



CORE

Public Health Functions for BC

**Model Core Program Paper:
Health Assessment &
Disease Surveillance**

BC Health Authorities

**Population Health and Wellness
BC Ministry of Health**

March 2007

This Model Core Program Paper was prepared by a working group consisting of representatives of the BC Ministry of Health and BC's health authorities.

This paper is based upon a review of evidence and best practice, and as such may include practices that are not currently implemented throughout the public health system in BC. This is to be expected, as the purpose of the Core Public Health Functions process—consistent with the quality improvement approach widely adopted in private and public sector organizations across Canada—is to put in place a performance improvement process to move the public health system in BC towards evidence-based best practice. Where warranted, health authorities will develop public performance improvement plans with feasible performance targets and will develop and implement performance improvement strategies that move them towards best practice in the program component areas identified in this Model Program Paper.

This Model Program Paper should be read in conjunction with the accompanying review of evidence and best practice.

Model Core Program Paper approved by:
Core Functions Steering Committee (March 2007)

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TABLE OF CONTENTS

Executive Summary	1
1.0 Overview/Setting the Context.....	3
1.1 An Introduction to This Paper.....	4
1.2 Introduction to Health Assessment and Disease Surveillance	4
2.0 Scope And Authority For The Health Assessment and Disease Surveillance Program	7
2.1 International Roles and Responsibilities.....	7
2.2 Federal Roles and Responsibilities	7
2.3 Provincial Roles and Responsibilities.....	8
2.4 Health Authority Roles and Responsibilities.....	11
2.5 Legislation and Policy Direction	12
2.6 Summary of Key Roles and Scope	12
3.0 Principles.....	15
4.0 Goals and Objectives	16
5.0 Main Components and Supporting Evidence	17
5.1 Introduction.....	17
5.2 Setting Priorities.....	18
5.3 Data Management	19
5.4 Data Analysis and Interpretation	20
5.5 Knowledge Exchange	22
5.6 Action/Utilization	23
6.0 Best Practices	25
7.0 Indicators, Benchmarks and Performance Targets	27
7.1 Introduction.....	27
7.2 Health Authority-level Indicators for Health Assessment and Disease Surveillance	28
7.3 Provincial-level Indicators for Health Assessment and Disease Surveillance.....	30
8.0 External Capacity and Support Requirements	32
8.1 Key Success Factors/System Strategies.....	32
8.2 Intersectoral Collaboration and Integration/Coordination.....	32
8.3 Assessing and Monitoring Health Assessment and Disease Surveillance.....	33
References	34

Appendices

Appendix 1: The Evidence Base for a Model Core Program for Health Assessment and Disease Surveillance	36
Appendix 2: The Evidence Base for Communicable Disease Surveillance	37
Appendix 3: Ministry of Health – Uses of Aggregated Health Information	38
Appendix 4: Program Schematic - Model Core Program for Health Assessment and Disease Surveillance	39

List of Figures

Figure 1: Framework for Health Assessment and Disease Surveillance Functions	17
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Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

List of Tables

Table 1:	Characteristics of Health Assessment and Disease Surveillance.....	5
Table 2:	Summary of Roles and Scope of Health Assessment and Disease Surveillance.....	13
Table 3:	General Indicators for Health Assessment and Disease Surveillance	28
Table 4:	Priority-setting/Data Management.....	29
Table 5:	Data Analysis/Interpretation, Knowledge Exchange and Action/Utilization	29
Table 6:	Provincial-level Indicators	30

EXECUTIVE SUMMARY

This paper identifies the core elements that are provided by British Columbia health authorities in the delivery of health assessment and disease surveillance programs. It is intended, as part of the BC Core Functions in Public Health, to reflect evidence-based practice and support continuous performance improvement.

A Working Group of representatives from the Ministry of Health, British Columbia Centre for Disease Control and the health authorities worked together in the development of this paper. They emphasized that there is a significant role for the Ministry of Health, the Provincial Health Services Authority and other provincial partners in health assessment and disease surveillance that is necessary to enable the health authorities to perform their core functions in this area.

They agreed the overall goal of the health assessment and disease surveillance function is to improve the health of the population by monitoring and reporting on the health of the population, determinants of population health and environmental risk factors, as well as by identifying and facilitating the response to incidents of disease, disability and injury. Specific objectives for health assessment and disease surveillance are to:

- Monitor, assess, improve understanding of and report on population health status, disease trends and risk factors, including the determinants of health and environmental contaminants.
- Detect and facilitate the response to outbreaks of disease, disease clusters and other health-related issues.
- Enhance the planning, implementation and evaluation of public health policies and programs.

The main components of the health assessment and disease surveillance function at the health authority level were

- Priority-setting.
- Data management.
- Data analysis and interpretation.
- Knowledge exchange.
- Action/utilization.

Best, or “promising” practices that can increase the effectiveness of this function, according to the literature and consensus views of professionals and key informants in the field, include the following:

- Establish appropriate organizational coordinating structures within the health authority.

Core Public Health Functions for BC: Model Core Program Paper **Health Assessment & Disease Surveillance**

- Develop mechanisms and technical tools to support data collection, management and analysis.¹
- Use proven practices such as standard data elements and definitions, electronic transfer of data, timely reporting for timely action, automatic transfer of data and time and space aberration detection.
- Interpret data and integrate the findings into planning and evaluation of interventions, and into all levels of the management decision-making cycle.
- Facilitate data-sharing, communication and dialogue about health concerns among multiple programs and levels within the health authority, and with other organizations (e.g., population health, health inequities for vulnerable groups, adverse effects of the health care system, outbreak reports, disease clusters, etc.).
- Support participatory practices for community engagement in data gathering, interpretation and follow-up action.
- Build capacity by enhancing staff expertise and knowledge.
- Evaluate health assessment and disease surveillance policies and processes to assess the effectiveness of these functions.

It should be noted that this paper is intended to provide an overall direction for health assessment and disease surveillance, rather than specific methods for implementing the range of initiatives. Strategic planning at the provincial and health authority levels over the coming year will assist in further clarifying the activities, particularly the respective roles of the regional and provincial levels.

Although indicators for health assessment and disease surveillance are presented for each major component as a basis for ongoing performance review, the majority of suggested indicators relate to processes and activities, rather than outcomes, thus reflecting the developmental nature of the health assessment and disease surveillance function at the health authority level at the present time.

¹ Provincial agencies provide health authorities with integrated regional data from multiple sources; health authorities interpret the data in terms of regional impact—they also collect, analyze and interpret data on unique local/regional issues.

1.0 OVERVIEW/SETTING THE CONTEXT

As demonstrated in recent Canadian reports, public health needs to be better structured and resourced, in order to improve the health of the population. The Framework for Core Functions in Public Health is a component of that renewal in British Columbia. It defines and describes the core public health activities of a comprehensive public health system. This policy framework was accepted in 2005 by the Ministry of Health and the health authorities.

Implementation of core functions will establish a performance improvement process for public health developed in collaboration between the Ministry of Health, the health authorities and the public health field. This process will result in greater consistency of public health services across the province, increased capacity and quality of public health services and improved health of the population. To ensure collaboration and feasibility of implementation, the oversight of the development of the performance improvement process is managed by a Provincial Steering Committee with membership representing all health authorities and the ministry.

What are core programs? They are long-term programs representing public health services that health authorities provide in a renewed and modern public health system. Core programs are organized to improve health; they can be assessed ultimately in terms of improved health and well-being and/or reductions in disease, disability and injury. In total 21 programs have been identified as “core programs”, of which health assessment and disease surveillance is but one. Many of the programs are interconnected and thus require collaboration and coordination between them.

In a “model core program paper”, each program will have clear goals, measurable objectives and an evidentiary base that shows it can improve people’s health and prevent disease, disability and/or injury. Programs will be supported through the identification of best practices and national and international benchmarks (where such benchmarks exist). Each paper will be informed by: an evidence paper; other key documents related to the program area; and by key expert input obtained through a working group with representatives from each health authority and the Ministry of Health.

The Provincial Steering Committee has indicated that an approved model core program paper constitutes a model of good practice, while recognizing it will need to be modified to meet local context and needs. The performance measures identified are appropriate indicators of program performance that could be used in a performance improvement plan. The model core program paper is a resource to health authorities that they can use to develop their core program through a performance improvement planning process. While health authorities must deliver all core programs, how each is provided is the responsibility of the health authority, as are the performance improvement targets they set for themselves.

It is envisioned that the performance improvement process will be implemented over several years. During that time the process will contribute to and benefit from related initiatives in public health infrastructure, health information and surveillance systems, workforce competence assessment and development and research and evaluation at the regional, provincial and national levels. Over time these improvement processes and related activities will improve the quality and

strengthen the capacity of public health programs, and this in turn will contribute to improving the health of the population.

