

Ministry of Health

Information Resource Management Plan 2007/08

Knowledge Management and Technology Division

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Health

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Message from the Assistant Deputy Minister

In accordance with the *Budget Transparency and Accountability Act* and the *Government Core Policy*, I am pleased to present the 2007/08 Information Resource Management Plan for the Ministry of Health.

...integrated health information to aid clinical and management decision making...

The Ministry of Health continues to be committed to improving the availability of timely, integrated health information to aid clinical and management decision making across British Columbia's health system and to enhancing electronic health service delivery. Consistent with the shift in its mandate to health care system stewardship, the ministry is in the process of building a culture in which both clinical and management decisions are made on the basis of reliable evidence. Substantial progress has already been made towards improving the quality of health data and information. Recognizing this, the ministry is steadfast in its ongoing efforts to increase the health system's analytical capacity in order to support effective decision making.

Accordingly, the ministry's Knowledge Management and Technology Division has been given the mandate to ensure a unified approach to the provision of accurate, relevant and timely health information, and to help build an effective and robust health information infrastructure through provincial and national partnerships.

The task outlined above is challenging, but the past year has seen tangible achievements. We have strengthened and more closely focused our organization, and have continued the enhancement of internal operating processes, in addition to expanding and consolidating our relationships with external partners and stakeholders. We have made progress in improving data quality in our existing systems and in the integration of those systems, in improving the input of ministry program areas into systems development planning, and in increasing the access of decision makers to the timely and relevant information they require. These achievements have bolstered the ministry's ability to analyze and use reliable data as a foundation for its decisions.

Health information needs to be centered on and organized around individual people and patients, rather than the places where the services are delivered (hospitals, clinics, local medical practices, etc). eHealth will support and enable a more effective, integrated and coordinated approach to communication and information transfer across the various components over the entire continuum of health care. We have maintained our efforts to lead and facilitate the delivery of the ministry's eHealth vision across the province.

The eHealth Steering Committee, formed in 2005, continues to provide impetus and strategic direction to the development and deployment of eHealth in British Columbia. This committee works to ensure the coordination and integration of initiatives across the province aimed at improving clinician and patient access to critical personal health data. These initiatives encompass the development of an interoperable electronic health record as well as an effective telehealth capability.

*...efficient deployment...
ongoing overall
governance.*

We work closely with the health authorities and the health care provider communities to identify and refine our evolving eHealth plans. The ministry has concluded a number of related joint funding agreements with Canada Health Infoway. We continue to work with the Western Health Information Collaborative to advance our common information technology objectives.

The year ahead will be one of sustained effort on eHealth development, while ensuring that the broad underlying gains of past years are maintained, extended and suitably embedded within the ministry's culture. All of this must be accomplished within a secure technical environment that properly manages timely access by authorized health care professionals to patient information intended to support clinical requirements, while maintaining consistent and appropriate protection of each citizen's privacy.

Two of the major upcoming issues for eHealth are firstly, the efficient deployment of the related technology once each of the many eHealth elements are fully developed, and secondly, ongoing overall governance. This ongoing governance is aimed at each major component following its initial deployment, as well as addressing the more comprehensive long-term governance required for the entire eHealth endeavor as an integrated system. Early progress in dealing with these two pivotal issues is critical to the ultimate success of eHealth in British Columbia.

The rapidly growing demand for high-quality, timely and relevant data, along with the information derived from that data is increasingly recognized as fundamental to the efficient delivery of modern health services. Our ongoing challenge is to increase the ability of the ministry and the wider health system to generate, assimilate and efficiently utilize the vast array of health data and information available to us.

We must be able to assess and report on the capacity of the health care system to properly accommodate new medical interventions and new drugs, its ability to meet underlying accountability requirements and the consequences of growing demographic pressures, as well as the system's capacity to properly manage the impact of uncertain or largely unforeseen future events. Wide-reaching potential crises, such as the sudden arrival of a major pandemic, could severely strain the health system's capacity to mount a timely and effective response.

The tasks that lie ahead are truly challenging. However, I remain confident that with clear objectives and strategies, prudent planning, and the support of our senior leadership, ministry staff and stakeholders, we will not only persevere, but ultimately we will be successful in fully meeting our goals and objectives. We will continue to make significant improvements in the delivery of health information together with the supporting services and technology to meet the business priorities of the ministry and the needs of the health system in British Columbia.

Original signed by,

Ron Danderfer
Assistant Deputy Minister
Knowledge Management and Technology Division

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Executive Summary

The ministry's 2007/08 Information Resource Management Plan (IRMP) accommodates provincial and health system redesign priorities in the context of an increasing interest in and demand for electronic health record (EHR) and electronic health delivery solutions (eHealth), as well as global information security and privacy concerns. For 2007/08, and likely most of the next decade, eHealth will be a major focus for the ministry's information management/ information technology (IM/IT) efforts. Many of the associated initiatives are highly complex and will require several years to fully develop and deploy on a province-wide basis.

...enabling province-wide integration of and access to clinically required, person-specific data...

The ministry's six key IM/IT strategies reflect its business drivers and information resource management priorities, as well as support the ministry's health goals. The IM/IT strategies are:

- Enhancing patient care by enabling province-wide integration of and access to clinically required, person-specific data, while protecting personal privacy (electronic health record).
- Working with the British Columbia Medical Association and the College of Physicians and Surgeons to coordinate, facilitate and support information technology planning and implementation for physicians, and develop and implement standardized systems of electronic medical records.
- Supporting the use of electronic medical record systems by physicians.
- Expanding telehealth to improve rural and remote residents' access to health services and specialists.
- Improving the availability of quality data and analysis to assist clinical and management decision making.
- Expanding public access to health services and health information through web-based applications.

The health information and technology management environment is complex, but its central principle is straightforward and clear – business needs determine information processing requirements, which in turn determine the appropriate technology infrastructure.

...provide clinicians, working in most care settings, with access to a range of clinical information...

In developing the IRMP, ministry program areas were engaged in identifying their information management and technology requirements. In addition, there is a Capital Planning Executive Committee, composed of senior ministry program representatives, that reviews and ranks proposed ministry initiatives in terms of their strategic value, urgency, cost saving, cost sharing and risk. The committee's assessment is critical to the approval and funding of the various candidate projects.

Major eHealth initiatives with work planned for 2007/08 include:

Aggregated Health Information Project (AHIP) – AHIP will create an integrated provincial health information management infrastructure capable of quickly supporting new types of analyses, as the need arises.

BC Public Health Information Project (PHIP) – includes the implementation of an improved environmental health/health protection system, providing better access, delivery and integration of health care services for managing communicable diseases in BC, as well as improved systems to support public health field operations, and health-related research and surveillance activities.

Connecting Diagnostic Imaging (CDI) – supports and facilitates the storage and exchange of digital diagnostic images and reports across the province.

Healthcare Client Identity Management (HCIM) – an Enterprise Master Person Index (EMPI) will enable EHR functionality by providing the ability to effectively identify the health records (laboratory results, medications, diagnostic reports, discharge summaries, etc.) that all belong to the same patient.

Interoperable Electronic Health Record (iEHR) – a combination of computer applications that will link care providers at the point-of-care with health information held elsewhere. The iEHR viewer will provide clinicians, working in most care settings, with access to a range of clinical information including laboratory test results, medication histories and diagnostic images.

Provider Engagement – ensures physicians and health professionals are engaged in the design of process changes, and the selection and implementation of new supporting technology for eHealth.

Provincial eDrug Project – improves clinical access to patient medication profiles, expands the content of the profiles, and introduces the ability for a physician to electronically generate prescriptions (ePrescribing) linked to PharmaNet.

Provincial Laboratory Information Solution – a system designed to support laboratory test result sharing, which can provide medical test information to care providers across the province right at the point-of-care.

...provide medical test information to care providers across the province right at the point-of-care.

Other initiatives with work planned for 2007/08 include:

BC Clinical Practice Guidelines and Protocols Web Enhancement – a better organized, inviting and interactive website targeted at physicians will replace the existing site, and will improve access to and utilization of the Clinical Guidelines.

Data Stewardship and Access Management Project – is intended to develop a comprehensive solution to the management of access to personal information banks maintained within the ministry. Once implemented, the solution will allow the ministry to more effectively manage its workload as data steward by providing a centralized repository of data access and data sharing information. It will also assist the ministry in responding to enquiries from the Office of the Information and Privacy Commissioner related to the status of requests for access and data sharing agreements.

Health Website Redesign – development of an overall redesign strategy and plan for the ministry website that is theme based, to ensure ease of access and navigation for the public, while maintaining consistency with the ministry's service plan and Public Affairs Bureau requirements.

The Knowledge Management and Technology (KMT) Division is the information and technology management arm of the Ministry of Health. It is also responsible for the operation of the BC Vital Statistics Agency. KMT provides leadership and ensures that IM/IT strategies, policies, standards and technology initiatives support the integrated delivery of sound and consistent, system-wide health information management. The KMT Division is responsible for the overall strategic development, implementation and evaluation of the ministry's information resource management plans, and for fostering a decision-making culture in the ministry that is based on reliable evidence. Implementation of eHealth over the next several years is currently a major focus of division efforts.

In 2007/08, the KMT Division, including the Vital Statistics Agency, has an estimated operating budget of \$61.33 million, a capital budget that has yet to be determined, and a projected staff complement of 254 full-time equivalents.

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Introduction

...timely and seamless access to the information they require...

Provincial, national and even global developments continue to influence this year's Information Resource Management Plan. Provincially, the ministry's 2007/08 – 2009/10 service plan articulates the goals, objectives and strategies on which the ministry and our partners will be focusing as we continue the redesign and reform of the health system. In 2007, the Government released its 2007/08 – 2009/10 Strategic Plan, which described Five Great Goals for the province. The current ministry information management/ information technology (IM/IT) plan is congruent with the Five Great Goals.

A number of socio and macro-economic pressures threaten the sustainability of our publicly funded health care system. These pressures or business drivers are:

- A growing and aging population, foreshadowing a steadily growing demand on health care e.g. from the impact of chronic diseases.
- A shortage of health care professionals that threatens to limit the supply of skilled practitioners and extend waitlists for some health care services.
- Emerging threats to public health, like SARS and avian flu.
- Citizens are increasingly expecting the same consistent and equitable health care access across remote regions as in densely populated urban centres.
- New treatments and technologies whose higher costs strain health care budgets.
- Silos of care that fail to provide patients and service providers with timely and seamless access to the information they require, causing delays and needless duplication.

*Better use of
information and
communications
technology is vital...*

The overarching ministry goal is to build a sustainable, publicly funded health system that will meet the needs of today's and future generations. To do this, the health system is being redesigned to address the needs of the population in more effective, efficient and innovative ways. Adopting cost effective technology and information system solutions is a key component of the ministry's strategic approach.

Globally, security issues have resulted in an increased emphasis on protection for the integrity of British Columbia's vital records and personal medical histories. In addition, the recent growing outbreak of avian flu, centred largely in Asia, along with the Canadian experience with SARS in 2003, have heightened the awareness of the need for a pan-Canadian mechanism to collect, share and analyze public health information that is critical for managing communicable diseases.

Even with our heightened concern, indicators of population health and medical outcomes from BC Stats and the Vital Statistics Agency still suggest that British Columbia's health system continues to meet its primary challenges. Life expectancy is rising every year, while mortality rates for conditions like cancer and chronic heart disease tend to be falling.¹ However, pressure on the system is growing. Individual demand for medical services rises steadily with age, and the first of the "baby boomers" are now entering their early sixties. British Columbians are living longer, and they expect good health, along with the medical support required to remain physically active well into their senior years.

Better use of information and communications technology is vital, if we are to continue to meet the health and medical needs of British Columbians over the coming decades. Development of an electronic health record (EHR) capability has been identified as a key to health system renewal. In British Columbia, the April 2005 report by the Premier's Technology Council reiterated its direction, first stated in 2002, for the development of a provincial electronic health record. This priority has also been stated in a number of other directional documents, including the ministry's service plans. Improved information collection and management has been widely recognized as a priority area to assist health reform.

The health information and technology management environment is complex, but its underlying principle is simple and clear - business needs determine information processing requirements, which in turn, determine the appropriate technology infrastructure.

As shown in Figure 1, there are three broad components or levels in our basic business model: business needs, information processing, and the underlying technology. The business needs determine the nature of the information required, and the technology makes the data from various

¹ Vital Statistics Agency; Annual Report 2005 and quarterly updates July-September 2006
(www.vs.gov.bc.ca/stats/annual/index.html)

sources available for the provision of this information. The model shows the planning and process flows - two key areas under direct management control. Clear goals, appropriate strategies, adequate resource allocations and specific performance measures underpin the plans at both the strategic and operational levels, and provide the basis for the Knowledge Management and Technology (KMT) Division to stay properly focused on its mission.

Information resource planning is an ongoing process...

