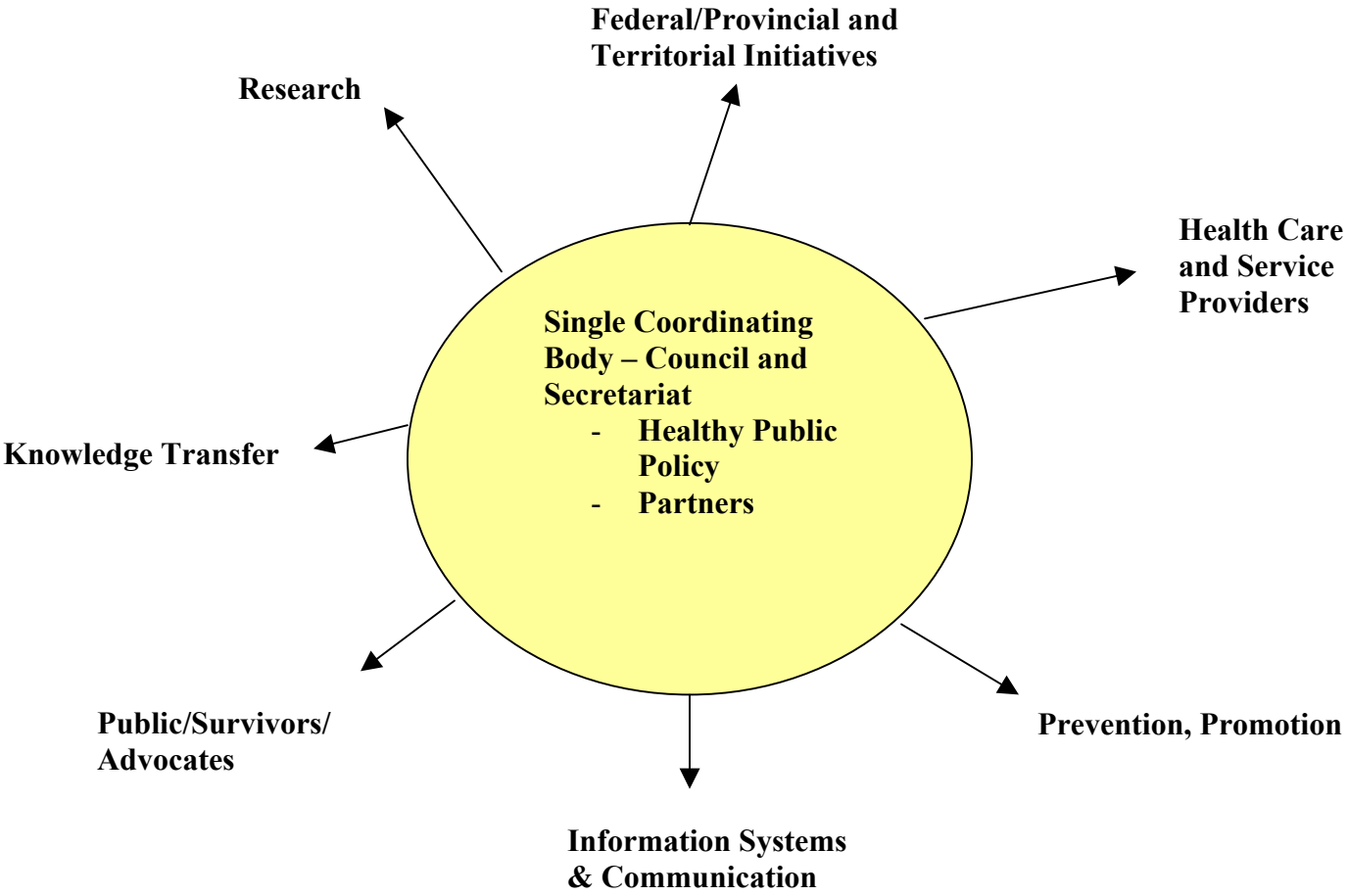
5) Knowledge Transfer

- Canadian Institutes for Health Research, Funding Councils
- Academic Sector
- Policy machinery of Government
- Public