1.1 An Introduction to This Paper

This model core program paper for health assessment and disease surveillance is one element in an overall public health performance improvement strategy developed by the Ministry of Health in collaboration with provincial health authorities and experts in the field of public health. It builds on previous work from a number of sources.

In March 2005, the Ministry of Health released a document entitled *A Framework for Core Functions in Public Health*. This document was prepared in consultation with representatives of health authorities and experts in the field of public health. It identifies the core programs that must be provided by health authorities, including health assessment and disease surveillance, and the public health strategies that can be used to implement these core programs. It provides an overall framework for the development of this document.

As well, two evidence reviews were conducted to support the development of the model core function. These documents provide the basis for identifying and documenting the evidence, best/promising practices, and some of the key indicators for the performance components:

- *Health Assessment & Disease Surveillance: A Review of Best Practices* (2006), prepared by Blue Thorn and Associates Research and Analysis Group Inc. for the Ministry of Health.²
- *The Evidence Base for Communicable Disease Surveillance* (2006), by L. Yuan and A. Vogel.

A Working Group for health assessment and disease surveillance, formed of experts in the field from the Ministry of Health and the health authorities, was established in the Fall 2006. The group provided guidance and direction in the development of the model core program paper during meetings in September and December 2006, as well as through regular telephone and e-mail discussions.

1.2 Introduction to Health Assessment and Disease Surveillance

Health assessment and disease surveillance is described as:

Monitoring and reporting on population health status, and changes in that status, and detecting disease clusters, outbreaks and trends (both communicable and non-communicable) through community-based, hospital-based and clinical epidemiology, and laboratory surveillance networks (microbiological, genetic, metabolic, and toxicologic) (Ministry of Health [MOH], Population Health and Wellness 2005).

² This document has been reformatted in a standardized format, and is listed in the References section under the Ministry of Health, Population Health and Wellness. 2006. *Evidence Review: Health Assessment & Disease Surveillance*. Citations for this document are listed as (MOH, Population Health and Wellness 2006).

Health assessment and disease surveillance may be defined as the tracking and forecasting of any health event or health determinant through the continuous collection of high quality data, the integration, analysis and interpretation of those data into surveillance products (such as reports, advisories, and warnings) and the dissemination of those surveillance products to relevant stakeholders. Surveillance products are produced for specific public health purposes or policy objectives. In order to be considered as health surveillance all of the above activities should be carried out.

Table 1, which was developed for the evidence review, is presented for discussion purposes to highlight some of the differences and similarities between health assessment and disease surveillance.

Table 1: Characteristics of Health Assessment and Disease Surveillance

Characteristics	Health Assessment	Disease Surveillance
Person	Groups.	Individuals and groups
Place	Small geographic area such as local health unit.	Often very small geographic area, but sometimes larger (e.g., cancer clusters).
Timelines	Years to decades.	Hours to days to years.
Factors	All diseases, conditions, health determinants, health risks and health status.	Communicable diseases, chronic diseases and injuries and health determinants.
Focus	Long-term planning.	Detection/reaction.
Continuous regular data	Desirable.	Imperative.
Data collection methods	All methods used to obtain data.	Directly from client or physician or indirectly from health service generated data (i.e., labs, MSP, hospitals).
Analysis and interpretation of data	Small numbers not (usually) utilized.	Individual cases analyzed and aggregated as appropriate.
Dissemination of information	Broad (health professionals, researchers, policy-makers, program planners and the public.	Narrow and broad (individual case information exchanged between health care providers, and aggregated data interpreted and disseminated as needed).

The role of health assessment and disease surveillance is of fundamental importance for all health programs: “it is critical for monitoring population health status, detecting and responding to outbreaks of disease or other health-related issues, and contributing to assessing the effectiveness of public health program and services” (MOH, Population Health and Wellness 2005).

Health assessment and disease surveillance is performed at multiple levels within health authorities, ranging from community engagement and front-line detection and response, to interpretation of regional aggregated data and planning and decision-making by senior management. It is also performed at multiple levels in the provincial and federal governments, and at international levels. The various roles, responsibilities and accountabilities at each level of

governance are an important consideration in defining the model core function for health authorities in this field, and will be addressed in this paper.

Further important areas of consideration are effective coordinating structures and communication mechanisms, both within the health authority and with other organizations. These are fundamental to a smooth flow of timely information for reporting, analysis and planning systems. The involvement of local groups and organizations is an important element in this process, particularly in priority-setting, interpretation and follow-up action. Community engagement is the “process of working collaboratively with and through groups of people...to address issues affecting the well-being of those people. It often involves partnerships and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programs, and practices” (Fawcett et al. 1995).

Advances in informatics and telecommunications have raised the opportunity for integrating diverse databases in real time so that a variety of data sources can be accessed and reviewed regularly to identify health risks and trends. Initiatives to integrate access to provincial, federal and international data through a provincial integrated information system are currently underway. This holds the potential for vastly improved centralized support that can enable health authorities to examine a wide range of population health and environmental health outcomes, health services and health outcomes within their region. A number of similar approaches are taking place on the interprovincial and national level as well. Also, a wide range of data sources, automatic data retrieval and aberrant signal detection methods have improved the timeliness of early warning systems. At the same time however, the advances take time to plan, coordinate and implement. Currently, many of the traditional surveillance data sources are isolated efforts, provided through a wide range of agencies that require specialized knowledge to utilize. The fragmented, uncoordinated nature of the present range of multiple sources and systems presents many challenges for health authorities.

Finally, it should be noted that because of the nature of health assessment and disease surveillance, the evidence in this area consists primarily of expert views from the literature and consensus views of professionals in the field. The area is not conducive to evaluation through randomized, controlled studies, nor through most observational study designs. As well, little evidence was found on the following topics: effective community and regional practices and structures; assessment of health inequities; comprehensive systems focusing on accessible, rather than centralized data sources; and studies of cost-effectiveness. Also, there are gaps in the literature as new technology and analytical techniques are constantly being developed and updated.

2.0 SCOPE AND AUTHORITY FOR THE HEALTH ASSESSMENT AND DISEASE SURVEILLANCE PROGRAM

In order to implement health assessment and disease surveillance programs, there must be clarity on the roles of the Ministry of Health, the health authorities, other provincial-level organizations and other levels of government involved in health assessment and disease surveillance.

2.1 International Roles and Responsibilities

Internationally, The World Health Organization (WHO) plays an active role in disease surveillance in countries around the world.³ This role includes:

- Establishing legal requirements for member states to report all diseases and events that may constitute a public health emergency of international concern. International Health Regulations set out basic public health capacities that a country must develop in order to detect, report and respond to public health risks and emergencies.
- Setting standards and developing protocols related to disease surveillance, including the International Classification of Diseases.
- Managing an infrastructure called the Global Outbreak Alert and Response Network for early detection of outbreaks. The network interlinks in real time with over 100 existing networks, including national institutes of public health, WHO regional and national offices, non-governmental organizations, electronic discussion groups and news wires (Heymann and Rodier 1998).

2.2 Federal Roles and Responsibilities

On the federal level, Health Canada, the Public Health Agency of Canada (PHAC) and Statistics Canada administer many data files that are of use for health assessment and disease surveillance, including:

- The Disease Surveillance On-Line website provides data on about 50 communicable diseases, based on input to PHAC by each province (communicable disease reporting is mandated by provincial legislation). It also provides mapping and other services for notifiable diseases.
- PHAC also provides the integrated Public Health Information System (iPHIS), an automated client health record and reporting system (originally developed by the British Columbia Centre for Disease Control [BCCDC]), which adheres to national data standards, tracks immunizations, assists in case management and collects surveillance data. Also, the Laboratory Data Management System (LDMS) is a laboratory information system used by the federal government.
- Following the SARS outbreak in 2004, the federal government provided \$100 million to Canada Health Infoway to develop a public health surveillance tool dedicated to

³ Some experts point out that global data from the World Health Organization are often not available in a timely manner.

supporting the management of infectious diseases and immunization. Canada Health Infoway was established in 2001 by the 14 federal, provincial and territorial Deputy Ministers of Health to develop an electronic health information system with compatible standards and communication technologies across Canada. It will be consistent with electronic health record architecture and enable improved linkages, timeliness, information exchange and record keeping.

- Through the Public Health Information Project (PHIP), BC is leading the development of the new national communicable disease surveillance and management system, funded by Canada Health Infoway. It has become clear that this also necessitates developing a new family health component (to replace the family health component in iPHIS), and a new environmental health component. When it is fully implemented in 2009, iPHIS will be sunsetted.
- Statistics Canada conducts many surveys, such as the *Canadian Community Health Survey*, to provide regular estimates of health determinants, health status and health utilization.
- Many other federal agencies manage health-related records, such as the Canadian Institute for Health Information and the National Advisory Committee on Environmental Protection.