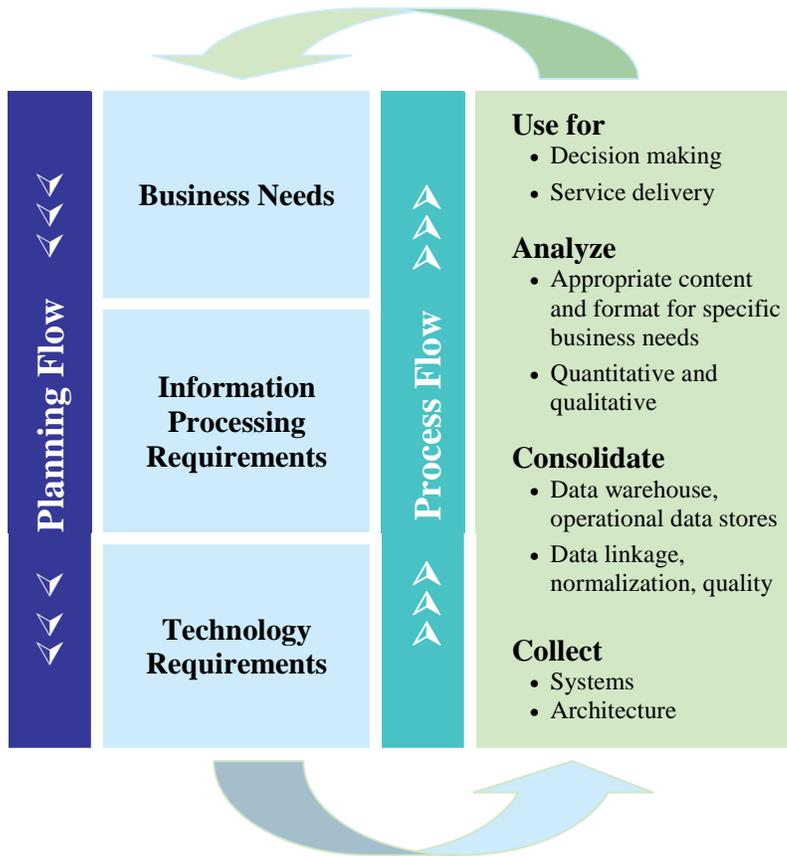


Figure 1 - Basic KMT Business Model

The basic IM/IT business model is designed to support both the decision making needs of the health system and the day-to-day operations of the Ministry of Health. Information resource planning is an ongoing process, with the Information Resource Management Plan published annually. Well-defined and integrated processes, along with effective tools and project management methodologies, facilitate the disciplined execution of the ministry's IM/IT plans.

A more detailed depiction of the business environment, including stakeholders and specific KMT enabling features (as shown in pull-out boxes), is illustrated by means of Figure 8 in Appendix 1.

...the integrated delivery of effective and efficient system-wide health information management.

The Knowledge Management and Technology Division

The Knowledge Management and Technology Division was created in November 2003 to consolidate the ministry's IM/IT systems into one portfolio in order to ensure a coordinated approach to this critical component of the ministry's overall service delivery and business management environment.

The division's mandate is to build capacity for the integration of data into daily ministry operations and policy development, and to support the ministry's stewardship role. KMT provides leadership to ensure that IM/IT strategies, policies, standards and technology initiatives support the integrated delivery of effective and efficient system-wide health information management. The division is responsible for the overall strategic development, implementation and evaluation of the information resource management plans of the Ministry of Health.

The Assistant Deputy Minister (ADM), Knowledge Management and Technology, is the chief advisor to the Minister and the Deputy Minister of Health on knowledge management and technology issues. The ADM bears the ultimate management responsibility for the KMT Division. The Assistant Deputy Minister is supported in this role by the KMT Executive Committee, which includes the KMT executive directors, and is chaired by the ADM. The division's organization structure is shown as Figure 7 in Appendix 1.

Ministry Core Businesses

The Ministry of Health has three core business areas:

- *Stewardship and Corporate Management*
- *Services Delivered by the Ministry*
- *Services Delivered by Partners*

As steward of the health system, the ministry provides leadership and support...

Stewardship and Corporate Management

As steward of the health system, the ministry provides leadership and support for its health system partners, including health authorities, physicians and other care providers.

The ministry sets the overall strategic direction for the health system, provides the appropriate legislative and regulatory frameworks to allow it to function smoothly, and plans for the future supply and utilization of health professionals, technology and facilities. The ministry also monitors the health of the population, and plans and coordinates responses to major public health risks and emergencies.

As part of its stewardship role, the ministry evaluates health system performance against clearly articulated expectations, and takes corrective action, when necessary, to ensure the population's health needs are being met. This core business area includes the Office of the Provincial Health Officer. Under the *Health Act*, the Provincial Health Officer is the senior medical health officer for British Columbia and provides independent advice to the Minister of Health, the ministry and the public on public health issues and population health. Each year, the Provincial Health Officer must report publicly, through the Minister of Health, to the legislature on the health of the BC population.

The ministry monitors and evaluates system performance and the overall health of the population of the province by collecting and analyzing health system data. By monitoring and evaluating the overall health system, the ministry is able to take evidence-based corrective action when necessary, and stay well informed concerning evolving requirements for the development of effective service plans and performance agreements.

As part of the ministry's corporate management role, it manages ministry budgets, as well as its human resources and ongoing information needs. In order to properly fulfill the stewardship role, it is essential for the ministry to administer its underlying corporate functions in the most efficient and cost effective manner possible.

The province's six health authorities are the ministry's primary partners...

Services Delivered by the Ministry

This core business area encompasses two important public services: the BC Ambulance Service (BCAS), which is delivered through the Emergency Health Services Commission, and the Vital Statistics Agency (VSA).

The BC Ambulance Service is responsible for providing effective, efficient and equitable emergency health services for the province. Approximately 1,100 full-time and 2,200 part-time paramedics and dispatchers, and 100 management and support personnel provide emergency and medical transport services. BCAS is a provincial service with 190 stations and 450 ambulances across BC. It responds to about 530,000 calls annually, including more than 8,800 air evacuations.

The Vital Statistics Agency is a special operating agency that is responsible for documenting important events for BC citizens such as births, marriages, and deaths. It maintains registries and records of those events back to 1872. There are two primary outputs of the VSA vital event registration activities: the production of accurate, timely and relevant health statistics and information, and the issuance of certified documents pertaining to an individual's vital events (e.g. birth certificates). The VSA also has a key responsibility to secure and protect personal identity records by taking appropriate measures to prevent identity theft and any associated frauds that relate to British Columbia vital event records and documents.

Services Delivered by Partners

Our partners deliver by far the majority of health services to the public. These services span the continuum of health care, from population health programs to end-of-life care. Accordingly, this core business area accounts for the greater portion of health expenditures, and is the main focus of the system redesign efforts reflected in this plan. The key organizational partners are:

Regional Health Sector

The province's six health authorities are the ministry's primary partners in delivering services to British Columbians. More than 90 per cent of the regional health sector funding is provided to the six health authorities for the delivery of most local health services, including health promotion and protection services, primary care, hospital services, home and community care, mental health and addiction services, and end-of-life care. The remaining funds are provided to other health agencies for health operations such as the delivery of blood services, out-of-province hospital services, post-graduate medical education, health care risk management, and some palliative care services.

Medical Services Plan

The Medical Services Plan funds medically necessary services provided by physicians, surgeons, midwives and other practitioners, as well as diagnostic services. These services are funded in a variety of ways: through fee-for-service, contracts (including contracts with health authorities), and salaried positions or sessions. Medical Services Plan funding also provides supplementary benefits to low-income British Columbians for a range of services, including physical therapy, naturopathy and chiropractic care.

...maximizing the value obtained from the use of public funds.

PharmaCare

PharmaCare is the province's prescription drug insurance program and includes several benefit plans. The main plan is Fair PharmaCare, which provides insurance to BC families for prescription drug costs. Several other plans exist to address the health needs of individuals, including seniors in long-term care facilities, severely disabled children who are cared for at home, enzyme treatment for people with cystic fibrosis, and clients on provincial income assistance.

Health Benefit Operations

Health Benefit Operations provides administrative services for BC's PharmaCare Program and Medical Services Plan. These services do not involve direct health care delivery, but include registering beneficiaries, processing medical and pharmaceutical claims from health professionals, and responding to inquiries from the public. Since April 1, 2005, these administrative services have been delivered by Health Insurance BC through an operating agreement.

The province's health authorities, health agencies and the various direct care providers are the ministry's key partners, and deliver the majority of health services to the public. Although the ministry does not directly deliver many of the services that influence health outcomes, it bears ultimate responsibility for the overall health system.

Collaboration and sharing with its partners is a fundamental priority for the Ministry of Health. With the demand for services increasing, collaboration is not only an effective strategy to facilitate the broad adoption of standards and best practices, it is essential to maximizing the value obtained from the use of public funds. Appendix 2 briefly describes the ministry's major partners and stakeholders, and also indicates the basic nature of their collaboration with the KMT Division.

Strategic Context

Vision

The ministry's vision is:

"A health system that supports people to stay healthy, and when they are sick provides high quality publicly funded health care services that meet their needs where they live and when they need them."

Goals

The ministry's three goals are:

Goal 1: Improved Health and Wellness for British Columbians

"British Columbians are supported in their pursuit of better health through health protection and promotion and disease prevention activities."

Goal 2: High Quality Patient Care

"Patients receive appropriate, effective, quality care at the right time in the right setting. Health services are planned, managed and delivered in concert with patient needs."

Goal 3: A Sustainable, Affordable Publicly Funded Health System

"The public health system is affordable, efficient and accountable, with governors, providers and patients taking responsibility for the provision and use of services."

In support of Goal 3, (*A Sustainable, Affordable Publicly Funded Health System*), the ministry has determined that its IM/IT objective is to make:

"Strategic investments in information management and technology to improve patient care and system integration."

The ministry's performance measure for Goal 3 is "the number of physicians implementing electronic medical record systems through the Government/BC Medical Association incentive program." The Physician Information Technology Office (PITO) is a jointly sponsored Government/BC Medical Association operation that will provide physicians with approved vendor options, give them technical and change management support, and serve as a source for provincial funding of 70% of their relevant technology acquisition costs. The support provided by PITO helps cover a physician's cost for necessary computer equipment, secure email access, software, network connectivity, and access to the provincial eHealth systems.

*...implementing
electronic medical
record systems...*

The PITO operation reflects the recent agreement between the BC government and the BC Medical Association (BCMA), which set out a responsibility framework for the transformation of physicians' offices and practices. The uptake of endorsed electronic medical record systems has been selected as the performance measures because of the underlying importance of eHealth in transforming the health care system, and in recognition that such a fundamental transformation can only take place if physicians actively and enthusiastically adopt and utilize the related technology.

IM/IT Strategies

The ministry has adopted six key strategies that relate to its IM/IT objective (i.e. to make strategic investments in information management and technology to improve patient care and system integration) and support ministry goals:

1. Enhancing patient care by enabling province-wide integration of and access to clinically required, person-specific data, while protecting personal privacy (electronic health record).
2. Working with the British Columbia Medical Association and the College of Physicians and Surgeons to coordinate, facilitate and support information technology planning and implementation for physicians, and develop and implement standardized systems of electronic medical records.
3. Supporting the use of electronic medical record systems by physicians.
4. Expanding telehealth to improve rural and remote residents' access to health services and specialists.
5. Improving the availability of quality data and analysis to assist clinical and management decision making.
6. Expanding public access to health services and health information through web-based applications.

An integrated set of information and communication technologies...

Figure 2 below, illustrates the basic linkages between the ministry vision, ministry goals, the ministry's basic IM/IT objective, and its six associated IM/IT strategies, along with the related performance measure.



Figure 2 – Strategic Linkages

Applying the six key IM/IT strategies to support the cost effective provision of health services gives rise to the use of an integrated electronic health record and a broad system of electronic health service delivery (eHealth). In the British Columbia eHealth Strategic Framework, eHealth is defined as:

“An integrated set of information and communication technologies, together with related health delivery process enhancements, that:

- Enables the efficient delivery of health care services over the full continuum of care through the provision of integrated, interoperable health information systems, tools and processes;
- Transforms the health sector decision-making culture into one that is firmly supported by accurate, timely and relevant information in a manner that protects individual privacy, respects clinical practice requirements and sustains the long-term viability of the health care system; and
- Encompasses the interoperable electronic health record and telehealth.”

The underlying vision for eHealth in British Columbia can be summarized as:

...communication of reliable patient health information...

“An integrated, interoperable eHealth system in which health care information is accessible, when and where it is needed, to support personal health, health care decision making and health system sustainability.”

Figure 3 shows the key components of health care that will be interconnected through eHealth, and which will lead to the transformation of health service delivery across the continuum of care in British Columbia. Reliance on an interoperable electronic health record will be one of the most critical features of eHealth, facilitating the timely communication of reliable patient health information throughout the entire spectrum of health service delivery.

In this eHealth vision, citizens (i.e. the public) and patients are the focal point of health care delivery. Health information needs to be centered on and organized around citizens and individual patients, rather than the places where the services are delivered (hospitals, clinics, individual medical practices, etc.).

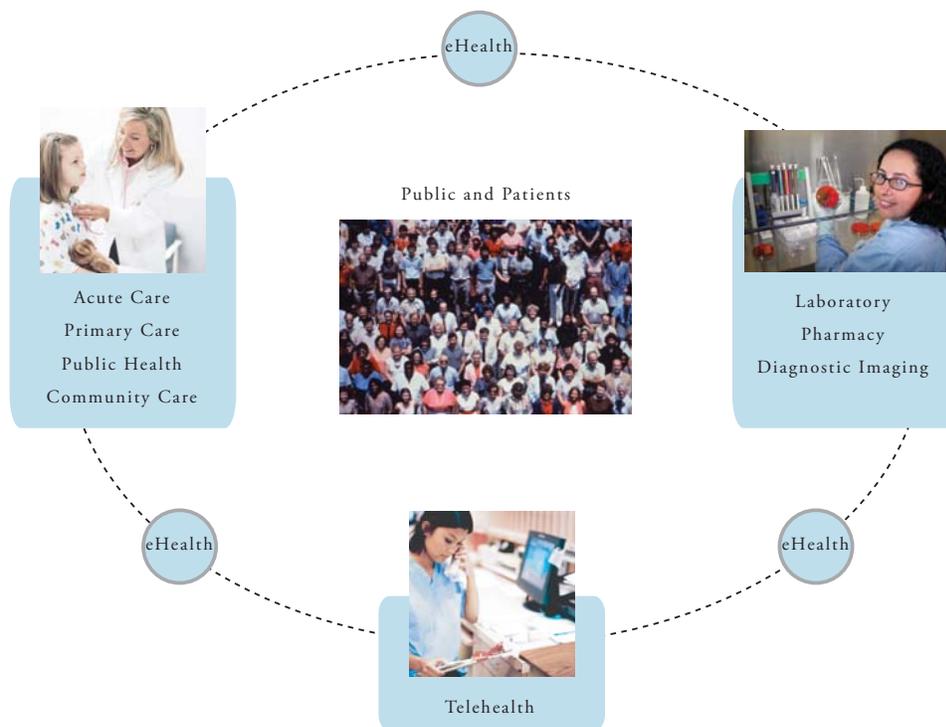


Figure 3 – The eHealth Vision

...fully realized over a longer period of time.