6) <u>Healthy Public Policy</u>

- Federal
- Provincial/Territorial
- Municipal

A single, coordinating organization of adequate size, resources and expertise/excellence is needed as lead and champion. Health Canada could be given the responsibility by a negotiated national agreement. Other models are possible, e.g. an arms-length body, such as a non-profit corporation (e.g. Canadian Blood Services), federal/provincial/territorial (f/t/p) bodies or centers of excellence, which are properly configured, empowered and resourced. The Canadian Strategy for Cancer Control has achieved commendable progress towards a coordinated approach. Resources are limited and more of these (perhaps through a cost sharing formula) and a stronger, larger secretariat would facilitate faster progress in this laudable initiative.



(Built upon the model for Governance Structure Canadian Strategy for Cancer Control)
(Governance Model for the Canadian Strategy for Cancer Control, Feb 25, 2002, Governance Workshop

Funding Options

- F/P/T – Cost shared
- Stable funding
- Granting councils
- Infoway
- Canadian Instiute for Health Information
- NGO
- Private
- Partners' Contribution In Kind

Partners in this example need not stray from their mandate. Rather their mandate would be strengthened by organizations linking the other components. For example CIHR could coordinate national research plans with other research organizations, Infoway Inc could convene partners in national health infrostructure, Cancer Care could develop national standards, quality mechanisms and goals, etc.

9) International Systems

The factors effecting health and well-being of the public often exist on a global scale. Mad cow disease, the contaminated blood tragedy, spread of antibiotic resistance, urbanization and sociocultural displacement affecting health (eg. former Soviet Union) are a few examples of that reality. International initiatives are underway to create inter-country, intercontinental, global systems to adjust these realities. Surveillance systems for food safety, surveillance for new variant Crutzfed Jacob disease, Global Health Intelligence Systems, multicountry research networks in major diseases are examples of such initiatives. Canada must be a collaborator in such systems and, to a degree, has been. However, we must come to these initiatives as a cohesive, national expert coalition, able to provide a united and formidable contribution. Otherwise we will be excluded as disparate, uncoordinated jurisdictions and organizations and Canadians will not immediately benefit from the output of progress.

BIBLIOGRAPHY

1) Public Health on the ropes: Canadian Medical Association Journal, 2002, 166:1245

2) CDC, National Center for Health Statistics, http://www.cdc.gov/nchs/otheract/phdsc/phdsc.htm#Goals
Minnesota Department of Health; Healthy Minnesotans Public Health Improvement Goals 2004, http://www.health.state.mn.us/divs/chs/phg/goals.html

3) The early years: Investing in our future, Dr. MUSTARD, Fraser, http://web.uvic.ca/cyc/research/uccr/reports/early.htm

4) Preventing chronic disease and promoting public health: An agenda for health system reform; Terry Sullivan, MD., 2002

5) CIHI: Burden of injuries. http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=statistics_results_topic_hospital_

6) Battle plan for fight against AIDS: UN website http://srch1.un.org/plweb-cgi/fastweb?state_id=1031861992&view=unsearch&docrank=22&numhitsfound=4223&query=AIDS&&docid=3923&docdb=pr2001&dbname=web&sorting=BYRELEVANCE&operator=adj&TemplateName=predoc.tmpl&setCookie=1

7) Statistics Canada; burden of mental health: http://www.statcan.ca/english/Pgdb/People/Health/health56a.htm http://stcwww.statcan.ca/english/sdds/5015.htm

8) Commission of Inquiry on the Blood System in Canada, Final Report, The Honourable Minister of Justice, Horace Krever, 1997

9) Atcheson D. Reducing Health Inequalities: An Action Report. The Department of Health. http://www.doh.gov.uk/pub/docs/doh/inequalities.pdf

10) Canadian Strategy for Cancer Control; Bulletin, 2002