2.3 Provincial Roles and Responsibilities

At the provincial level, the Ministry of Health, the Provincial Health Services Authority (PHSA) and other provincial ministries and academic institutions are all actively involved in population health assessment and disease surveillance activities.

It should be noted that in discussion of this core function, there was agreement by the Ministry of Health and PHSA that a strategic plan will be developed in the coming year to clarify, coordinate and formalize arrangements with respect to their respective roles and responsibilities, priorities and plans. This will include all provincial-level agencies (e.g., BC Cancer Agency, BC Vital Statistics Agency, BCCDC, etc.) and will include arrangements for sharing information with health authorities. It is recognized that regional health authorities are dependant upon the provincial-level organizations for access to data in a timely manner to fulfill their core functions in health assessment and disease surveillance.

2.3.1 Ministry of Health Roles and Responsibilities

The Ministry of Health has three major roles and responsibilities:

- Providing overall stewardship of the health care system in British Columbia, including conducting strategic interventions with health authorities to ensure continuation of the delivery of efficient, appropriate, equitable and effective health services to British Columbians.
- Working with the health authorities to provide accountability to government, the public and the recipients of health services.

Core Public Health Functions for BC: Model Core Program Paper **Health Assessment & Disease Surveillance**

- Providing resources to health authorities to enable them to deliver health-related services to British Columbians.

With respect to health assessment and disease surveillance, the Ministry of Health plays a role in:

- Leading the coordinated planning and development of the province-wide health assessment and disease surveillance function:
 - o Undertaking provincial-level strategic planning and implementation (currently being developed through the Population and Public Health Data and Evidence Expert Group, which is co-chaired with PHSA).
 - o Developing and implementing data-sharing arrangements and agreements, including: agreements on how data will be shared and for what purpose, and standardized methodologies for data analysis (to be developed through collaboration with health authorities) to ensure consistency across the province.
 - o Encouraging progress toward standardized, accessible provincial and national data health systems by coordinating initiatives with other ministries and with the federal government (e.g., promoting a BC government-wide approach to data warehousing; partnering with other ministries to share information; and collaborating with federal initiatives to enhance compatibility and improve data-sharing, including access to federal data on Aboriginal populations in BC).
 - o Undertaking health human resource planning in the field.
 - o Through PHIP, developing new public health information systems in environmental health and conducting a strategic assessment of other public health information system needs related to core programs.
- Developing information systems to enhance accessibility to quality and timely regional, provincial and national health information resources, through the Ministry of Health's Knowledge Management and Technology Division:
 - o Developing policies and infrastructure for information management support systems.
 - o Developing structures and systems for a central repository for shared information (See Appendices 1 and 2): the Aggregated Health Information Project (AHIP) will integrate data from all ministry databases (e.g., Medical Services Plan [MSP], Pharmacare, Pharmanet, hospitals, continuing care, mental health and addictions, laboratory reports, birth registry, mortality registry, etc.); an AHIP geographic information system will link population health data, service utilization data and evaluation data (outcome analysis, performance measurement, program evaluation and economic evaluation) for use in health planning processes.
- Analyzing and disseminating BC health assessment and disease surveillance data:
 - o Organizing, disseminating and sharing information on key provincial health issues (e.g., data on diabetes, influenza and water diseases using MSP data, etc.).

- o Providing provincial and regional data to health authorities to facilitate interpretation of regional issues, trends and performance measures.
- o Partnering with universities in the development of new studies and tools.
- Utilizing health assessment and disease surveillance information:
 - o Integrating assessment/surveillance data into monitoring, evaluation, planning and decision-making related to all aspects of the health care system.

2.3.2 Provincial Health Services Authority Roles and Responsibilities

The Provincial Health Services Authority's (PHSA) role overall is to coordinate the delivery of high-quality, specialized services and programs with the regional health authorities. PHSA's role in health assessment and disease surveillance includes:

- Providing expertise and advice to health authorities in conducting health assessment and disease surveillance on community and regional issues.
- Maintaining registries of specific diseases in the province, such as the Cancer Registry maintained by the BC Cancer Agency.
- Conducting analysis and data modeling of provincial surveillance data.
- Coordinating the development of specialized studies, reports and profiles to inform health authority planning (e.g., 2006 BC Health and Wellness Survey, which assesses general health, behaviour and environmental risk factors for a wide-range of health issues).
- Developing initiatives to enhance provincial data resources (e.g., Population and Public Health Data and Evidence Expert Group—co-chaired with the Ministry of Health—will advise on data collection needs and sources).
- Through BCCDC, playing a central role in communicable and environment-related disease surveillance, assessment and control for the province:
 - o Surveillance, analysis and reporting of “reportable” communicable disease events and their risk factors, and laboratory data in BC.
 - o Surveillance, analysis and reporting of environmental health risks.
 - o Monitoring of vaccine coverage rates, vaccine safety and vaccine utilization.
 - o Managing the supply of provincially funded vaccines.
 - o Collaborating with other provinces and the federal government on environmental health data-sharing, including information on animal diseases, water and food safety.

- o Providing advisory and information services for health authorities, including investigation, monitoring and control of outbreaks, clusters or unusual occurrences of diseases significant to public health.
- o Setting provincial standards and developing tools and guidelines for surveillance, assessment, prevention and control of communicable diseases and environmental risk in BC.
- o Providing expertise and support in case and outbreak management.
- o Managing iPHIS for BC.
- In addition, a number of provincial agencies, such as the BC Cancer Agency, BC Renal Agency and the BC Centre for Excellence in HIV/AIDS maintain surveillance data on specific diseases in the province, including trends over time.

2.3.3 Other Provincial Ministries/Agencies Roles and Responsibilities

A number of other provincial ministries are actively involved in managing data relevant to population health, such as the Ministry of Education and the Ministry of Environment (e.g., school absenteeism data can be used for monitoring outbreaks of illness such as influenza, asthma and other infectious diseases, and data from BC's Air Data Management System and Watertrax system can be used to review the health impacts of hazardous substances). BC Stats conducts customized surveys on many health-related topics and manages provincial data developed by Statistics Canada.

Provincial academic institutions are also active participants in this field. For example, the University of Victoria, University of British Columbia and Simon Fraser University collaborate on a geographic information system (GIS) research team focusing on spatial analysis of data, and the Centre for Health Services and Policy Research at the University of British Columbia manages a linked health database comprising Ministry of Health administrative datasets.

A wide range of other organizations may also be able to provide important provincial- and local-level data. For example, data collected by municipalities, churches, consumer groups, business groups and non-governmental organizations such as food banks and service organizations.

2.4 Health Authority Roles and Responsibilities

The role of health authorities is to identify and assess the health needs in the region, to deliver health services (excluding physician services and BC Pharmacare) to British Columbians in an efficient, appropriate, equitable and effective manner, and to monitor and evaluate the services that it provides. In the area of health assessment and disease surveillance, health authorities may be involved in some or all of the following:

- Establishing appropriate organizational coordinating structures within the health authority.

- Developing mechanisms and technical tools to support data management.⁴
- Interpreting data and integrating the findings into planning and evaluation of interventions, and into all levels of the management decision-making cycle.
- Facilitating data-sharing, communication and dialogue among multiple programs and levels within the health authority, and with other organizations (e.g., population health, health inequities for vulnerable groups, adverse effects of the health care system, outbreak reports, etc.).
- Supporting participatory practices for community engagement in data gathering, interpretation and follow-up action.
- Building capacity by enhancing staff expertise and knowledge.
- Evaluating health assessment and disease surveillance policies and processes to assess the effectiveness of these functions.

2.5 Legislation and Policy Direction

The overall legislative and policy direction for the health assessment and disease surveillance function is derived from:

- The following acts and regulations: the *Health Act*; Communicable Disease Regulation; Occupational Health and Safety Regulation, *Health Emergency Act*, *Freedom of Information and Protection of Privacy Act*.
- *A Framework for Core Functions in Public Health* (March 2005).
- Specific policies/priorities that may be established by the health authority, the Ministry of Health or the provincial government.

2.6 Summary of Key Roles and Scope

The respective roles and scope of health assessment and disease surveillance performed by the health authorities, provincial-level organizations and national/international organizations are summarized in Table 2.

⁴ Provincial agencies provide health authorities with integrated regional data from multiple sources; health authorities interpret the data in terms of regional impact—they also collect, analyze and interpret data on unique local/regional issues.