Implementing eHealth across the province requires an immediate as well as an extended investment of substantial human and financial resources. The resulting efficiencies, generated throughout the system, will only be fully realized over the longer term. Figure 4 below succinctly highlights some of the key eHealth initiatives or projects that are planned for deployment over the next one to two years.

Key Initiatives	Descriptions
Interoperable Electronic Health Record (iEHR)	<ul style="list-style-type: none"> iEHR – comprehensive health information at the point-of-care iEHR viewer, access control
Electronic Medical Record	<ul style="list-style-type: none"> Electronic medical record (EMR) systems in the doctor’s office – with technology funding and integration support provided for physicians through PITO to integrate with the provincial EHR system
eDrug	<ul style="list-style-type: none"> eDrug information system (integrated with PharmaNet) Medication profiles, enhanced content, and ePrescribing
Public Health Surveillance	<ul style="list-style-type: none"> Implementation of the Pan-Canadian Public Health Surveillance Information Project, with subsequent local deployment of a tailored application of the system in British Columbia
Provincial eLab System	<ul style="list-style-type: none"> Provincial laboratory information solution (PLIS) System will provide laboratory test results at the point-of-care
Connecting Diagnostic Imaging	<ul style="list-style-type: none"> Provincial diagnostic imaging (DI) - storage and reports using a picture archive and communications system (PACS)
Telehealth	<ul style="list-style-type: none"> Implementing a telehealth strategic plan with identification and prioritization of clinical telehealth services, plus telepathology
Aggregated Health Information Project	<ul style="list-style-type: none"> The aggregated health information project (AHIP) will integrate currently separate health data sources and systems into a more accessible, knowledge-based, corporate decision support framework

Figure 4 – Key eHealth Initiatives

In a 2005 document setting out Canada Health Infoway’s 10-year investment strategy, Booz Allen Hamilton estimated that the acquisition cost for a Pan-Canadian EHR delivered over a 10-year period would be approximately \$10 billion. This is made up of: \$1.4 billion for Physician Practice Systems, \$3.9 billion for Inpatient Systems, \$1.8 billion for a Long-term Care System, \$0.05 billion for a Home Health extension, and \$2.9 billion for the Infrastructure costs.

Booz Allen Hamilton also estimated that as a result of implementing a Pan-Canadian EHR, the following savings would be achieved over a 20-year period:

...faster, better and safer care...

- \$3.6 billion from the reduction of duplicate and unnecessary radiological tests;
- \$10.4 billion from the reduction of duplicate and unnecessary laboratory tests; and
- \$48.3 billion from reduced ambulatory, hospital and long-term care adverse drug reactions.

Canada Health Infoway makes strategic investments in the provinces and territories to develop and implement interoperable electronic health record and telehealth solutions across the country. Over the 5-year period from 2004/05 to 2008/09, British Columbia is expected to recover up to \$157 million from Infoway.

In November 2005, British Columbia completed its eHealth Strategic Framework. It outlined how eHealth initiatives will improve overall patient care, and help health professionals to deliver faster, better and safer care, as well as provide a number of benefits for the entire health system. As indicated in the framework, the six basic steps designed to implement and realize British Columbia's vision for eHealth are to: establish strong governance and leadership; foster collaboration and joint procurement; leverage available financial resources; fully safeguard privacy and security; build on British Columbia's existing health information technology foundation; and implement eHealth in incremental phases.

eHealth governance was set in place through the establishment of an eHealth Steering Committee (eHSC). The eHealth Steering Committee is a partnership between the Ministry of Health, the health authorities and the care provider community. It reports to the ministry's Leadership Council, with a mandate to govern the introduction of eHealth across the province. Its key sub-groups include the Provincial Laboratory Information Solution Executive Steering Committee, the Health CIO Council, the Telehealth Steering Committee, the BC eHealth Information Standards Council, the eHealth Privacy and Security Steering Committee, the Special Physician Engagement Expert Delegate Committee (SPEED), the eDrug Project Steering Committee, and the BC Public Health Information Project Steering Committee. Figure 5 on the next page shows the main committee with a number of its key subcommittees.

...ongoing governance of eHealth as an integrated system...

The eHSC includes members from the executive of each of the six health authorities, physician representatives, and several members drawn from the ministry executive. The mission of the eHSC is to accelerate the development and implementation of eHealth systems in British Columbia, and demonstrate substantial progress and material achievements over the next two to three years, while ensuring proper attention to sound fiscal management. Two major current issues for eHealth are the efficient deployment of each component across the province once developed, and the ongoing governance of eHealth as an integrated system after the initial deployment.

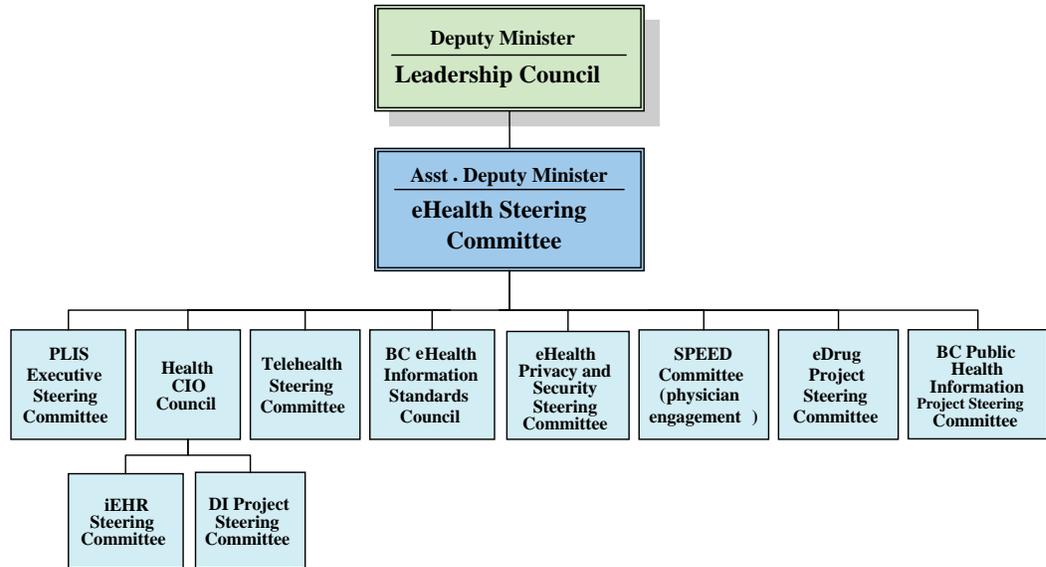


Figure 5 – eHealth Steering Committee

The ministry’s six IM/IT strategies are not only fully congruent with its efforts to implement eHealth, but each of the core components of the eHealth initiative can be directly related to one or more of the key strategies. In addition, these six ministry IM/IT strategies also support broader government IM/IT goals.

The following section of the IRMP examines the six IM/IT strategies in terms of the basic nature of those strategies, and also provides some examples of the projects being undertaken as a direct result of each.

Strategy 1: Enhancing patient care by enabling province-wide integration of and access to clinically required, person-specific data, while protecting personal privacy (electronic health record)

...towards a more seamless, integrated continuum of care.

There is general agreement among governments in Canada that an electronic health record system, offering secure access to a patient's health history and care events, would provide a substantial improvement to the effectiveness of patient care and enable system-wide efficiencies in health delivery. The EHR has the potential to provide patients with safer, higher quality care; reduce duplication of tests and information collection; and improve access to authoritative general health information and to an individual's personal health record details.

Improved access to personal health records must be balanced with diligent protection of personal health information. Information privacy is fundamental to the vision for an interoperable eHealth system. In the EHR environment, personal health information could flow through many interconnected databases and reside in multiple systems and locations. eHealth will place the utmost importance on the protection of personal health information and must comply with provincial government requirements to protect privacy and assure the security of systems.

For many years, governments, health organizations and health service providers have been collecting information about the operation of the health system. While some of this information is general in nature (for example, the total numbers of orthopedic surgeries performed in a region or in a specific hospital), much of it can also be patient specific. However, when it is patient specific, it is typically provider or facility centric (for example, patient records held in a particular physician's office or a list of prescriptions provided from a local pharmacy for a specific patient).

Much of the current patient-specific information is associated with a number of different medical offices or locations, and scattered across multiple data systems. As a result, critical person-specific information is not always readily available to individual physicians or other service providers at the time when health care decisions are being made. An interoperable electronic health record system offers the ability to electronically link together health information to directly support clinical and management decision making, and help move the health care system towards a more seamless, integrated continuum of care.

British Columbia is actively developing an EHR capability. It is a cornerstone of government's comprehensive strategy to deliver safer, faster and more effective treatment to patients. Enabling care providers to access clinical information, such as patient medication profiles, lab test and other diagnostic results using web-based technology is a high priority. British Columbia's approach to implementing an interoperable EHR system is to build on, and adapt over time, our existing technology infrastructure, systems and data repositories.

...participation from a wide array of business managers and clinical experts.

Both the provincial and federal governments have committed to the development of an EHR, and a substantial part of new federal health funding is targeted at improving health data, including the development of a pan-Canadian EHR capability. The province formed an executive-level eHealth Steering Committee to accelerate the development and implementation of electronic health systems for British Columbia. This committee is a partnership involving the ministry, the health authorities and the health care service provider community.

The EHR is ultimately more about changing business practices in health care service delivery than it is about adopting information technology. Building an electronic health record represents a major business challenge to health administrators. It involves change management for service delivery processes and related information flows, as well as participation from a wide array of business managers and clinical experts. It also requires innovative new systems development, along with integrated linkages between previously isolated systems and geographically separated communities.

Two important issues currently facing the eHealth initiative are the smooth and efficient deployment of each key component after it has been developed, and the ongoing governance for the major components, once deployed, as well as overall ongoing governance for eHealth as a comprehensive, integrated system. Addressing these two major concerns is critical to successfully delivering eHealth for British Columbia.

A complete listing of IM/IT business initiatives and requirements is contained in Appendices 3 and 4. The following briefly highlights some of the major projects being undertaken during 2007/08 in support of this EHR strategy:

Connecting Diagnostic Imaging (CDI)

BC has developed a provincial DI electronic health record strategy to use information technology to increase the value of imaging services for health care delivery. CDI will develop a solution to deliver diagnostic imaging results to end users via the interoperable electronic health record and electronic medical record systems. In this way, the design and operation of the provincial diagnostic image repository (PDI-r) will be implemented in the broader context of the electronic health record. The PDI-r will use the EHR architecture and controls, but will be designed and implemented at a higher level and with a broader scope. Features that deliver such common services as privacy and security will, therefore, be addressed in a consistent and comprehensive fashion across the whole provincial eHealth initiative, and each of the domain projects such as CDI will avoid creating their own solutions.

Healthcare Client Identity Management (HCIM)

An Enterprise Master Person Index (EMPI) will help enable EHR capability by providing the means to effectively identify the health records (lab results, medication histories, diagnostic reports, discharge summaries, etc.) that all belong to the same patient. To address the problem of identifying what records belong to a single patient, British Columbia is implementing a new technology to enhance the existing client registry system. It will enable the linkage of patient demographic information contained in the provincial and health authority key client registry/clinical systems.

British Columbia will leverage the existing capability of PharmaNet...

Interoperable Electronic Health Record (iEHR)

The iEHR is a combination of computer applications that will link care providers with electronically held health information at the point-of-care. The iEHR viewer will provide clinicians, working in most care settings, with access to a range of clinical information including lab results, medication histories and diagnostic images.

Provider Registry - Health Authority Uptake

The Provider Registry System was designed by, and implemented in, the four western provinces. This project will develop and implement the required registry interfaces to health authority business and clinical information systems.

Provincial eDrug Project

British Columbia will leverage the existing capability of PharmaNet and further enhance it to improve clinician access to patient medication histories, and increase the scope of medications recorded to include drugs dispensed in physician offices and acute care settings. This project will also set the foundation for and introduce ePrescribing, which will permit a physician to electronically generate prescriptions, and then have them available at the patient's pharmacy of choice. The system will be designed to minimize the possibility of preventable adverse drug reactions resulting from allergies or inappropriate prescription combinations.

Provincial Laboratory Information Solution

This project will support health care providers with a standardized view and timely access to laboratory information at the point-of-care, anywhere in the province. It will provide physicians and other health care providers with more complete, timely and relevant lab test information to support medical decision making.

...moving from paper-based offices to an electronic medical record system...

Strategy 2: Working with the British Columbia Medical Association and the College of Physicians and Surgeons to coordinate, facilitate and support information technology planning and implementation for physicians, and develop and implement standardized systems of electronic medical records

In their 2006 agreement, the BC Government and the BC Medical Association (BCMA) agreed to work collaboratively to coordinate, facilitate and support physician adoption of information technology related to eHealth, as described in the British Columbia eHealth Strategic Framework. This included the development and implementation in BC of standardized electronic medical record systems. The agreement took effect April 1, 2006.

For the great majority of the approximately 6,000 doctors who are members of the College of Physicians and Surgeons and in private practice in BC, this means first moving from paper-based offices to an electronic medical record system that is compatible with the provincial laboratory, diagnostic imaging, pharmacy and electronic health record systems.

The agreement with the BCMA provides for a shared investment, with the Government covering 70% of a physician's eligible cost to acquire electronic medical record systems, computers, secure network connectivity and secure email. As well, the Ministry of Health and the BCMA established the Physician Information Technology Office to coordinate the implementation of the information technology products and services with vendors and physicians. PITO provides physicians with a choice of up to six approved EMR vendors, along with access to implementation and transition support.

A complete listing of IM/IT business initiatives and requirements is contained in Appendices 3 and 4. The following briefly outlines a major project planned for 2007/08 in support of this electronic medical record strategy:

Electronic Medical Record (EMR)

The purpose of this project is to facilitate the implementation of EMR systems and other related information technology services, in physician offices throughout BC, to support primary health care and specialist medical practices.

This initiative will provide electronic medical record and practice management systems, for physicians' offices, to replace today's largely paper-based health records and to facilitate access to the provincial EHR system. They will provide such information as lab test results, medication profiles, hospital reports and diagnostic images.

Through this project, BC will actively participate in, and contribute to the creation of, national EMR standards, together with the other provinces and Canada Health Infoway. The project will also support underlying physician connectivity by providing secure network access for health service providers.

Strategy 3: Supporting the use of electronic medical record systems by physicians

eHealth is about more than just information technology.

The Physician Information Technology Office was initiated to help facilitate physician adoption of electronic medical record systems and related practice-based technology. The Physician Information Technology Office will provide information, advice and support for physicians who are making the transition to a digital office using one of the up to six recommended electronic medical record systems to be procured in 2007. PITO will operate for the term of the 2006 agreement with the BCMA, which expires in early 2012. Through PITO, the BC Government has committed more than \$107 million for physician adoption of relevant information technology over that period.

Supporting the use of electronic medical record systems by physicians is critical to the success of eHealth. In addition to the Electronic Medical Record (EMR) project already noted above under Strategy 2, the following briefly outlines a major initiative that supports this strategy and will be active during 2007/08:

Provider Engagement

eHealth is about more than just information technology. It is about changing clinical and business practices in health care. This involves change management for service delivery processes and information flows, and involves participation from both clinical experts and business managers. eHealth requires new and innovative systems development as well as integrated linkages between previously isolated systems, data islands, and geographically separated communities.

As previously noted, the SPEED Committee will provide input from medical practitioners in the design, development, and adoption of all major eHealth components. There is also an associated Special Provider Engagement Expert Delegate for Upcoming Professionals (SPEED-UP) committee, which was formed in January, 2006. The SPEED-UP committee is intended to help optimize health professional eHealth training; identify existing eHealth training and any gaps; expose students to eHealth applications; share best practices between training programs; discuss key eHealth issues impacting the medical profession (e.g. ethics, privacy, innovation, etc.); engage associated faculty members in eHealth through trainee involvement; harmonize academic planning (i.e. education and research); and generally promote life long learning in coordination with SPEED (the main eHealth provider engagement committee).

...a comprehensive and sustainable telehealth system...

Strategy 4: Expanding telehealth to improve rural and remote residents' access to health services and specialists

Telehealth is the use of communications and information technology to enable clinical consultation, health care management, general health promotion, and continuing professional education when the participants are in separate locations. It can be used to collect, organize and share information for patient assessment, diagnosis, and treatment by remotely linking medical practitioners to patients and their health care information. Telehealth can be especially useful in remote or under-serviced areas by helping to improve patient access to a number of medical services.

British Columbia's telehealth strategy has a strong focus on First Nations communities, building on the principles outlined in the *New Relationship Document*² (May 2005) and the *Transformative Change Accord: First Nations Health Plan*³ (November 2005), which affirmed a commitment to close the gap between First Nations and other British Columbians, in health and other areas, over the next ten years. For telehealth, the objective is to have all 70 First Nations communities that have a health centre fully integrated as part of a robust province-wide clinical telehealth network within ten years.

In support of these commitments, the eHealth program is collaborating with the ministry's Population Health and Wellness division to establish a comprehensive and sustainable telehealth system in BC that supports both First Nations and rural/remote communities.

A project submission has been approved by Canada Health Infoway for funding to strengthen BC's telehealth service delivery foundation and to expand the breadth of the telehealth clinical services available. This phase 1 planning project will be underway throughout 2007. In addition, the ministry will work with BC's health authorities to identify five high-priority clinical areas for telehealth expansion.

A complete listing of IM/IT initiatives and business requirements is contained in Appendices 3 and 4. The following briefly highlights three projects, encompassing development as well as planning and operational initiatives, which support this IM/IT strategy:

Telepathology Project

The purpose of the telepathology project is to provide leadership for the development and implementation of an integrated, cost effective, sustainable, provincial telepathology network. It will function within and across health authorities/regions. Initial planning phases are complete, with a schedule for pilot studies established for 2007. Improvement to patient care and safety through better access to pathology expertise, timeliness of results and quality of service within the province are the long-term expectations.

² See www.gov.bc.ca/arr/newrelationship/default.html

³ See www.gov.bc.ca/arr/social/health/plan.html

Telehealth Videoconferencing Equipment National Procurement Process

Over the next three years, Canada Health Infoway has set aside \$50 million in funding for Canadian provinces/territories to acquire new telehealth systems, services and peripheral devices. Canada Health Infoway will match funds (i.e. funding 50 percent of the cost) for telehealth videoconferencing equipment purchases. The Ministry of Health will oversee the provincial videoconferencing equipment inventory and requirement projection, and will participate in the national procurement process. This will be an opportunity for BC health authorities and their affiliates to expand their telehealth programs and to collaborate at a pan-Canadian level, developing standards and processes to implement, support, and sustain the use of videoconferencing technology.

...properly resource BC's telehealth videoconference scheduling needs.

Telehealth Videoconference Scheduling System

Last year's Telehealth Videoconference Scheduling System project was meant to help ensure that the related personnel and equipment were used to their maximum efficiency. One of the keys to the success of telehealth videoconferencing is the utilization of a common scheduling application. BC's health authorities and First Nations have piloted the Alberta Electronic Scheduling Application to determine its suitability for use in BC. The Northern Health Authority is the project sponsor, and is now developing a plan to properly resource BC's telehealth videoconference scheduling needs. As well, the project will conduct a due diligence review on the other Infoway approved scheduling systems.

A number of telehealth services are currently available in BC or are being planned, including:

- Virtual thoracic surgery clinics use videoconferencing to connect a surgeon in Kelowna with patients in Cranbrook, Trail and Kamloops for pre- and post-operative consultations. This service is now available to communities in the Northern Health Authority, and consideration is also being given to expansion to Vancouver Island.
- The Vancouver Island Health Authority, 'Namgis First Nation and the Inter Tribal Health Authority (ITHA) have signed an agreement to jointly develop First Nations chronic disease prevention and health promotion educational programming that will be delivered via videoconferencing to clinicians and health workers throughout their territories.

...support students with their clinical training.

- The expansion of the University of British Columbia Medical School from 128 to 224 first-year students by September 2010, will involve extensive use of technology enabled learning. Teaching hospitals and community sites will serve as distributed learning centres to support students with their clinical training.
- The Victoria Cancer Centre is expanding its successful gastrointestinal cancer clinical consultations from Nanaimo to sites throughout Vancouver Island. A similar service is being delivered between the Cancer Centre in Kelowna and clients in Cranbrook, Kamloops and other Interior Health Authority communities.
- The Vancouver Coastal Health Authority (VCH) is planning expansion of telepsychiatry services to Bella Bella, including delivery of cognitive behavioural therapy. This will be a partnership between VCH, First Nations and Inuit Health Branch, and the Heiltsuk Nation in Bella Bella. VCH will also be providing counseling services on diabetes and weight control through the use of a nurse for both Bella Bella and Bella Coola.
- Planning is underway to implement telemental health for the northern communities (e.g. Mt. Waddington) in the Vancouver Island Health Authority.
- The Provincial Health Services Authority will use videoconferencing to carry out court ordered psychiatric assessments.

Strategy 5: Improving the availability of quality data and analysis to assist clinical and management decision making

...based on clear and credible data or evidence.

Much of the health data currently collected has been maintained at local sites for use in managing the local operation, whether it is personal patient information to assist with the management of care delivery, or organizational, financial and staffing records to assist with the management of the institution.

The collection of much of the health data at the regional, provincial or national level has primarily been related to epidemiological studies (incidence of disease in a large population) or life events (births, deaths, and cause of death). Much of this data has been used for long-term studies of health status, and whether that status is improving or declining in various areas and as a result of specific causes. The collection of this data has often been performed on an annual or even less frequent basis, where the timeliness of the data was not a major issue.

There continues to be an increasing expectation that management decisions in the field of health service delivery are to be made in a transparent manner, and should be based on clear and credible data or evidence. The emergence of major service demand and access issues, coupled with an understanding that funding for the health care system would not grow at the same rate as service demands, has heightened the recognition of the need for faster, more responsive management of the overall system.

The resultant demand for improved and more timely data continues to drive the review of existing data and clinical systems. The overall objective is to meet an expanding management requirement for data and information to support sound, timely, evidence-based decisions.

As in previous years, the initiatives in support of this strategy tend to involve two areas:

- Enhancing existing systems or developing new systems to provide authoritative clinical health information to service providers and patients, related to care areas such as chronic disease management, emergency services and patient safety, especially in more remote locations.
- Significantly modifying existing management information systems or developing new systems to accommodate the transition of the ministry from program delivery to health system stewardship. The aim is to improve the health system's human resource planning and monitoring, and improve access to and reporting from health databases, while ensuring appropriate security for organizational and personal information.

A complete listing of IM/IT initiatives and business requirements is contained in Appendices 3 and 4. The following highlights some of the major projects with work planned during 2007/08 in support of this strategy:

Aggregated Health Information Project (AHIP)

The purpose of the Aggregated Health Information Project is to create an integrated provincial health information management infrastructure capable of quickly supporting new types of analyses, as the need arises. Through a staged and iterative process, AHIP will provide a strategic information management framework for the Ministry of Health and the health authorities.

AHIP will integrate currently separated health data sources and systems into a more accessible, knowledge-based, corporate decision support framework.

BC Public Health Information (PHIP)

BC is leading the Pan-Canadian Public Health Communicable Disease Surveillance and Management Project that will deliver the Pan-Canadian Public Health Surveillance (PHS) System, providing high quality, timely health surveillance data at the regional, provincial/territorial and Pan-Canadian levels. The BC Public Health Information Project encompasses the implementation of PHS in BC as well as the implementation of an improved environmental health/health protection system, and systems to support family health. It will provide improved support for public health field operations as well as health-related research and surveillance activities.

Data Stewardship and Access Management Project

This project is intended to develop a comprehensive solution to the management of access to personal information banks maintained within the ministry. Once implemented, the solution will allow the ministry to more effectively manage its workload as data steward by providing a centralized repository of data access and sharing information. It will also assist the ministry in responding to enquiries from the Office of the Information and Privacy Commissioner related to the status of requests for access and data sharing agreements.

...data to support better planning and decision making...

Provincial Surgical Services Project (PSSP) - Registry

PSSP is a collaborative, province-wide project aimed at:

- developing provincial standards as well as quality and performance measures for surgical services;
- creating processes for the ongoing collection of consistent surgical data to support better planning and decision making;
- ensuring existing resources are allocated and applied appropriately to areas of greatest need; and
- developing province-wide resources for health authorities to help them improve their surgical services.

The overarching purpose of the PSSP is to build a patient surgical registry based on patient needs, with a focus on transparency, consistency and reliable supporting evidence.

...an overall web redesign strategy...

Strategy 6: Expanding public access to health services and health information through web-based applications

The advent of the Internet has contributed to greatly expanded familiarity of citizens with the use of computers. Increasingly, people rely on the web to gather information, conduct day-to-day business, and to help handle their personal affairs.

Many commercial organizations in the service sector have recognized and taken advantage of major opportunities to improve the quality of client service by using the web, while at the same time, achieving substantial operating efficiencies. There is an ongoing need for the health care system to achieve similar benefits.

The IM/IT initiatives, in support of this strategy, focus on two distinct service aspects:

- Improving the delivery of specific health services by providing electronic access to health support through the ongoing redesign of the ministry website and the chronic disease management website, as well as improved delivery of the BC NurseLine system, along with possible related alternative service delivery options for ministry programs.
- Improving general information delivery through electronic access to basic health related information aided by the ongoing redesign of the ministry website, as well as seeking new electronic delivery systems for BC HealthGuide and surgical wait list information.

A complete listing of IM/IT initiatives and business requirements is contained in Appendices 3 and 4. The following briefly highlights two of the projects planned for work during 2007/08 in support of this strategy:

BC Clinical Practice Guidelines and Protocols Web Enhancement

A better organized, inviting and interactive website targeted at physicians will replace the existing site, and will improve access to and utilization of the Clinical Guidelines.

Health Website Redesign

This project is intended to develop an overall web redesign strategy and plan for the ministry's website that is theme based, and designed to ensure ease of access and navigation for the public, while maintaining underlying consistency with the ministry's service plan and broader government communications requirements.

In Closing

*...integrated provincial
health information
management...*

An earlier section highlighted how key, proposed initiatives are aligned with the six ministry IM/IT strategies. In turn, the ministry IM/IT strategies support the four key government IM/IT goals: to enhance service and access for clients; to contain and reduce IM/IT costs across government; to improve internal operational efficiency and decision making; and to create an environment that supports provincial economic development.

Many of the current projects represent continuations of the work described in the 2006/07 Information Resource Management Plan. These projects will continue to be shown until they are fully implemented. New projects will be introduced as and when they receive the appropriate ministry approvals.

The capital base budget covers a range of IT projects and upgrades. The biggest is the Aggregated Health Information Project (AHIP), with an anticipated 2007/08 investment of \$4 million. AHIP will integrate currently separated health data sources and systems into a more accessible, knowledge-based corporate decision support framework. This new integrated provincial health information management infrastructure will be accessible by more health system managers than the present mix of legacy databases and applications. It will also be able to quickly support new types of analyses to meet emerging management information needs.

Other projects included in the base budget involve improvements and innovations in tracking and reimbursing services provided by physicians, other health care providers, and various public and private sector institutions. Still others offer enhanced security provisions for a number of ministry data collection systems; improvements to data quality, timeliness and reliability; and more effective, comprehensive licensing systems for community care and other health facilities.

In developing the 2007/08 Information Resource Management Plan, an extensive consultation and planning process was undertaken with ministry program areas to identify their information management and technology requirements. In addition, a Capital Planning Executive Committee, composed of senior ministry program representatives, was established to review those requirements and proposed initiatives in terms of their strategic value, urgency, cost saving, cost sharing and risk.