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

Table 2: Summary of Roles and Scope of Health Assessment and Disease Surveillance

Role	Scope		
	Health Authority	Provincial	National/International
Priority-setting	Integrate community, regional, provincial and national priorities.	<ul style="list-style-type: none"> Identify priorities in consultation with the health authorities. Integrate regional, provincial and national priorities. 	Establish priorities at the federal and international levels.
Data Management	<ul style="list-style-type: none"> Access and manage national, provincial and regional data from provincial data support services. Manage health authority data on public health services. Collect community/ regional data on specialized topics. Manage information on “reportable diseases”. 	<ul style="list-style-type: none"> Develop and implement provincial integrated health data system. Collect, coordinate and integrate provincial and regional level data, and national data-sharing. Facilitate data access by local, regional, provincial and national users. Ensure safe, high-quality data, provincial data standards and data confidentiality protocols. 	Establish/coordinate/integrate: <ul style="list-style-type: none"> Federal/Provincial/Territorial data standards. National and international integrated information system. National/International survey data on multiple topics and levels. Research data from institutes, international organizations, etc.
Analysis and Interpretation	<ul style="list-style-type: none"> Coordinate system-wide interpretation of regional data from multiple sources, including: <ul style="list-style-type: none"> Population health analysis of vulnerable subgroups. Specific disease trends and health risks. Analyze and interpret local and regional data collected by the health authority. 	<ul style="list-style-type: none"> Conduct specialized population health analysis (e.g., GIS spatial analysis, risk analysis, provincial trends, inequities, disease profiles, etc.). Conduct epidemiologic analysis and detection of aberrations. Provide technical support and assistance to health authorities. Develop/adapt/adopt consensus-based standardized analytic methodologies for use across the province. 	Conduct: <ul style="list-style-type: none"> National and international analysis and profiles of key trends and issues. Academic studies and research on specialized topics.
Knowledge Exchange	<ul style="list-style-type: none"> Release health authority outbreak information. Notify the province of key health concerns. Issue strategic communications on key issues. Encourage data-sharing, communication and dialogue (in health authority, region and community). Organize alliance on policies. 	<ul style="list-style-type: none"> Issue health alerts. Implement strategic communication strategies and initiatives on key health issues. Facilitate/support exchange of information products and tools with health authorities and others. Contribute to national communications and dialogue. 	Facilitate national and international communication and dialogue (interprovincial/federal levels, research institutes and international organizations).

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

Role	Scope		
	Health Authority	Provincial	National/International
Action/ Utilization	<ul style="list-style-type: none"> Integrate information into health authority decision-making processes. Facilitate community engagement for local planning. Use data to prevent/manage outbreaks. 	<ul style="list-style-type: none"> Integrate information into provincial and inter-regional planning and evaluation. Use data to prevent/manage diseases and outbreaks, and to increase public understanding. 	<ul style="list-style-type: none"> Integrate information into national and federal level decision-making. Use data to prevent/manage disease and outbreaks.
Enablers			
<ul style="list-style-type: none"> Statutory requirements. Organizational capacity (coordinating structure, networks, and fiscal, human and technical tools). Cooperation/collaboration among multiple programs and levels. Community engagement. Privacy protection. Evaluation. 			

The summary provides a general description of the roles and responsibilities of the health authority, the province and the national/international-level organizations. However, it should be noted that it is impossible to make precise boundaries of responsibilities between these bodies. While one may have a dominant role, this does not mean that the other bodies have no responsibility in this area. It is critical for all three areas to work collaboratively and cooperatively in creating an effective system of health assessment and disease surveillance.

3.0 PRINCIPLES

The following principles can guide the direction of policies, procedures and operating practices for the health assessment and disease surveillance function:

- Collaboration among multiple levels—local, regional, provincial, national and international—to increase access to data required for decision-making.
- Shared access to integrated, automated information systems.
- Common data standards, privacy protocols, data quality and analytic methodologies.
- Principle of “subsidiarity” (functions should be handled at the lowest level of authority that can perform them effectively).
- Planning and decision-making at all levels utilizes assessment and surveillance information.
- A focus on population health and health disparities.
- Timely identification and response to disease outbreaks.
- Local priorities and action based on community engagement.
- Evidence-based.
- Evaluation and continuous quality improvement.

4.0 GOALS AND OBJECTIVES

The overall goal of the health assessment and disease surveillance function is to improve the health of the population by monitoring and reporting on the health of the population and the determinants of health, and by identifying and facilitating the response to incidents of disease, disability and injury. The specific objectives for achieving this goal are:

- To monitor, assess, improve understanding of and report on population health status, disease trends and risk factors, including the determinants of health.
- To detect and facilitate the response to increases in disease and sources of disease, and other health-related issues.
- To enhance the planning, implementation and evaluation of public health policies and programs.

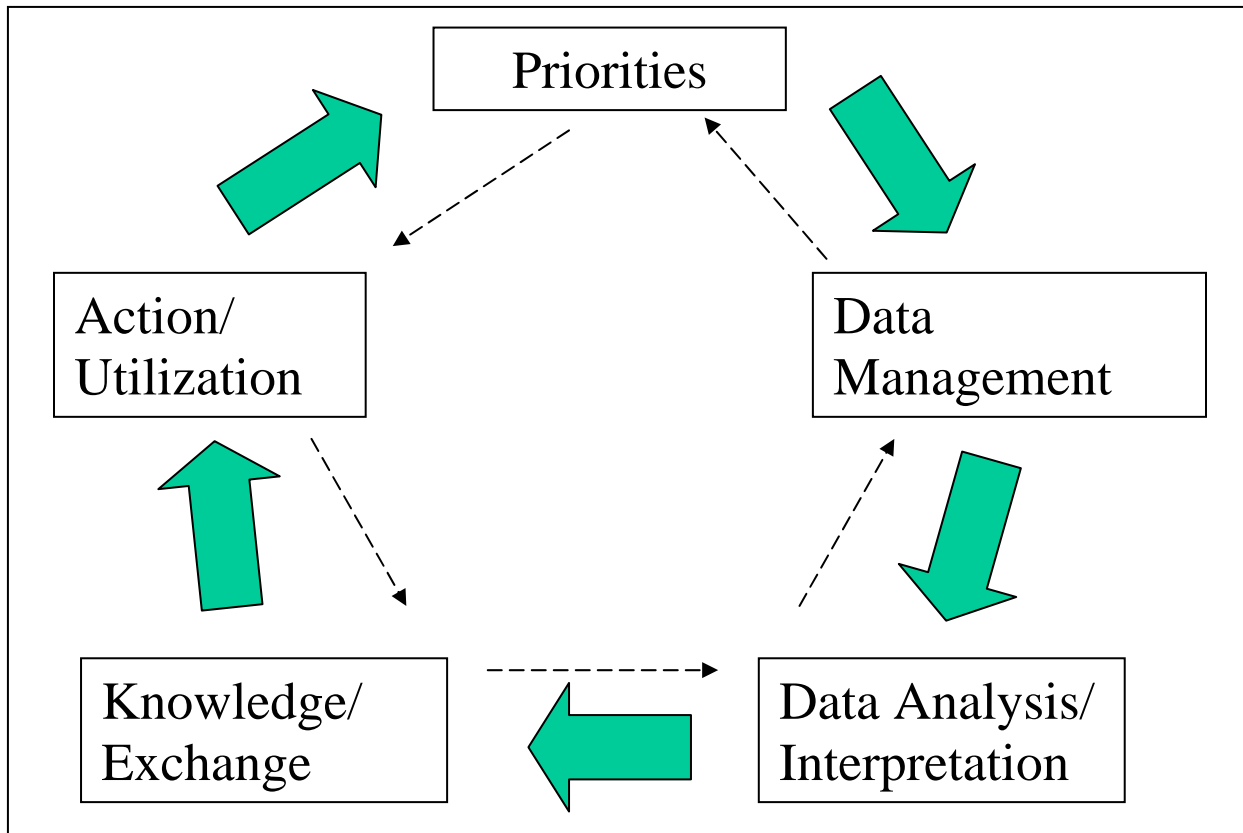
5.0 MAIN COMPONENTS AND SUPPORTING EVIDENCE

5.1 Introduction

Health assessment and disease surveillance is performed by multiple public health programs within health authorities. This function consists of the following key components:

- Priority-setting.
- Data management.
- Data analysis and interpretation.
- Knowledge exchange.
- Action/utilization.

Figure 1: Framework for Health Assessment and Disease Surveillance Functions



Health assessment and disease surveillance must continually examine and respond to emerging situations and adapt and adjust accordingly. Rather than a linear process, the nature of the components is dynamic and iterative as indicated in Figure 1. The effective performance of these functions is facilitated and strengthened through a number of enablers including: statutory requirements; organizational capacity (coordinating structure, networks; fiscal, human and

technical tools), cooperation/collaboration among multiple programs and levels; community engagement; privacy protection; and evaluation. These enablers are highlighted within the description of each component.