...work funded and undertaken with confidence.

The Ministry of Health evaluates the critical aspects of each IM/IT initiative along with its partners, before making the decision to invest its limited resources. Each potential project will be thoroughly scrutinized for the strategic value it offers to the ministry, its partners and stakeholders; its urgency; its cost and return on investment; how it supports the ministry Service Plan; and how much potential risk is inherently associated with the project.

Once fully reviewed by the ministry's Capital Planning Executive Committee, a well-founded IM/IT investment decision can be properly justified, and the work funded and undertaken with confidence.

Appendix 1: Knowledge Management and Technology Division

Resource Summary

Financial and Human Resource Estimates		
	2006/07 Budget (Restated)	2007/08 Budget
KMT Division (excluding Vital Statistics)		
Operating Expenditures	\$ 35,009,000	\$ 53,520,000
FTEs	174	165
Capital Expenditures		
Information Systems	\$ 7,700,000	\$ TBD
Electronic Health Record		
Ministry	11,307,000	TBD
Canada Health Infoway	33,922,000	TBD
Total Capital	\$ 52,929,000	\$ TBD
Vital Statistics Agency		
Operating Expenditures	\$ 7,552,000	\$ 7,812,000
FTEs	89	89
Capital Expenditures		
Information Systems	\$ 525,000	\$ 405,000
Furniture/Equipment	25,000	25,000
Total Capital	\$ 550,000	\$ 430,000
Revenue	\$ 9,249,000	\$10,900,000
KMT Division - Total		
Operating Expenditures	\$ 42,561,000	\$ 61,332,000
FTEs	263	254
Capital Expenditures	\$ 53,479,000	\$ TBD
Revenue	\$ 9,249,000	\$ 10,900,000

Figure 6 – Resource Summary

Notes:

1. This chart summarizes the financial and human resources within the ministry allocated to Knowledge Management and Technology Division operations for 2006/07 and 2007/08.
2. 2006/07 figures have been restated for comparative purposes to reflect inter-ministry and intra-ministry transfers.
3. In addition to the above estimates for capital expenditures, BC Ambulance Services and the Provincial Lab Coordinating Office are allocated capital budget for information systems capital expenditures.
4. In addition to the above estimates for capital expenditures, the six health authorities are each allocated capital budget for information systems capital expenditures.

KMT Organization Structure

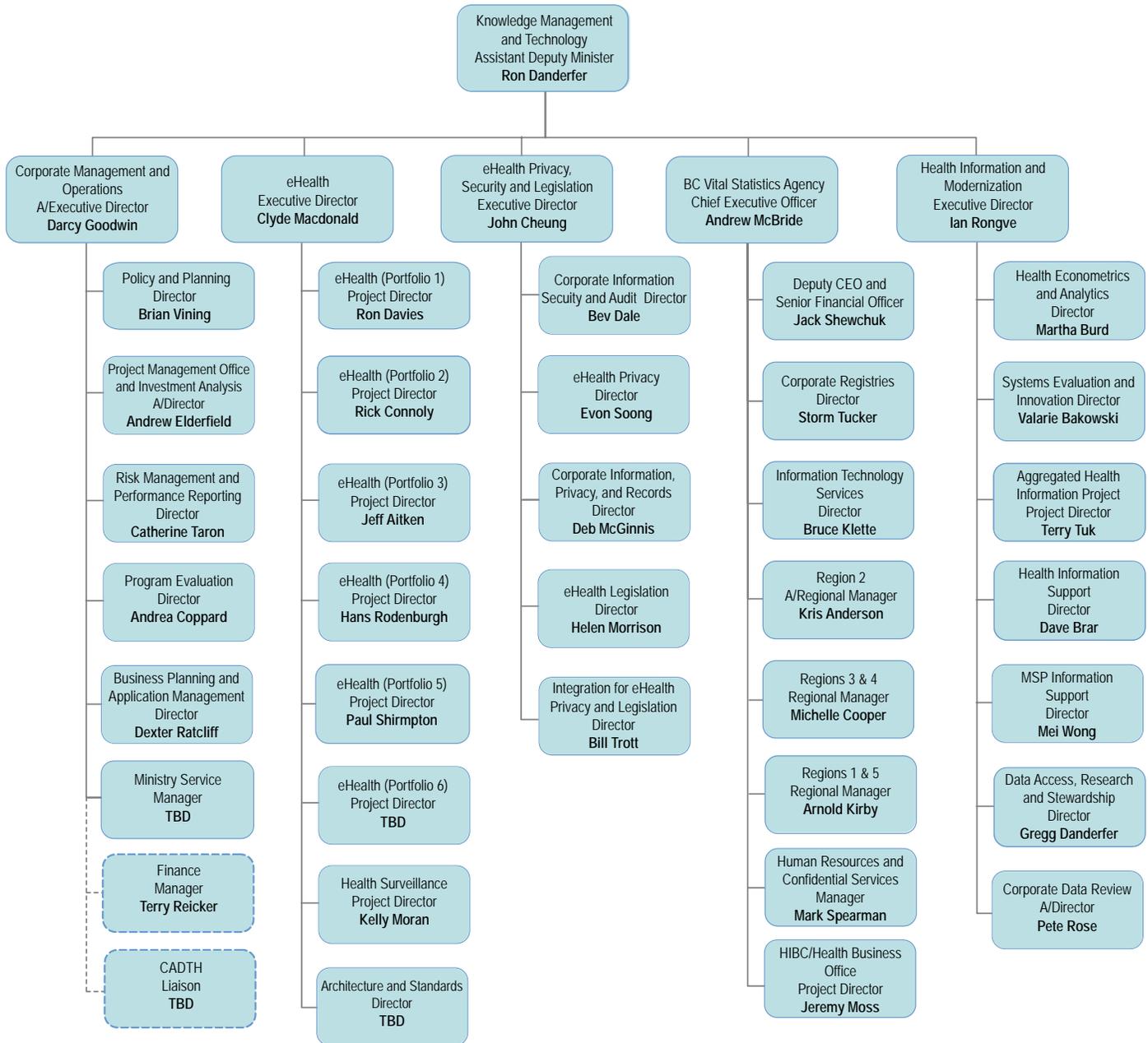


Figure 7 – KMT Organization Structure

Accountability Statements

I am the Assistant Deputy Minister of the Knowledge Management and Technology Division. I am accountable for the following overall results:

- Enable the consolidation and transformation of information management and information technology systems into one portfolio to ensure a coordinated approach in this critical area;
- Build the capacity for the integration of data into daily operations and policy, and support the ministry's stewardship role;
- Provide leadership for eHealth and all other ministry IM/IT initiatives, ensuring that the IM/IT strategies, policies, standards and technology initiatives support the integrated delivery of system-wide health information management; and
- Ensure the overall strategic development, implementation and evaluation of the Ministry of Health information resource management plans.

In addition to my more general responsibilities, I am accountable for the following specific deliverables in 2007/08:

eHealth

Lead the work to acquire the necessary data and information infrastructure to support successful health outcomes for the future. In advancing the eHealth agenda, ensure that priority setting and sequencing are treated as key factors. In addition, ensure that the provincial objectives for interoperability, security, access management and authorization are achieved. Key eHealth initiatives and deliverables include:

- Provincial Laboratory Information Solutions
- Interoperable Electronic Health Record
- eHealth Drug (eDrug)
- Premier's Technology Council Support (particularly eHealth recommendations)

Data Security and Protection of Privacy

Implement FOIPPA policy regarding access to and security of health data and information.

Data Analysis and Interpretation

Facilitate and support the success of programs and services across the ministry and health authorities through standard and customized data analyses, reports and interpretation, and management information tools and standard methodology for data collection reporting. This work includes providing health sector leadership and stewardship in data access, research, health information support, economics and analytics.

Original signed by,

Ron Danderfer

I am the A/Executive Director of the Corporate Management and Operations Branch in the KMT Division. I am responsible for strategic business planning and policy, provision of business solutions to the ministry including outsourced services, the project management office, divisional financial management oversight, project risk management, and health authority IM/IT plan reviews. In addition to my overall responsibilities, I am accountable for the following specific deliverables in 2007/08:

- In collaboration with the Project Management Centre of Excellence, develop a framework for delivery of project management training and services that will enable and promote best practices in project management;
- Develop and implement budget management processes and procedures for eHealth projects that will reflect appropriate management accountability consistent with the organizational structure;
- Develop a resource capacity to evaluate project and program proposals, and their associated business cases;
- Develop and implement a plan for review of existing ministry IM/IT policy in the context of government-wide core policy;
- Develop and publish the annual ministry Information Resource Management Plan;
- An eHealth (enterprise-wide/ program-level) Risk Management Plan;
- A program assurance (risk “audit”) policy and procedures document/manual, including a business process diagram, and definition of roles and responsibilities;
- Organize and staff the ministry’s operation for the management of the government-wide iStore technology procurement system, and manage the associated ministry-wide technology services and equipment procurement budget; and
- Develop and implement a business consulting and resource allocation model, and planning process.

Original signed by,

Darcy Goodwin

I am the Executive Director of eHealth in the KMT Division. I am responsible for the effective development and implementation of eHealth projects across the province by working closely with the health authority CIOs. In particular, I am responsible for ensuring development of the electronic health record and ensuring its interoperability across BC, while protecting privacy and security, as well as its compliance with provincial standards. I also work with other jurisdictions to advance national eHealth strategies.

For eHealth projects, as identified and approved by the eHealth Steering Committee, the Health Leadership Council, and the ministry, I am accountable for the following specific deliverables in 2007/08:

- Develop and coordinate project charters and comprehensive project business plans;
- Provide ongoing leadership for standards and architecture development both within KMT and across the eHealth program, which includes the eLab, eDrug, Physician EMR and First Nations Telehealth initiatives;
- Ensure that eHealth projects comply with the provincial eHealth architecture and standards;
- Provide ongoing project management support and coordination;
- Ensure the execution of projects within timeline and budget, resolving or escalating any related issues where necessary;
- Monitor and report progress;
- Work with the health authorities and other health agencies to determine and implement appropriate information systems with secure views of data for analytical requirements to support enhancement of the health care system;
- Negotiate with Canada Health Infoway regarding project funding;
- Identify and promote joint procurement and shared services within the health sector; and
- Coordination with other Canadian jurisdictions, health authorities and public health professionals to develop and test Panorama, the Pan-Canadian public health surveillance system, and integrate and implement the British Columbia instance of the Panorama system.

Original signed by,

Clyde Macdonald

I am the Executive Director of the eHealth Privacy, Security and Legislation Office in the KMT Division. The Office works with all eHealth project teams and plays the lead role in the development of privacy, security and records management policies and standards for provincial eHealth projects. In addition, the office is also responsible for information privacy protection, freedom of information (FOI), records management and data/system security and audit for the ministry.

I am accountable for the following specific deliverables in 2007/08:

- Identify any new legislation required to reflect eHealth privacy or security policies or other legislative implications related to eHealth;
- Prepare Ministerial Orders pursuant to amendments to the *Health Act* regarding Health Information Banks, and manage related consultation and information sharing processes;
- Work closely with the ministry's Legislation Office to provide input and direction on privacy and data security matters related to legislative issues and requirements;

- Work with the Ministry of Labour and Citizens' Services to develop new processes for managing changes to FOI and protection of privacy legislation, and implementation of Ministerial Orders affecting the ministry and health authorities;
- Develop, deploy and maintain the ministry's privacy protection, FOI, records management and security policies and procedures;
- Lead ministry information privacy and security system audits;
- Provide privacy, FOI, records management and data security advice and support to ministry program areas and services, including external partners such as the health authorities;
- Liaise with other government agencies, ministries and external stakeholders with respect to matters related to privacy, FOI, records management and data security;
- Develop and implement a governance framework for eHealth privacy and security, including establishing a privacy and security steering committee, working groups, and related consultation and information sharing processes; and
- Develop and deliver an eHealth privacy and security framework that will enable the establishment of eHealth systems in BC, and liaise with Canada Health Infoway on privacy issues relating to their funded eHealth projects.

Original signed by,

John Cheung

I am the Executive Director of the Health Information and Modernization Branch in the KMT Division. I am responsible for overall data stewardship for ministry administrative data excluding BC Vital Statistics and BC Ambulance Services, building a modeling and analytical capacity in the Ministry of Health and the BC health system, and for developing a knowledge sharing infrastructure. I am accountable for the overall management of the branch, and ensuring the cost-effective operation of the data capture and storage systems for health information used by the ministry and the health authorities as well as for developing effective information management and information technology strategies that set the direction for a provincial approach to health information management and electronic service delivery, and more specifically, the overall direction and management of the following areas and initiatives:

- The branch's knowledge integration and development area, promoting and managing knowledge transfer, and assisting ministry programs to better use data, tools and services to inform evidence-based decision making; and
- The Aggregated Health Information Project – developing an effective provincial health information infrastructure.

In addition to my overall responsibilities, I am accountable for the following specific deliverables in 2007/08:

- Develop provincial models addressing long-term or critical issues facing the BC health care system;

- Timely analysis of current and ongoing issues facing the health care system in BC;
- Support for knowledge transfer infrastructure in the Ministry of Health and the BC health system;
- Progress in implementing the ministry data warehouse for the production of regular and ad-hoc reports;
- Analyses, reviews and assessments, and development of health strategies that improve the return on provincial investment of financial, human and capital resources;
- Verify data quality and the interpretation of material submitted through the KMT Data Quality and Assurance Program;
- Develop and implement improved processes and an updated data access agreement template, incorporating current legislation, privacy requirements and linkages with external databases, for researchers requesting health data from the ministry;
- Implement new financial and statistical indicators for the HAMIS web-based management information tool for health authorities;
- Improve the quality of acute care, financial and statistical data through the efforts of joint ministry/health authority/CIHI data quality working groups for the MIS and DAD;
- Progress in implementing the ministry data warehouse for the production of regular and ad-hoc reports; and
- In collaboration with the Health Authorities Division, develop a new Surgical Wait List website that incorporates benchmarks for medically accepted wait times for priority areas, as directed by the federal/provincial/territorial Ministers of Health.