5.2 Setting Priorities

The identification of priority issues for assessment and surveillance is necessary to ensure that key data are collected and managed in a consistent manner over time. This includes:

- Establishing priorities based on criteria, including the major determinants and conditions of health that are sufficiently important within the region to warrant monitoring (considering time and expense).
- Integrating legislated priorities (i.e., reportable diseases) and provincial and regional priorities.
- Ensuring a collaborative approach is used in planning priorities, to enable input from all public health programs, all levels of the health authority, and from community engagement and input from community organizations.
- Reviewing priorities regularly.

The evidence supporting this approach includes the work of the Canadian National Advisory Committee on Epidemiology, which developed a systematic process to determine which communicable diseases should be under surveillance. It identified criteria as follows: diseases of interest to national/international regulatory and prevention programs; incidence in Canada; severity; potential spread; potential for outbreaks; socio-economic burden; preventability; risk perception; necessity for public health response; diseases which appeared to increase in incidence or change patterns over the past five years (Carter and National Advisory Committee on Epidemiology Subcommittee 1991; Doherty 2000). Priority-setting by the Public Health Laboratory Service (PHLS) in the United Kingdom identified six criteria for disease surveillance: the present burden of ill health; social and economic impact; potential threats; health gain opportunity; public concern and confidence; and PHLS-added value (Giesecke 1999).

Community engagement “breaks down barriers between data collection, analysis, and action; [it] broadens the perspective of all participants involved, and increases communities’ feeling of responsibility for their own health...” (MOH, Population Health and Wellness 2006) Community engagement involves a spectrum of different levels of citizen participation and power-sharing. The levels of engagement are: informing, consulting, involving, collaborating, partnering, delegating authority and empowering. At the end of the spectrum, citizens are empowered with decision-making on issues that affect the health of their own communities (Patzner 2006).

5.3 Data Management

Data management includes the collection and administration of information by health authorities. This may involve:

- Establishing a formal coordinating structure for a collaborative, team approach to data collection and data access across health authority programs.
- Setting up tools and systems for efficient collection, management and integration of data from various sources, including reporting by those generating data (e.g., health care providers and laboratories).
- Building capacity to enhance data management knowledge, skills and abilities of staff and operational units.
- Collecting key health care system data, including surveillance, trend data and program outcomes.
- Establishing mechanisms for the collection of, and/or access, to priority data from additional multiple sources, ranging from community level surveillance and surveys, to data from provincial and federal organizations.⁵
- Ensuring information on reportable diseases is provided in a timely manner to all levels of the public health system that require it for action.
- Identifying situations where enhanced surveillance or more active collection of data may be necessary (e.g., collection of increased amount of/more specific data, stimulating surveillance through increased awareness or collection of data by direct solicitation).
- Adopting data standards, analytic methodologies and privacy protocols that are efficient, ensure quality and are consistent with other health authorities and the provincial level, in order to facilitate sharing and integration of data.

Researchers note “a wealth of health information and surveillance products are available but a greater proportion of the workforce must acquire the ability to understand and use surveillance concepts and techniques” (Chambers et al. 2006). It is suggested that skills be strengthened by: enabling existing staff to acquire new skills; simplifying and standardizing the management of public health information; collaborating with universities, colleges and others to provide public health practitioners with opportunities to improve their surveillance skills and knowledge through project work and courses; and developing and implementing strategies to recruit and retain staff with surveillance expertise (Chambers et al. 2006).

Related to both data collection and data-sharing is the concept of improved data transfer. Best practices in this area are reported to focus on: quality; automation and integration (MOH, Population Health and Wellness 2006). A national, integrated public health surveillance system

⁵ The provincial-level role is to provide national/provincial/regional data from multiple sources to health authorities including: demographic, laboratory, environmental, educational, and health care utilization data; and other relevant health, social and economic data. Health authorities collect data on unique local/regional issues when necessary (e.g., homeless, substance abuse, etc.).

(Canada Health Infoway) is expected to facilitate improved linkages and timeliness of information exchange on communicable diseases.⁶

An example of a successful collaborative surveillance system is the Rapid Risk Factor Surveillance surveys in Ontario, which are based on coordination between the province and health units. Health units determine the standard, high-level requirements in conjunction with the province, while, at the same time, tailoring the system to address their own requirements. The data is stored in the databases of the local authorities for direct and immediate access, while the standard data is transferred to the province for the production of general information. Health units also utilize the data collected and analyzed by the province to identify outbreaks of disease. Province-wide data collection of physician claims, hospital admission and pharmacy prescriptions feed both communicable and chronic disease surveillance systems, with the results being provided to medical officers in the health units for review and action (MOH, Population Health and Wellness 2006).

The use of data standards (a minimum set of standard data elements and definitions) is a best practice important to both health assessment and disease surveillance (MOH, Population Health and Wellness 2006). In addition, BC has a history of using standard datasets in indicator reports (e.g., the Office of the Provincial Health Officer has developed a set of population health indicators, which are published in annual reports). Canada Health Infoway and the Canadian Institute for Health Information are working on national data standards (MOH, Population Health and Wellness 2006).

5.4 Data Analysis and Interpretation

Data analysis and interpretation requires a variety of initiatives. While much data analysis (organizing and presenting data in a meaningful way) is performed at the provincial level⁷, a health authority will need to perform these functions for unique local/regional issues. The interpretation of data (assessing the meaning and impact on regional health) is a major health authority role. Data analysis and interpretation may involve:

- Establishing system-wide processes for coordinating analysis and interpretation of regional, local and program data by policy, planning and management staff at all levels.
- Adopting best practices and technical tools, for quality analysis and interpretation of data such as:
 - o Community engagement for detection and analysis of emerging threats and issues.
 - o Analysis of risk factors including determinants of health.
 - o Integration of data from provincial and federal levels.

⁶ <http://www.infoway-inforoute.ca/en/home/home.aspx>.

⁷ The descriptions in this section refer to the role of health authorities; the role at the provincial level involves more detailed assessment and interpretation in health assessment, disease surveillance and environmental surveillance, including: the use of analytical and statistical tools to detect risk factors and potential risk factors, analysis of trends over time, assessment of the impact of interventions and interpretation of results based on expertise and consultation with other experts in the field.

- o Use of standardized methodologies for data analysis, based on methods developed for use across the province for consistency and comparisons.⁸
- o Partnerships and other arrangements, as required, for provincial organizations to undertake advanced or non-standard analyses on behalf of the health authority.
- Preparing reports on key issues, for example:
 - o Identification of current and emerging challenges to regional population health, including health inequities of vulnerable sub-groups and principal determinants contributing to the disparities.
 - o Reports on priority health issues in the region (e.g., child health, reproductive health, disease profiles, community profiles, road safety, Aboriginal peoples' health, seniors health, adverse health effects of the health care system, etc.).
 - o Information on the role, value and benefits of health assessment and disease surveillance, to increase public knowledge, particularly on a community level, about the importance of this field.
 - o Reports on outbreaks, new or emerging diseases, as well as potential environmental health problems.

The literature notes that quality analysis and interpretation is dependent upon having: educated and qualified personnel, appropriate tools and standard approaches and methodologies (Advisory Committee on Population Health and Health Security 2005). Researchers further summarize best practice related to data analysis and interpretation as including: methodological considerations; time, place and person analysis; rates and rate standardization; exploratory data analysis; and interpretation of surveillance data (Teutsch and Churchill 2000). Methodologic considerations include reviewing the reliability and validity of the surveillance, and the clustering of health events. Researchers require common language to describe health events (MOH, Population Health and Wellness 2006).

Successful management of infectious disease outbreaks, chronic disease clusters or changes in risk factor patterns requires rapid event recognition so appropriate control measures can be undertaken. Systematic approaches to outbreak investigations are conducted in liaison with, and with the expertise of, the British Columbia Centre for Disease Control when outbreaks are large or when they affect more than one health authority (Yuan and Vogel 2006). Analytic methods enable the detection of abnormal patterns from normal ones. A variety of aberration detection methods have been developed, including the use of statistical methods that compare the differences between observed and expected data, and spatial modeling that examines the distribution of observed cases. A variety of statistical methods are used to assess clustering (Yuan and Vogel 2006).

A further best practice noted in the literature is the integration of complementary data from various sources to inform the discussion of key issues in health.

⁸ The Ministry of Health plans to lead development of standardized methodologies in partnership with the health authorities.

The Public Health Annual Report for the Lothian health area of the National Health Service for Scotland is an excellent example of integrating data from multiple sources. The report integrates data on income, employment, education, access to services, life expectancy, low birth weight, self-reported health, and use and impression of health services. The data is obtained from local health information systems, local surveys, and national information sources. The focus of the report is health inequities, which is an ongoing area of study for the region (Director of Public Health 2004).

5.5 Knowledge Exchange

Knowledge exchange involves a sharing and two-way communication of ideas for the purpose of improving policy and interventions (Director of Public Health 2004). Health authorities can facilitate effective knowledge exchange by:

- Releasing case and outbreak information as quickly as possible (based on previously agreed-upon reporting timelines) to those responsible for taking public health action at the local and provincial level, using a variety of electronic and manual dissemination strategies (e.g., providing information to policy-makers, administrators, planners, physicians who provided the data, the Canadian Network for Public Health Intelligence and other electronic networks).⁹
- Issuing public notices on environmental health risks and appropriate strategies for the public to reduce their exposure to contaminants.
- Establishing strategic communication plans for releasing key policy research information to health professionals and/or the public, through targeted information tailored for specific purposes for specific audiences (using a variety of methods such as news conferences, the internet, newsletters, etc.).
- Notifying the province of key health concerns within the region.
- Facilitating data-sharing, communication and dialogue among multiple programs and levels within the health authority, and with other organizations as appropriate.
- Distributing annual reports from the Medical Health Officer on the health of the population.
- Forming alliances and coalitions on common policy agendas with local/regional organizations and other levels of government to maximize the visibility and impact of key messages.

Knowledge dissemination, the traditional approach to providing information on health assessment and disease surveillance, is a one-way flow of information. Researchers have found that moving from a situation of transferring information to and from parties to one of mutual engagement predicts the utilization of information (Manske et al. 2003).

⁹ The Centers for Disease Control and Prevention has developed a guidance document to assist public health departments in developing and distributing clear and concise health alerts and advisories. It is available online at http://www.cdc.gov/epo/dphsi/files/Guidance_for_Public_Health_Alerts_Advisories_Updates.doc.

Experts agree that “information products should have a clear purpose and be appropriate for the audience (program planners, policy analyst, general public, etc.)” (MOH, Population Health and Wellness 2006). The Canadian Institute for Health Information (2002) states it is important to “always tailor the message to the target audience”. It further notes that to enhance accessibility, a crisp synthesis of research is more useful than dense, academic literature reviews.

Several electronic networks facilitate the exchange of information on communicable diseases. For example, the Canadian Network for Public Health Intelligence is available to registered staff to access and post information on an electronic bulletin board about communicable disease outbreaks; and the Program for Monitoring Emerging Diseases (ProMED) is an Internet-based global monitoring systems for emerging diseases through which public health staff in BC can receive as well as post information about diseases of international interest (Yuan and Vogel 2006).

5.6 Action/Utilization

Health authorities require mechanisms to translate assessment and surveillance findings into action. This may involve:

- Facilitating effective response to disease outbreaks, environmental contaminants and other health concerns.
- Facilitating the use of assessment and surveillance information in the design and evaluation of all health system policies and programs, including the continuum of population health programs for sub-groups experiencing health inequities.
- Integrating assessment and surveillance information into all levels of the management decision-making cycle, including the use of health assessment impact analysis on key strategies.
- Coordinating community engagement initiatives for developing new or restructured initiatives based on assessment and surveillance findings.
- Evaluating the effectiveness of health assessment and disease surveillance functions across programs, and across the organization.¹⁰

The literature suggests that weak connections between the people who would use the data and those who collect them, prevent the surveillance system from becoming an integral part of the management cycle (MOH, Population Health and Wellness 2006).

Community engagement has been identified as a key element in mobilization into action. The literature refers to the “spectrum or ladder of engagement.” The spectrum (as noted earlier) describes differing levels of public impact that different forms of community engagement can provide (Elton Consulting n.d.). Members of the general public, municipalities, professional groups and users can enrich the planning process and support the community in taking responsibility for the health of its residents.

¹⁰ Guidelines for the evaluation of surveillance systems that are considered best practice in the field can be found at <http://www.cdc.gov.mmwr/PDF/rr/rr5013.pdf>.

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

These approaches are also supported by the Health Disparities Task Group of the F/P/T Advisory Committee on Population Health and Health Security which recommends that the health sector (including health authorities): make health disparities reduction a priority; facilitate the participation of the public, private and voluntary sectors in action to reduce health disparities; and collaborate with other sectors in the development of structures and mechanisms for setting policy, developing programs and sharing resources (Health Disparities Task Group 2004).

6.0 BEST PRACTICES

Often, there is no one “best practice” which is agreed upon, but rather, there are practices that may have been successful in other settings and should be considered by health authorities. The terms “promising practices” or “better practices” are often preferred to reflect the evolving and developmental nature of performance improvement.

A number of general approaches that are widely accepted have already been identified in this paper. They include:

- Establish appropriate organizational coordinating structures within the health authority.
- Develop mechanisms and technical tools to support data collection, management and analysis (provincial agencies provide health authorities with integrated regional data from multiple sources; health authorities interpret the data in terms of regional impact—they also collect, analyze and interpret data on unique local/regional issues).
- Use proven practices such as standard data elements and definitions, electronic transfer of data, timely reporting for timely action, automatic transfer of data, integration of data from multiple sources and time and space aberration detection.
- Interpret and integrate assessment/surveillance information into planning and evaluation of interventions, and into all levels of the management decision-making cycle.
- Facilitate data-sharing, communication and dialogue among multiple programs and levels within the health authority, and with other organizations (e.g., population health, health inequities for vulnerable groups, adverse effects of the health care system, outbreak reports, etc.).
- Support participatory practices for community engagement in data gathering, interpretation and follow-up action.
- Build capacity by enhancing staff expertise and knowledge.
- Evaluate policies and processes to assess the effectiveness of health assessment and disease surveillance functions.

Additional “better practices”, not previously mentioned, may also contribute to effective initiatives in this field. The following were proposed in *Evidence Review: Health Assessment and Disease Surveillance* (MOH, Population Health and Wellness 2006), and reflect discussions held with key BC informants, and consensus views presented in the literature:

- Develop leadership, formal and informal relationships and strong infrastructure in critical areas to facilitate health assessment and disease surveillance.
- Provide staff training; this is important given the current lack of trained staff in the health assessment and disease surveillance field in BC, and the demographic shift as the current experts age.

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

- Develop a network of professionals to focus on the review and development of best practices in health assessment and disease surveillance in BC.
- Develop (with other health authorities and the provincial-level organizations) a public health secretariat responsible for coordinating, communicating and implementing projects developed by the public health research networks in BC. Possible models include the Coordination Unit of the Vancouver Agreement, the Provincial Infection Control Network of BC (PICNET) secretariat or the new public health agency in Ontario.
- Develop dedicated units or participatory models related to community engagement.
- Protect the confidentiality of personal information and continue to use individual-level data by developing sound organizational or technical infrastructure.
- Utilize geographical information systems (GIS) for health assessment and disease surveillance.
- Examine the application of provincial- or national-level tools for local application.

7.0 INDICATORS, BENCHMARKS AND PERFORMANCE TARGETS

7.1 Introduction

It is important to define what one means by the terms *indicators*, *benchmarks* and *performance targets*. An indicator is a measurement (usually numerical) of a factor that constitutes an important reflection of some aspect of a given program or service. Indicators need to be standardized in some manner so that they can be compared across different organizational entities such as health regions. Benchmarks are usually numerical representations. However, they are reflective of “best” practices. They represent performance that health authorities should strive to emulate. Benchmarks are determined by: reviewing the literature; reviewing the best practice experience in other jurisdictions; or by determining “consensus” opinion of leading experts and practitioners in the field. Performance targets are locally determined targets that represent a realistic and achievable improvement in performance for a local health authority.

This section presents a number of key indicators or performance measures for a health assessment and disease surveillance function. Suggested benchmarks can apply across the province, while other benchmarks may need to be modified to account for key variables such as geographic size and population density of the health authority, and cultural issues. Once there is a set of agreed-upon benchmarks, health authorities can use the indicators, benchmarks and performance targets to monitor their own performance and to address any gaps that may exist between the indicators for their regions and the agreed-upon benchmarks. It is anticipated that the Ministry of Health will work with health authorities over time to develop a greater consensus on key indicators and benchmarks for the health assessment and disease surveillance function. As well, one or two key performance indicators may be selected to represent overall effectiveness for this field in the Performance Agreements between the Ministry of Health and the health authorities.

Per the draft Public Health Logic Model, one can develop indicators related to the inputs, activities, outputs and outcomes (immediate, intermediate or final) of each of the respective components of the health assessment and disease surveillance function. Thus, it is not necessary to only have outcome related indicators and benchmarks. Furthermore, indicators need to be understood within a broader context. For example, a low per-capita cost for a specific function could reflect the efficiency and effectiveness of the function, or it could reflect a function that is under-resourced. In general, it is best to consider a number of indicators, taken together, before formulating a view on the performance in this area. Indicators and benchmarks work best as flags to indicate a variance from accepted norms and standards. Further investigation is usually required to determine the causes of any given variance from such norms or standards.