Original signed by,

Ian Rongve

I am the Chief Executive Officer of the Vital Statistics Agency (VSA) in the KMT Division. I am accountable for the overall management of the VSA, and to ensure the integrity and cost-effective operation of the related data registries. I am accountable for the following specific results in 2007/08:

- Continued effort to reduce the time delays in the birth reporting process with a target of 45 days for 90% of births by March 2008, from a level of 50 days for March 2007 (time from the date of birth to receipt of the Registration of Live Birth form from the parents);
- Work with the Perinatal Database group of the BC Reproductive Care Society to streamline birth reporting systems, reduce duplication, and enhance timeliness of reporting;
- Work with the BC Coroners Service to develop an electronic medical certification of death for implementation in fiscal 2008/09;

- Continue to work with federal government departments and other provinces in setting up a federal /provincial /territorial network that will allow vital event data to be delivered from “producing” organizations (the VSA) to authorized “subscribing” organizations (federal departments and the vital statistics organizations of other provinces and territories), including verification of key information;
- Implement a system for electronically registering newborns with the Social Insurance Register (federal) for assignment of social insurance numbers and enrollment with the Medical Service Plan as part of the birth registration process;
- Implement a birth certificate verification for services provided through Service Canada;
- Enhance vital event registration and services through increased use of public sector partnerships and the development and implementation of marriage licence issuance systems;
- Develop new data sharing agreements with users of vital statistics data to ensure compliance with recent legislative changes;
- Implement the BC government credit card system for the payment of VSA fees for service and a web-based system to facilitate citizen application for VSA services;
- Complete the development (in collaboration with the Vital Statistics Council for Canada) and implementation of a new birth certificate document to increase document security;
- Participate with representatives from other ministries in the development of a government policy for individual identity determination and identity management, and, a pilot for an enhanced driver’s licence to facilitate border crossing by citizens, without the need for a passport;
- Implementation of the Enterprise Master Patient Index in three health authorities, and development of plans for implementation in the others plus the Medical Services Plan; and
- Facilitate the uptake of the ministry Provider Registry by all health authorities.

Original signed by,

Andrew K. McBride

Appendix 2: Key Stakeholders and Partners

The ministry's information resource management activities involve a broad range of public and private partners – both national and provincial (in addition to other parts of the British Columbia government). Key stakeholders and partners include:

National

Canada Health Infoway (Infoway)

Infoway's mandate is to accelerate the development and adoption of electronic health information systems within Canada. An independent, not-for-profit corporation, Infoway is a partnership of federal, provincial, and territorial governments. It has \$1.5 billion (including the increase from the 2007 federal budget) in capital to invest with partners to develop and deploy robust, reusable, interoperable electronic health record solutions, and replicate them throughout Canada's health care system.

As of February 2007, Infoway approved investments of up to \$106 million for the development and deployment of EHR solutions in BC and further potential investments of up to \$52 million have been identified. In addition, Infoway has invested approximately \$5 million in the multi-jurisdiction Provider Registry project led by BC, and has committed over \$40 million towards the development of a Pan-Canadian Health Surveillance solution by BC.

Infoway's approved and anticipated BC investments are allocated between initiatives as follows:

- Provider Registry BC Implementation - \$1.7 million
- BC Healthcare Client Identity Management - \$9.1 million
- Provincial Laboratory Information System - \$17.1 million
- Interoperable EHR - \$33.4 million
- Connecting Diagnostic Imaging - \$15.7 million
- eDrug Solution (PharmaNet upgrade) - \$22.7 million
- Public Health Information Project - \$7 million
- End User Strategy - \$1.3 million
- Interior HA Regional Picture Archive and Communications System - \$8.8 million
- Fraser HA Regional Picture Archive and Communications System - \$15.4 million
- BC Telehealth Strategic Plan - \$384,000
- Telehealth 811 Project - \$77,000
- Telehealth Business Terminology Project - \$22,000
- Telepathology Solution - \$1.2 million

- Telehealth Governance - \$1.1 million
- eHealth Coordination and Integration Project - \$9.3 million
- Patient Safety Learning System - \$2.7 million
- Decision Support Tools supporting Mental Health and Addictions Services - \$1.8 million

The ministry, in conjunction with the health authorities, continues to work collaboratively with Infoway and to explore other opportunities for Infoway investment in the province.

Canadian Institute for Health Information (CIHI)

CIHI is an independent, pan-Canadian, not-for-profit organization working to improve the health of Canadians and support the health care system by providing high-quality, reliable and timely health information.

The ministry works with CIHI, and makes extensive use of its health information functions to develop and manage health databases and registries; conduct research and analysis; help develop national health indicators; coordinate and promote the development of national health information standards; and disseminate health information.

Health Canada

Health Canada is the federal government's internal focal point for eHealth, and multi-channel government service delivery.

The ministry works with Health Canada in a number of areas, including eHealth.

Identity Council for Canada

The Identity Council provides support for the Vital Statistics Council Committee for Standards Development, oversight of the National Routing Pilot project, and is responsible for adoption of a national identity framework at the federal level.

Statistics Canada

Statistics Canada has two main objectives: to provide statistical information and analysis concerning Canada's economic and social structure, and to promote sound statistical standards and practices. The registration of all live births, stillbirths, deaths, and marriages that occur in the Province of British Columbia are submitted to Statistics Canada for the compilation of national statistics for these vital events. The ministry, through the Vital Statistics Agency, identifies and reports problems and errors using automated coding systems for generating International Classification of Disease (ICD) codes.

Vital Statistics Council for Canada

The Vital Statistics Council for Canada is an advisory group composed of the heads of the vital statistics divisions/agencies from the provincial and territorial governments and the Health Statistics Division of Statistics Canada. The council provides a forum for developing common approaches for collecting vital statistics, sharing information with external parties (e.g. social services departments, law enforcement agencies, individuals), and for facilitating problem solving by sharing experiences, research findings and expertise among the jurisdictions. BC currently co-chairs the council.

Western Health Information Collaborative (WHIC)

A process initiated in 1999 by the Western Premiers and Deputy Ministers of Health; WHIC explores collaborative opportunities with respect to health infostructure initiatives.

One of the major successes of WHIC has been the joint development of the Provider Registry, led by BC. Additional functionality for the registry is currently being added through funding by Canada Health Infoway. The ministry has ongoing engagement with WHIC through the WHIC Leaders Forum.

Provincial

BC eHealth Information Standards Council (eHISC)

The eHISC is intended to facilitate and oversee the provincial health information and technology standards management and approval process. In doing this, it is to support the strategic direction of the British Columbia eHealth Steering Committee in its province-wide implementation of eHealth, and encourage timely information sharing and constructive dialogue with health information stakeholders and with the broader public. eHISC brings together an informed and experienced group of health system experts, including physician, dentist, nurse and pharmacist representatives, BC university representatives, ministry and health authority staff, as well as other technical specialists.

British Columbia Medical Association (BCMA)

The BCMA is a voluntary association which represents more than 95% of the doctors practicing in British Columbia. The role of the BCMA is to advance the practice and science of medicine and the health of British Columbians by working for the improvement of medical education, health care legislation, hospital and other health services, and to achieve “appropriate compensation” for professional services.

The Information Technology Advisory Committee is a forum for communication between the Ministry of Health and the BCMA on the strategic direction and application of information management and information technology.

College of Pharmacists

The College of Pharmacists of British Columbia is the licensing and regulatory authority for the profession of pharmacy and its practice environment. The college obtains its authority from the *Pharmacists, Pharmacy Operations and Drug Scheduling Act*, and is accountable to the public.

College of Physicians and Surgeons

The College of Physicians and Surgeons of British Columbia is a statutory body established by the Provincial Legislature in 1886. It is composed of physicians registered in the province to practice medicine and surgery.

The functions of the college are to: protect the public, maintain the standards and honour of the profession, establish rules for the proper professional conduct of its members, determine qualifications for registration and licensure, and to evaluate the competence and conduct necessary to maintain registration and licensure.

eHealth Steering Committee (eHSC)

The eHealth Steering Committee is a partnership between the ministry, the health authorities, and service provider representatives (e.g. physicians). The committee provides leadership in matters ranging from strategy, governance structure, project priorities, initiative leadership and financial arrangements to implementation approaches designed to ensure an effective electronic health system for British Columbia. The eHSC is chaired by the Assistant Deputy Minister, KMT.

The BC eHealth Information Standards Council, the Health CIO Council, the Provincial Lab Information Solution Executive Steering Committee, the eDrug Project Steering Committee, the Special Physician Engagement Expert Delegate (SPEED) Committee, the BC Public Health Information Project Steering Committee, and the Telehealth Steering Committee all report to the eHealth Steering Committee. The eHealth Steering Committee reports to the BC Health Leadership Council, which is comprised of the six health authority CEOs and members of the ministry's senior executive. The Leadership Council is chaired by the Deputy Minister of Health. Figure 5 depicts the basic structure of the eHealth Steering Committee.

Health Authorities

The health authorities have the main responsibility for delivering health services for the province. The six health authorities are: the Northern Health Authority, Interior Health Authority, Fraser Health Authority, Vancouver Coastal Health Authority, Vancouver Island Health Authority, and the Provincial Health Services Authority.

The ministry receives data from and provides information to BC's health authorities. It also works with the health authorities at the IM/IT planning and project level, largely through the leadership of the eHealth Steering Committee and its subcommittees.

Health CIO Council

The Health CIO Council is comprised of the executive director of the ministry's eHealth program and the chief information officers of the six health authorities. The purpose of the council is to establish and implement a unified provincial IM/IT vision and plan for the provincial health care system, and to ensure that collaboration mechanisms and common IM/IT approaches, where practical, are in place to foster underlying business success.

Office of the Chief Information Officer

The office provides government-wide leadership and strategic direction in the management of IM/IT resources. It establishes and manages British Columbia's IM/IT governance framework. The office leads the transformation of government operations to electronic service delivery, and develops IM/IT strategies to help position British Columbia's citizens and businesses to better participate in the global economy.

The Ministry of Health commits significant resources to cross-government IM/IT activities, including sharing methodologies (e.g. project management) and information (via advisory committees).

Office of the Information and Privacy Commissioner (OIPC)

The Office of the Information and Privacy Commissioner for BC is independent from government. It monitors and enforces British Columbia's *Freedom of Information and Protection of Privacy Act* (FIPPA) and the *Personal Information Protection Act* (PIPA). FIPPA allows access to information held by public bodies (such as ministries, universities and hospitals) and determines how public bodies may collect, use and disclose personal information. PIPA also sets out how private organizations (including businesses, charities, associations and labour organizations) may collect, use and disclose personal information.

In addition to ongoing regular communication between KMT and the OIPC, the division's eHealth Privacy, Security and Legislation Office is actively liaising and consulting with the OIPC on privacy issues pertaining to implementation of eHealth projects.

Physician Information Technology Office (PITO)

The Physician Information Technology Office will provide physicians with approved vendor options, give them technical and change management support, and serve as the source for provincial funding of 70% of their eHealth system acquisition costs. The support provided by PITO helps cover a physician's cost for the necessary computers, secure email access, EMR software, connectivity, and access to the provincial eHealth systems.

The PITO operation reflects the 2006 agreement between the BC government and the BC Medical Association, which sets out a responsibility framework for the eHealth-related transformation of physicians' offices and practices. The Physician Information Technology Office is expected to operate until early 2012. The BC government has committed more than \$107 million dollars to physician IT support over that period, through PITO.

Provincial Lab Coordinating Office (PLCO)

The PLCO is charged with developing a patient-centred medical lab service system for British Columbians that can provide high quality, affordable, and accessible service. The PLCO is part of a comprehensive initiative to renew lab service delivery in the province, and ensure better coordination of lab test results for patients.

The ministry works with the PLCO to develop a provincial lab information system that will be more efficient (in its use of people, processes, and technology), prevent the needless duplication of testing, and provide for better patient care.

Provincial Lab Information Solution Executive Steering Committee

Reporting to the eHealth Steering Committee, the Provincial Lab Information Solution (PLIS) Executive Steering Committee is charged with guiding and directing the development of a patient-centred lab service information system for British Columbians. PLIS is a comprehensive initiative to renew and streamline medical lab service delivery in the province, integrate lab information with BC's electronic health systems, and ensure better coordination of lab test results for patients.

SPEED Committee

Reporting to the eHealth Steering Committee, the Special Physician Engagement Expert Delegate (SPEED) committee helps ensure that physicians and other health professionals are properly informed of and engaged in the design and implementation of the electronic health systems in British Columbia. SPEED is a partnership of the Ministry of Health, the health authorities and key stakeholders from the health care provider community.

The Special Provider Engagement Expert Delegate: Upcoming Professionals (SPEED UP) Committee is an associated committee that seeks to optimize health professional training on eHealth; identify existing eHealth training and any gaps; expose students to eHealth applications; share best practices between training programs; discuss key eHealth issues (ethics, privacy, innovation, etc.); engage faculty members in eHealth through trainees' involvement; harmonize academic planning (education and research); and promote life-long learning in coordination with the SPEED committee. It has a wide membership drawn from the health academic community, including medicine, nursing, pharmacy, dentistry, the College of Health Disciplines, as well as medical and nursing students.

Telehealth Steering Committee

Reporting to the eHealth Steering Committee, the Telehealth Steering Committee has representation from the six health authorities, the Health CIO Council, medical schools, the ministry, and the Premier's Technology Council.

The committee identifies and defines provincial priorities for telehealth that respect health authority and provincially identified health care needs, and endeavours to align them with strategies identified by Infoway for potential funding.

Universities

The ministry works with a number of colleges and universities on a variety of health information issues. They include: the BC Academic Health Council to explore collaboration opportunities between health and education sectors; the School of Health Information Science at the University of Victoria to develop curriculum on health information management and physician education; the BC Institute of Technology to examine health care technology issues; and Simon Fraser University to establish a partnership whereby the Vital Statistics Agency will share its existing warehouse technology with the university, and in turn, the university will assist with ongoing development and will be the clearinghouse for academic users requesting access to the warehouse for research or teaching purposes.

Workplace Technology Services (WTS)

Services provided by WTS include integrated, common IT services, finance and administration services, payroll services, as well as procurement and supply services.

The ministry works with WTS to clarify its outsourcing strategy and information technology decision-making process, service levels, costing models, the government migration strategy for mainframe/legacy systems, and the cost implications for remaining legacy users.

Other Stakeholders and Partners

In addition to the groups listed above, there are numerous other provincial stakeholders, including:

- BC Civil Liberties Association
- BC Coalition of People with Disabilities
- BC Dental Association
- BC Freedom of Information and Privacy Association
- BC Patient Safety Task Force
- BC Persons With AIDS Society
- BC Pharmacy Association
- BC Schizophrenia Society
- Canadian Mental Health Association, BC Division
- College of Registered Nurses of BC
- Michael Smith Foundation for Health Research
- Seniors Network BC

Appendix 3: eHealth Projects

The ministry's information resource management activities involve a broad range of projects and initiatives, with the greatest present effort focused on eHealth. The eHealth clinical and foundational projects that are targeted for implementation within the next one to two years include:

Aggregated Health Information Project (AHIP)

AHIP is intended to create an integrated, provincial health information management infrastructure, capable of quickly supporting new types of analyses, as the need arises. Through a staged and iterative process, AHIP will provide a strategic information management framework for the Ministry of Health and the health authorities. AHIP will integrate currently separated health data sources and systems into a more accessible, knowledge-based, corporate decision support framework.

BC Public Health Information Project (PHIP)

In 2005, the British Columbia Ministry of Health initiated a project to review and improve public health information management and public health surveillance technology in BC.

In 2006, an agreement was reached between British Columbia and the Yukon Territory to partner on this initiative. This BC /Yukon project (PHIP) has three major components:

1. The communicable disease component will determine how to best implement the systems in BC to support communicable disease surveillance and control, based on the system that is being developed and provided to all Canadian jurisdictions by the Pan-Canadian Communicable Disease Surveillance and Management Project.
2. The environmental health/health protection component will support public health field operations by developing requirements and assessing tools for managing environmental health and health protection information, and supporting the research and surveillance requirements of environmental health/health protection stakeholders.
3. The family health component will support public health providers in their provision of maternal/child services.

Additionally, the project will develop a strategy to ensure the PHIP solution fits within the context of British Columbia's EHR initiatives.

Chronic Disease Management - Integration

The Chronic Disease Management (CDM) Toolkit, EMR (electronic medical record) and eMS (electronic medical summary) all represent separate applications or interfaces. This project will develop a strategy to promote the integration of the CDM functionality and eMS messaging standard within the EMR standards.

Connecting Diagnostic Imaging (CDI)

Diagnostic imaging (DI) serves a critical role in the delivery of high quality health care in British Columbia. Diagnostic images and their interpretation are of significant clinical value, but their supply is constrained by the high capital and operational cost of the imaging modalities and by the limited availability of the skilled health professionals that support imaging services. In response, BC has developed a provincial DI electronic health record strategy to use information and communications technology to increase the value of imaging services for health care delivery.

CDI will develop a solution to deliver diagnostic imaging results to end users via the interoperable electronic health record and electronic medical record systems, and thus the design and operation of the provincial diagnostic image repository (PDI-r) will be implemented in the broader context of the electronic health record. The PDI-r will use the EHR architecture and controls, but designed and implemented at a higher level and with a broader scope. Features that deliver services such as privacy and security will, therefore, be addressed in a consistent and comprehensive fashion across the whole provincial eHealth initiative and each of the domain projects such as CDI will avoid creating its own approach.

The PDI-r will integrate with other key clinical and patient data systems within British Columbia's iEHR program to provide a longitudinal view of electronic DI records across the province. Users of the PDI-r will be able to use the iEHR as a route to access provincially held DI results that are necessary for the care of the patients, but are not accessible through the local PACS system.

Electronic Medical Record (EMR)

On May 5, 2006, the British Columbia Medical Association and the provincial government completed negotiations on a new agreement covering physicians in British Columbia. As part of this negotiation, the parties agreed to work collaboratively to coordinate, facilitate and support information technology planning and implementation for physicians within the eHealth strategic framework.

Appendix C of the agreement describes the strategy to implement an electronic medical record system, and the supporting infrastructure, in the offices of BC physicians. It also describes the plan to set up a Physician Information Technology Office to facilitate and support the implementation of the EMR.

The requirement, in Appendix C of the agreement, to implement EMR products and services in BC physician offices has resulted in the launch of three separate but related projects:

1. Definition, procurement, packaging and implementation of the infrastructure necessary to run the EMR applications in physician offices (e.g. secure network, email);
2. Definition, procurement and bundling of qualified EMR products and services (including required computer hardware and helpdesk services); and

3. The set-up of PITO, including the framework, policies and procedures related to supporting physicians in their EMR implementation, and provision of the associated funding and services.

Healthcare Client Identity Management (HCIM)

Today, patient records exist in numerous care settings, residing in a variety of different information systems that each hold patient demographic information. To address the problem of identifying which records belong to a single patient, British Columbia developed a provincial client identity management model and implementation strategy. This will facilitate the management of client identity that can support the needs of clinical care delivery, both at the regional level and for situations where patient care extends beyond the boundaries of a single health authority. In July 2003, the BC Health CIO Council approved the plan, recommended by a working group representing the health authorities and the Ministry of Health, for a provincial Enterprise Master Person Index (EMPI) that supported the immediate health authority needs to integrate data, as well as the longer term requirements for a provincial EHR.

The HCIM project will procure the required products and services to perform comprehensive planning for implementation of the provincial Enterprise Master Person Index. EMPI implementation will be approached in phases, with the initial HCIM scope covering implementation of a provincial EMPI and the integration of a selected number of priority health authority source systems and the provincial Client Registry System.

Immunization Data and Physician Office Strategy

Currently, only immunizations given by public health nurses are captured electronically and stored in the Public Health Information System. Immunizations given in physician offices are not captured or entered into the system. This project will develop a strategy to capture the majority of immunizations in the Public Health System and make them electronically available to care providers.

Interoperable Electronic Health Record (iEHR)

From a clinical and business perspective, the iEHR project solution will deliver a private and secure EHR service for BC and will enable sharing of electronic health records data across the continuum of care for the appropriate caregivers. It is established from the needs and requirements of service providers and patients to have sharable clinical information available using an EHR infostructure. Physicians will view this information on a real-time transactional basis through a provincial viewer. Expected benefits include improved patient safety and quality of care, as well as cost and process efficiencies.

From a technical perspective, the solution will acquire or reuse, integrate and deploy the core components of an EHR infostructure, including the HIAL (Health Information Access Layer), the LRS (Longitudinal Record Services), the Shared Care Record and the provincial viewer. The solution will also integrate a number of provincial and health authority level systems in order to establish the complete set of services required to create a working EHR infostructure, including registries and specific domains such as drug, laboratory and diagnostic imaging. The solution will be standards-based, with a firm commitment to the standards set by the Pan-Canadian EHR standards collaboration process.

InterRAI Implementation - Residential Care

Implement interRAI (Residential Assessment Instruments) to help guide consistent community-based service delivery. The interRAI data will be used to facilitate evidence-based clinical practice and policy decisions.

Pan-Canadian Public Health Communicable Disease Surveillance and Management Project

British Columbia is leading development of the Pan-Canadian Public Health Communicable Disease Surveillance and Management solution ("Panorama") that will deliver the Pan-Canadian Public Health Surveillance System, supporting high-quality, timely health surveillance and outbreak response data at regional, provincial/territorial and Pan-Canadian levels.

Patient Access and Flow: Mental Health and Addictions

This project supports timely discharge and placement for the high risk mental health and addictions patient population. Through the development of patient risk assessment/dependency profiles, providers can match real-time client needs against an inventory of the community-based capacity. Concurrently, accurate new data will be captured that will offer valuable insights into the strategic direction that future resource and program planning will need to take to deal with the growing challenge of ensuring that mental health care is delivered in both an efficient and compassionate manner.

Patient Safety Learning System

The primary goal of this project is to make health care safer, while also improving the quality of care. This goal will be accomplished through the implementation of a province-wide, web-based safety incident reporting and management information system that will:

- support identification, investigation, and analysis of all safety and risk-related incidents (including safety hazards and near misses);
- capture and facilitate responses to client feedback (including complaints, compliments and requests for information); and
- facilitate claims management.

Such reporting and related functions are fundamental to improving patient safety, as they provide a means through which learning from actual experience can occur. The results of data analysis and investigation can be used to formulate and disseminate recommendations for change in order to prevent future problems and promote a safer health care system. The Patient Safety Learning System will support reporting and learning from events occurring across the continuum of care, in hospitals, care facilities and the community.

Provider Engagement

eHealth is about more than just information technology. It is about changing clinical and business practices in health care. It involves change management for service delivery processes and information flows, and involves participation from both clinical experts and business managers. It also requires new and innovative systems development as well as integrated linkages between previously isolated systems, data islands, and geographically separated communities.

This initiative will ensure that physicians and health professionals are engaged in the design of the process changes and the selection and implementation of new supporting technology. The operation of the SPEED committee is one of the keys to good provider engagement.

Provider Registry - Health Authority Uptake

The Provider Registry System (PRS) is a trusted source of information about health care providers, and is available to authorized users. The PRS was designed and implemented in the four western provinces. Following some additional BC enhancements, this project will develop and implement the required interfaces to the BC health authority business and clinical information systems.

Provincial eDrug Project

The eDrug project will build on the existing PharmaNet systems and focus on three areas:

1. Increasing authorized access to medication profiles for physicians, other clinicians and patients;
2. Expanding medication profiles stored in PharmaNet (e.g. to include physician office medications, and drugs dispensed in acute care settings); and
3. Deploying ePrescribing capability across the province, including:
 - a) Clinical reference and financial reference support tools -
 - dosage calculations and best practice guidelines
 - formulary checking and special authority management
 - b) Electronic prescription functionality and associated methodology.

Provincial Laboratory Information Solution

This project will support care providers with a standardized view of and timely access to laboratory information at the point-of-care anywhere in the province. It will provide physicians and other health care providers with more complete, timely and relevant information to support clinical decision making. The project will be phased, with the end-state solution delivering web-enabled laboratory test order entry and results reporting capability across BC.

Provincial Privacy, Security and Legislation for eHealth

The Provincial Privacy, Security and Legislation for eHealth initiative is intended to provide leadership and direction to eHealth projects regarding the implementation of the privacy and security requirements of Canada Health Infoway and BC legislation. It will develop an eHealth privacy and security framework which will be used as the basis for strategies to protect privacy and ensure security across all eHealth projects.

Provincial Surgical Services Project (PSSP) - Registry

The overarching purpose of the Provincial Surgical Services Project is to build a patient surgical registry based on patients' needs with a focus on transparency, consistency and reliable evidence. PSSP is a collaborative, province-wide project aimed at:

- developing provincial standards, as well as quality and performance measures for surgical services;
- creating processes for the ongoing collection of consistent data to support better surgical planning and decision making;
- ensuring existing resources are allocated and applied appropriately to areas of greatest need; and
- developing province-wide resources for health authorities to help them improve their local surgical services.

Registries Readiness

This project will ready the Provider and Client Registries for the various eHealth domain (lab tests, drugs, diagnostic images) solution implementations. Through it, the provincial registry hardware and software will be enhanced to support the greater demands and volumes associated with the EHR and the overall eHealth system. The Enterprise Master Person Index (Client Registry) will help enable EHR capability by providing the means to identify the health records (lab results, medication histories, diagnostic reports, discharge summaries) that all belong to the same patient. The Provider Registry will help enable EHR capability by providing demographic, licensing, credential and practice restriction information for such service providers as physicians, nurses and pharmacists.

Telehealth Planning

The Telehealth Planning project is intended to generate a comprehensive, organized framework for the ongoing development and implementation of telehealth services across the province. It will help support a more rapid expansion of the use of videoconferencing and communications technology to better meet the health needs of rural and remote settlements, including First Nation communities. This planning project should ultimately give rise to new telehealth delivery projects, spearheaded by the affected health authorities and First Nation groups.

Telepathology Project

The purpose of the telepathology project is to provide leadership for the development and implementation of an integrated, cost effective, sustainable, provincial telepathology network. It will function within and across health authorities/regions. Initial planning phases are complete, with a schedule for pilot studies established for 2007. Improvement to patient care and safety through better access to pathology expertise, timeliness of results and a higher quality of service within the province are long-term expectations.

The eHealth Gantt Chart

In 2005/06, the ministry released British Columbia's eHealth Strategic Framework, which outlined how the eHealth vision and initiatives would improve overall patient care; help health professionals deliver better, faster and safer services; and improve the underlying efficiency of the health system. That document also contained a Gantt chart showing the eHealth 10-year Implementation Plan. The eHealth Strategic Framework can be found at www.health.gov.bc.ca/cpa/publications/

Figure 9 shows an updated version of the original eHealth 10-year Implementation Plan Gantt chart. This chart is similar to the original one found in the Strategic Framework. It essentially presents the same type of information, but it reflects current eHealth projects and timeframes. Accordingly, its time scale covers only the eight years that presently remain out of the original ten.

This chart illustrates the relationship between individual project timelines for the planning and initiation or resourcing phase (e.g. arranging project contracts); the project assessment and solution design stage; the solution build, prototype (if applicable), and testing segment; and the implementation or rollout and evaluation phase.