A health authority could determine its performance target by assessing its current (and perhaps historical) level of performance; then, based on a consideration of local factors (e.g., capacity, resources, new technology, staff training, etc.), it could establish a realistic performance target. This performance target would be consistent with the goal of performance improvement, but would be “doable” within a reasonable period of time. Initially, health authorities will set performance targets for a number of indicators. However, over time and particularly if consistent data collection methods and definitions are applied, it would be realistic for health authorities to

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

Table 4: Priority-setting/Data Management

Indicator	Definition/Description	Benchmark
2.1 Priority-setting initiatives.	a) Health authority has clarified priority topics for health assessment and disease surveillance. (Yes/No)	Yes
	b) Priorities are identified in an annual report. (Yes/No)	Yes
2.2 Data collection/management processes.	a) Procedures have been implemented for gathering/sharing/accessing data across health authority programs. (Yes/No)	Yes
	b) Unique community/regional data on specialized topics is collected as necessary. (Yes/No)	Yes
2.3 Health authority uses standardized practices to manage data.	a) Health authority has adopted provincial standardized data management methodologies. (Yes/No)	Yes
	b) Privacy protection practices are consistent with provincial level and other health authorities. (Yes/No)	Yes

Table 5: Data Analysis/Interpretation, Knowledge Exchange and Action/Utilization

Indicator	Definition/Description	Benchmark	
3.1 Health authority formal processes for data analysis and interpretation.	a) Health authority has clear structures/procedures for ongoing interpretation of key data by policy, planning and management staff. (Yes/No)	Yes	
	b) Health authority uses best practices and technical tools for analysis and interpretation, including:	• Community engagement. (Yes/No)	Yes
		• Identifying risk factors. (Yes/No)	Yes
		• Identifying determinants of health. (Yes/No)	Yes
		• Aberrant disease detection analysis. (Yes/No)	Yes

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

Indicator	Definition/Description	Benchmark
3.2 Health authority initiatives in knowledge exchange.	a) A formal communication strategy and plan for health assessment and disease surveillance information has been established. (Yes/No) b) Percentage of communicable diseases reported within the timelines established by BCCDC.* c) Management committee meeting agendas include health assessment and disease surveillance reviews. (Yes/No) d) Public information distributed includes: <ul style="list-style-type: none"> • A medical health officer's annual report on health authority's population health. (Yes/No) • Information/reports on priority topics. (Yes/No) • Information on the value and use of health assessment and disease surveillance. (Yes/No) 	Yes No benchmark available. Yes Yes Yes
3.3 Health authority action/ utilization of information resources	a) Health impact assessment statements are used for health authority budget decision-making process. (Yes/No) b) Health authority corporate strategic plan includes surveillance data. (Yes/No)	Yes Yes

* BCCDC – iPHIS Duplicate Cases and Reporting Timelines 2004-2008_25.doc

7.3 Provincial-level Indicators for Health Assessment and Disease Surveillance

Table 6: Provincial-level Indicators

Indicator	Definition/Description	Benchmark
4.1 Formal provincial-level organizational initiatives.	a) A strategic plan encompassing the Ministry of Health, PHSA, and other provincial agencies has been completed. (Yes/No) b) Lead roles/responsibilities for all components of provincial health assessment and disease surveillance are clarified. (Yes/No) c) Province facilitates health assessment and disease surveillance human resources planning and training. (Yes/No)	Yes Yes Yes

Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

Indicator	Definition/Description	Benchmark
4.2 Provincial priority-setting and data management.	<ul style="list-style-type: none"> a) Provincial priorities have been clarified in consultation with health authorities. (Yes/No) b) Standardized data-sharing arrangements/agreements have been developed with health authorities. (Yes/No) c) Regular meetings are held to improve standardization and access to province-wide and national data systems. (Yes/No) d) Standard data elements and definitions are developed for the province. (Yes/No) e) The Aggregated Health Information Project is on schedule in developing integrated access to ministry data. (Yes/No) f) The Canada Health Infoway system is implemented and maintained. (Yes/No) 	<ul style="list-style-type: none"> Yes Yes Yes Yes Yes Yes
4.3 Provincial data analysis/ interpretation, knowledge exchange, and action/ utilization.	<ul style="list-style-type: none"> a) Standardized methodologies have been collaboratively developed for health authority data analysis. (Yes/No) b) Level of health authority satisfaction with regular reports on key health issues (assessment using a Likert scale). c) Level of health authority satisfaction with provincial response to data requests, based on data arrangements/agreements (assessment using a Likert scale). 	<ul style="list-style-type: none"> Yes No benchmarks available. No benchmarks available.

8.0 EXTERNAL CAPACITY AND SUPPORT REQUIREMENTS

8.1 Key Success Factors/System Strategies

The previous sections outlined the main components and best practices that health authorities could include in their health assessment and disease surveillance function. However, it must be emphasized that successful implementation of effective health assessment and disease surveillance functions will also depend on having in place key success factors/system strategies. Many of these have been identified previously as “enablers” to effective health assessment and disease surveillance. They include:

- Strong support from the Board and management of the health authorities regarding the importance of population health assessment and disease surveillance in all public health programs in their regions, and the importance of this information in planning and developing effective public health programs for the regions’ population.
- An organizational culture that values and relies upon informational resources as a fundamental component in planning, development and decision-making at all levels;
- Allocation by the health authorities of sufficient resources to meet the priority needs identified in their health improvement plan.
- Well-trained and competent staff with the necessary policies and equipment to carry out their work efficiently.
- An information system that provides staff with appropriate support, and provides management with the information it needs to drive good policy and decisions.
- Clear mechanisms of reporting and accountability to the health authority and external bodies.

8.2 Intersectoral Collaboration and Integration/Coordination

Intersectoral collaboration is essential in health assessment and disease surveillance functions. Effective partnerships with community organizations and front-line personnel are necessary, as well as cooperation and collaboration with provincial organizations and government agencies. Strong involvement, participation and support is needed from key groups within the public health sector, as well as with acute care and hospital services. On the local and regional levels, the important linkages are with community development groups, municipal councils, local service agencies and health advocates providing support to vulnerable sub-groups such as seniors, Aboriginal peoples, teen parents and other at-risk populations. At the provincial level, it is important to collaborate with the Ministry of Health, PHSA, BCCDC, BC Stats, other ministries and other provincial agencies and research institutions. At the federal level, important linkages are with Health Canada, the Public Health Agency of Canada, Statistics Canada and other federal agencies that collect and maintain health, social, economic and environmental data.

8.3 Assessing and Monitoring Health Assessment and Disease Surveillance

It will be important for health authorities to review their existing information and monitoring systems and evaluate their usefulness with respect to capacity, performance and effectiveness in health assessment and disease surveillance functions.¹² It may be necessary to:

- Establish new policies and procedures for some activities to ensure that the necessary measurement data are recorded and accessible.
- Plan regular survey or sampling projects, either individually or in partnership with other health authorities, to assess performance on certain indicators.

¹² Guidelines for the evaluation of surveillance systems that are considered best practice in the field can be found at <http://www.cdc.gov/mmwr/PDF/rr/rr5013.pdf>.

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Core Public Health Functions for BC: Model Core Program Paper
Health Assessment & Disease Surveillance

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APPENDIX 1: THE EVIDENCE BASE FOR A MODEL CORE PROGRAM FOR HEALTH ASSESSMENT AND DISEASE SURVEILLANCE

Taken from: *Evidence Review: Health Assessment and Disease Surveillance*, prepared by Blue Thorn Research and Analysis Group Inc. for the Ministry of Health, Population Health and Wellness, 2006.

This evidence review focuses on the health assessment and disease surveillance core program. It identifies categories of best practices and the processes that enable best practices and speaks to the integration of the practice and the players.

This paper resulted from a mix of key informant interviews, Internet searches and a literature review using PubMed and EBSCO. The public health key informants included: health authority Chief Medical Health Officers, researchers in health authorities and tertiary care organizations and Ministry of Health staff.

The health assessment and disease surveillance core program lacks evidence of effectiveness with respect to its practice, but is informed by expert opinion. This paper describes those practices used by and/or supported by multiple and reputable sources. These sources provided consistent recommendations related to the main categories of best practices: data collection, analysis and interpretation, dissemination and utilization/action.

Data collection practices include identifying data sources and current needs, collecting data from a variety of data sources and collecting data in a standard fashion. Analysis and interpretation practices include utilizing standard approaches and methodologies. Dissemination practices include defining the message and defining the audience. Action/utilization practices include developing a connection between the people who would use the data and those who collect it.

Two enabling factors, organization and capacity, are key to an effective health assessment and disease surveillance program. Organizations must define participant roles to ensure there is a clear definition of “who is doing what.” Other important success factors related to organization include leadership, formal and informal relationships, strong infrastructure in critical areas (e.g., laboratories) and data quality.

With regard to building capacity, all informants poke to the need to increase funding in order to maintain current practices and undertake new ‘best practice’ initiatives, and to train staff required to undertake health assessment and disease surveillance work.

APPENDIX 2: THE EVIDENCE BASE FOR COMMUNICABLE DISEASE SURVEILLANCE

Taken from: *The Evidence Base for Communicable Disease Surveillance*, prepared by L. Yuan and A. Vogel, 2006.

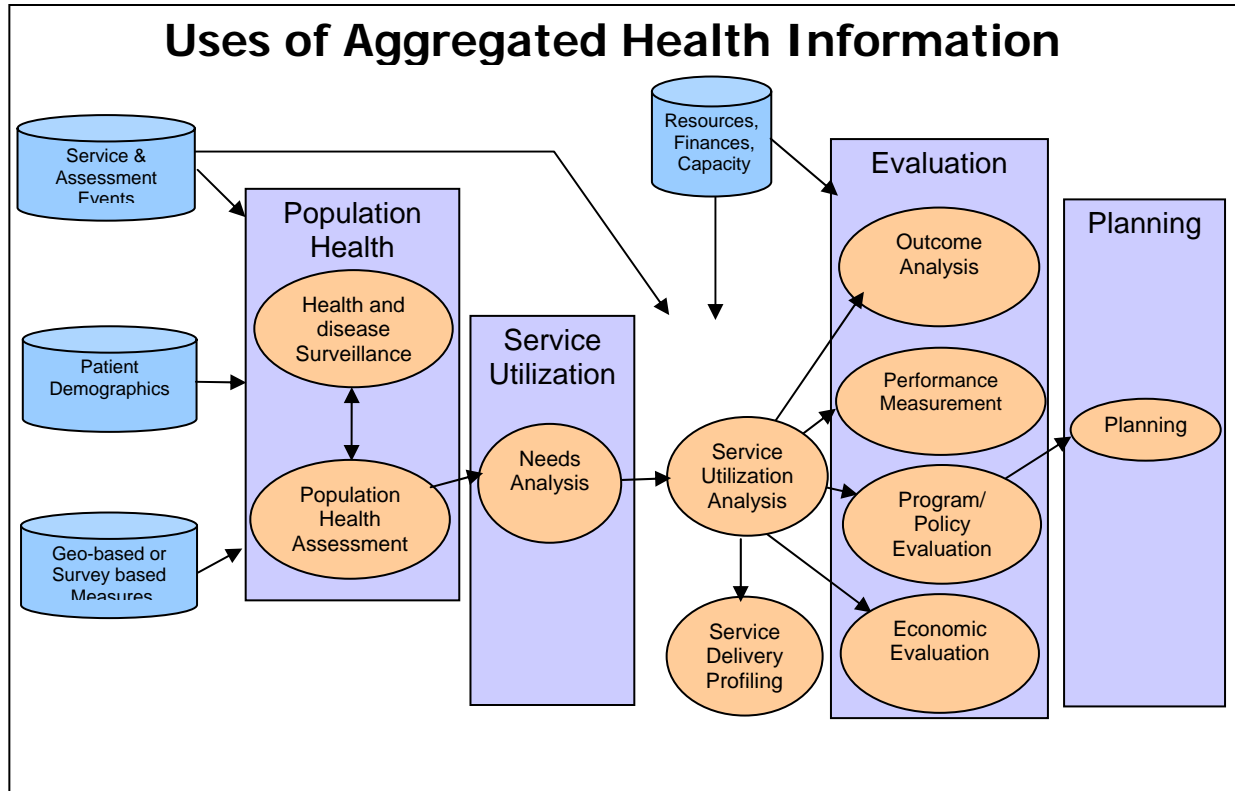
Communicable disease surveillance is the ongoing and systematic collection, analysis, interpretation and dissemination of infectious disease data for public health action. It acts as an early warning system for outbreaks and identifies infections that are the most important causes of illness and death, so prevention and control activities can be prioritized.

Many sources of data can be used for monitoring. Some are legally mandated (e.g., reportable diseases), while others are not (e.g., health utilization data and school or work absenteeism information). More recently, informal data from public Internet sites and media sources have been used. The type of information collected depends on the purpose of the surveillance system.

Information is usually transmitted by telephone, fax or mail. More recently, data transfer has been by electronic means. Advances in information technology have led to automated data extraction and analysis of routinely collected information. Other innovations include integrated public health information networks.

With growing concerns about emerging infections and bio-terrorism, surveillance networks have been developed to share data across different sectors and countries. Examples include the global communicable disease surveillance network and the international surveillance of pathogens in animals.

APPENDIX 3: MINISTRY OF HEALTH – USES OF AGGREGATED HEALTH INFORMATION



APPENDIX 4: PROGRAM SCHEMATIC - MODEL CORE PROGRAM FOR HEALTH ASSESSMENT AND DISEASE SURVEILLANCE

Objectives: To monitor, assess, improve understanding of and report on population health status, disease trends and risk factors, including the determinants of health.
 To detect and facilitate the response to increases in disease and sources of disease, and other health-related issues.
 To enhance the planning, implementation and evaluation of public health policies and programs.

Main Components	Implementation Objectives (Best Practices)	Outputs	Linking Constructs	Short-term Outcomes	Long-term Outcomes
Data Priority-Setting	<ul style="list-style-type: none"> Establish major data priorities for the health authority. Integrate legislated priorities and provincial priorities. Ensure a collaborative approach in priority planning with input from all levels of the health authority; all public health programs, and from community engagement. 	<ul style="list-style-type: none"> Clear set of data priorities established. Priorities are developed collaboratively. 	<ul style="list-style-type: none"> Increased clarity and focus on key health issues and health risks. 	<ul style="list-style-type: none"> Improved ability to manage assessment/surveillance. 	<p>Improved detection and response to population health issues/risks, and to disease outbreaks</p> <p style="text-align: center;">↓</p> <p>Improved population health</p>
Data Management	<ul style="list-style-type: none"> Establish a formal coordinating structure, utilizing capacity building, for a collaborative approach to data collection and data access across programs. Collect key health care system data, including surveillance, trend data and program outcomes. Establish mechanisms and tools to collect and/or access priority data from additional multiple sources, including community, provincial and federal levels. Provide information on “reportable” diseases in a timely manner. Adopt appropriate data standards and methodologies. 	<ul style="list-style-type: none"> Coordinating structure in place. Staff are trained. Data integrated from multiple sources. Standardized practices implemented. 	<ul style="list-style-type: none"> Improved organizational processes. Increased level of staff expertise. 	<ul style="list-style-type: none"> Increased organizational capacity to perform health assessment and disease surveillance. Provided timely access to standardized data. 	
Data Analysis and Interpretation	<ul style="list-style-type: none"> Coordinate system-wide analysis and interpretation of regional, local and program data by policy, planning and management staff at all levels. Adopt best practices for quality analysis/interpretation, such as: community engagement, risk factors, aberrant disease detection, standardized methods for analysis, partnerships with other organizations, etc. Prepare reports on key issues, such as regional population health, health inequities of vulnerable groups, priority health issues in the region, etc. 	<ul style="list-style-type: none"> Analysis/interpretation provided by policy, planning and management staff. Best practices and technical tools are used in analysis/ interpretation. 	<ul style="list-style-type: none"> Increased collaboration among staff and other groups. 	<ul style="list-style-type: none"> Enhanced assessment of health risks and population health issues. 	
Knowledge Exchange	<ul style="list-style-type: none"> Release outbreak information quickly for action at the local level. Establish strategic communication plans for key policy research information. Facilitate data-sharing, communication and dialogue among multiple programs and levels, and with other organizations as appropriate. Notify the province of key health concerns within the region. Distribute annual reports of the medical health officer on the health of the population. 	<ul style="list-style-type: none"> Outbreak information released quickly. Data shared/discussed with multiple groups. Communication strategies utilized. 	<ul style="list-style-type: none"> Increased public awareness of health issues/risks. Increased information on health issues and trends. 	<ul style="list-style-type: none"> Enhanced public knowledge of health issues/risks. Enhanced understanding of vulnerable groups. 	
Action/Utilization	<ul style="list-style-type: none"> Facilitate effective response to disease outbreaks and health alerts. Facilitate the use of assessment/surveillance information in planning health authority policy and programs, particularly population health programs. Integrate assessment/surveillance information into all levels of the management decision-making cycle. Evaluate effectiveness of health assessment and disease surveillance functions. 	<ul style="list-style-type: none"> Data findings used for planning/evaluation. Provincial Health Officer’s indicators used to assess progress in reducing health risks. 	<ul style="list-style-type: none"> Improved planning and evaluation for program effectiveness. 	<ul style="list-style-type: none"> Improved response for population health issues and disease outbreaks, and improved ability to support at-risk population groups. 	