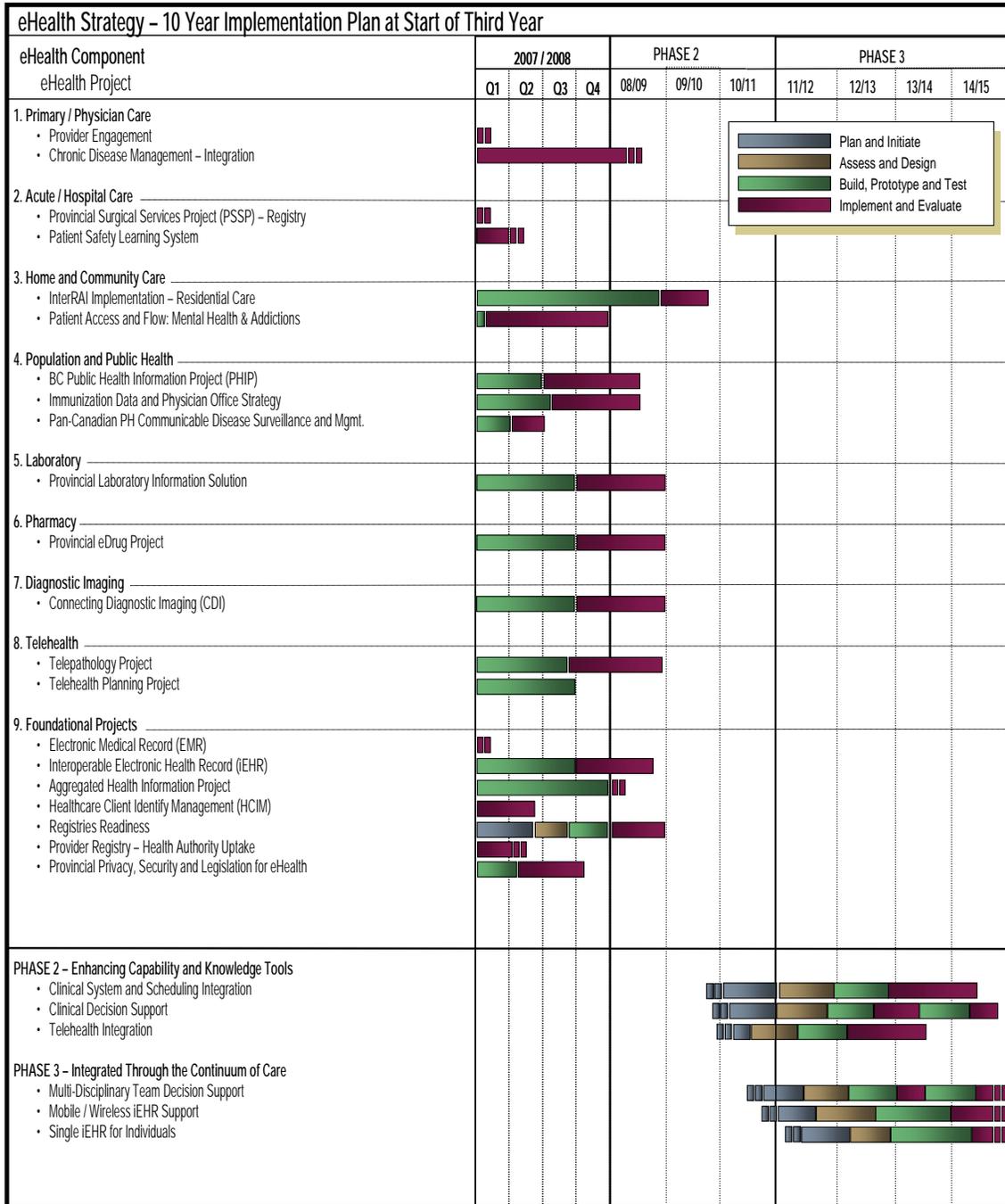


Figure 9 – eHealth Gantt Chart

Appendix 4: Other Business Requirements and Initiatives

The following is an alphabetical listing that briefly highlights the business requirements, projects and initiatives not specifically aimed at eHealth. They were identified through an extensive consultation and planning process with the health authorities and ministry program areas.

Since information resource planning is an ongoing process, additional business requirements and initiatives may be identified throughout the year and added to this list. The Information Resource Management Plan is published annually.

ActNow BC Information Management

Information management activities to properly facilitate and support ActNow BC, including development of a public website, presentation of available data, acquisition/analysis of required data not currently collected, and an overall evaluation of its utilization.

AIMS Database Assessment

The Addictions Information Management System (AIMS) database is nearing capacity and will need some attention to ensure functionality remains available until all the regional health authorities are reporting through the Mental Health and Addictions Minimum Reporting Requirements system.

AIMS - Feasibility Study

Investigate whether or not the Addictions Information Management System data can be used to populate the new Addictions Minimum Reporting Requirements; and if so, proceed with the associated work.

Alternative Payment Program Case Management System (APPCMS)

The overall purpose of this APPCMS replacement project is to replace the mainframe APPCMS system with a system that is compliant with ministry and industry standards, addresses issues raised by the Auditor General, and more effectively supports business requirements.

Alternative Service Delivery (ASD) Governance Support and Interfaces

The government has selected Maximus Inc. to work with the province on developing an alternative service delivery model for the Medical Services Plan (MSP) and PharmaCare. This initiative focuses on carefully defining the complex business processes required to facilitate change management and knowledge transfer in support of the ASD agreement.

Annual PROFILES

Produce the annual PROFILES report, which describes patterns of practice for licensed medical and health care practitioners within the province.

BC Bedline Call Management System

Replacement of the current system with a more scalable system capable of handling the increasing call volume, while also enhancing basic functionality.

BC Clinical Practice Guidelines and Protocols Web Enhancement

A better organized, inviting and interactive website targeted at physicians will replace the existing site, and will improve access to and utilization of the clinical guidelines.

Birth Registration

Significantly reduce the number of days between the date of birth and the ministry's receipt of the Registration of Live Birth form.

British Columbia Ambulance Services Patient Care Information System Project

Enhance the quality, timeliness and completeness of the patient care information available to the BC Ambulance Service for operational, business intelligence and medical research purposes.

Cardiac Arrest and Major Trauma Initiative

Provide the British Columbia Ambulance Service with the ability to manage cardiac arrest and major trauma data for the purposes of quality improvement and medical research.

Core Image Migration

This project will ensure all ministry line-of-business applications are compatible with the standard operating system for government workstations.

Data Stewardship and Access Management Project

This project is intended to develop a comprehensive solution for the management of access to personal information banks maintained within the ministry. Once implemented, the solution will allow the ministry to more effectively manage its workload as data steward by providing a centralized repository of data access and sharing information. It will also assist the ministry in responding to enquiries from the Office of the Information and Privacy Commissioner related to the status of requests for access and data sharing agreements.

DSS - MO Server Segregation

A project designed to move DSS application databases, and their linkages, from currently shared servers, to a separate, securely managed environment. This will ensure segregation of applications security and operations between the ministry DSS team and the new Managed Operations contract with CGI.

EMA Licensing Registry and ID Cards

Enhance or replace the current Emergency Medical Assistant (EMA) License Registry system with photo ID software for multi-user network installation, high grade PVC license ID card printing, as well as robust data management and reporting.

Employee Development Centre

A comprehensive system designed to identify training and career development needs among the KMT staff, and help ensure appropriate action is taken to rectify any present or projected deficiencies. This will support the development of required skills, and help ensure the continued viability and effectiveness of the KMT Division.

Guaranteed Income Supplement (GIS) Alternative Distribution Method

Provide an alternative method of delivering Guaranteed Income Supplement lookup capabilities to those health authorities no longer using CCIMS as their Home and Community Care client database.

Health Authority Community Care Licensing

Utilize the Health Authority Management Information Systems (HAMIS) and its supporting processes for the Ministry of Health Community Care Licensing Branch to collect and report on community care licensing data from health authorities.

Health Authority Encounter Reporting (HAER)

An automated system for transmission and validation of clinical encounter data from health authorities to populate a new encounter repository.

Health Authority Health Human Resource Planning (HHRP) Report Requirements

Conduct an assessment of what health authorities are tracking within their physician reimbursement systems, and their process for reporting to the ministry. Deliverables will include a strategy for health authority HHRP reporting, a business systems options document, and a proposal for a solution.

Health Authority Physician Reimbursement (HAPR) Enhancements

This undertaking actually combines two projects. The first is designed to develop a flow of data from HAPR to the AHIP data warehouse, and the second is intended to select and implement reporting tools for HAPR.

Healthlines Services BC (HLSBC) Program Transfer

This project is to assist with IT activities related to the transfer of the program to the Emergency Health Services Commission.

Health Status Registry Rejuvenation

Increase the number of reporting sources, quality of the data, and accessibility to the Health Status Registry.

Health Website Redesign

Development of an overall web redesign strategy and plan for the ministry that is theme based, and ensures ease of access and navigation for the public, while maintaining consistency with the ministry's Service Plan and Public Affairs Bureau requirements.

Home and Community Care - InterRAI data from Canadian Institute for Health Information (CIHI)

Define, design and build a repository for the InterRAI data for Home Care to be received by the ministry from CIHI. InterRAI data is sent to CIHI by the regional health authorities.

HNI Upgrade

This project will modernize the existing HNSecure (software and infrastructure communications technology), HNI (healthnetBC Interface) Message Broker and ACL (access control list) functions.

Improved Financial Tracking and Reporting Systems and Business Processes

Define, design, build and implement replacements for the current MS Access and MS Excel-based ministry financial management tracking and reporting systems. Replacement systems will involve modern database and web architecture.

Interactive Website for Emergency Medical Assistant Licensing

This project is intended to provide a venue for all licensed Emergency Medical Assistants to submit and retrieve information pertaining to their annual license requirements, involving patient contacts and continuing education.

Mental Health and Addictions Minimum Reporting Requirements (MH&A-MRR)

Develop processes to accept the revised Minimum Reporting Requirements dataset for Mental Health and Addictions; provide error reporting back to the health authorities; and develop a database to store the validated data.

Mental Health Review Case Management Application

Replace the Review Panel Database (MS Access 97) with a more secure and effective database platform.

Ministry of Health Emergency Operations Centre (EOC)

This project is intended to assist the Emergency Management Branch with IT activities related to implementing the EOC.

MSP Influenza Early Warning

Establish and evaluate a prototype for ongoing monitoring of influenza like illness (ILI) activity by extracting and summarizing daily MSP data, using a software approach to automation in order to provide early warning of increased influenza activity beyond historical norms for BC and its regions.

National Ambulatory Care Reporting System (NACRS)

The National Ambulatory Care Reporting System pilot project was initiated by the ministry to implement NACRS into three new British Columbia sites (currently not using NACRS). It is intended to carefully measure the costs, and build an understanding of the issues and impacts associated with system implementation and ongoing data submission to the Canadian Institute for Health Information.

National Routing Pilot

Demonstrate the feasibility of setting-up a federal/provincial/territorial network that will allow vital event data to be delivered from producing organizations (e.g. the BC Vital Statistics Agency) to authorized subscribing organizations (federal government departments and the vital statistics organizations of other provinces and territories). This will include verification by federal government departments (e.g. the Passport Office) of vital event information from vital event certificates issued by provincial and territorial vital statistics organizations.

NETCAD Computer Aided Dispatch

Acquire and implement a single computer aided dispatch system to be used by all functional dispatch areas within the BC Ambulance Service.

New Ministry Intranet

This project is part of the internal communication strategy to develop a new Intranet site focused on communicating with and engaging employees.

Nursing Professional Development Database

Develop a database and reporting function designed to integrate data on Nursing Directorate funded professional nurse development programs from across the province, integrating the funding data in order to improve underlying access, allow timelier reporting, and reduce the associated analytical effort.

Patient Safety Project

Conduct a business solution options review that will lay out the current situation, the alternatives to consider, and recommend a solution to improve patient safety.

PharmaCare LANFAX Genifax Software Replacement

Replacement of the previous Omtool Genifax server software used in the Pharmaceutical Services' LANFAX application with Genifax web-based client software. This is intended to stabilize the LANFAX system in order to allow the client area to provide uninterrupted service to the public, to eliminate the duplication of faxes being sent to practitioners, and to reduce the operational cost of support for the application.

Plan G Alternative Access

Health authorities are currently using the legacy mainframe Client Patient Information Management System (CPIM) to register clients for PharmaCare Plan G. With the implementation of health authority patient information systems, a different method of access to PharmaNet is required. KMT and PharmaCare will be working together with Maximus Inc. to develop a method of direct connection for health authorities to PharmaNet. This will not only reduce duplicate entry of client information, but will help facilitate the ministry's strategic goal of retiring CPIM.

Public Health and Wellness Core Services Data

A business requirements analysis to determine the minimum dataset required for program management, evaluation and planning, followed by an implementation phase.

PURRFECT Replacement

Replace the old PURRFECT product with the new AHIP product, called HealthIdeas.

Rural Health Travel Program - Reporting System

A reporting system for the Rural Health Travel Program, which provides rural residents of BC access to non-emergency services that are not available in their own community.

Social Insurance Number (SIN) Registry Interface

Assist the federal government, in a cost-neutral manner, in its effort to improve the integrity of the Social Insurance Register, and provide seamless registration services for British Columbia newborns by combining the birth registration and SIN number application processes. Where possible, this initiative will also increase the security associated with the issuing of SIN numbers and birth certificates, through the mutual confirmation of client information.

Track-IT Timesheets Upgrade to Web Version

This upgrade will update and improve the Track-IT timesheets database used to track the time spent, primarily by contractors, on project work. It will allow management staff the added ability to view and approve contractor timesheet data, while away from the office.

VISTA Enhancement

This project is intended to enhance the utility of the BC Vital Statistics Agency VISTA warehouse by increasing its functionality and the information provided to users of vital event information.

WIMS - BCAS Staff Scheduling

This BC Ambulance Service project has two main objectives:

1. Define and implement an integrated set of processes and employ a central computer system that will facilitate the management of employee scheduling and seniority, qualifications, leave, and on-call tracking.
2. Implement an electronic link to the payroll system to streamline the process of determining, distributing and auditing payroll.

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