Health Information Management Workforce Transformation: New Roles, New Skills and Experiences in Canada

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Abstract

Healthcare in Canada is undergoing significant transformation and change at regional, provincial, and national levels to better utilize scarce health resources to provide safe, high-quality care at lower cost. The electronic health record (EHR) is being introduced as an innovation and enabler in achieving reduced healthcare costs and improved patient care. Numerous studies and reports have described the advantages of the EHR; however, little attention has been paid to the human and fiscal resources necessary to implement and effectively manage the EHR. As Canadian health settings move from paper to electronic health records, the role of health information management (HIM) professionals needs to correspondingly change to meet the demands of an increasingly digital workplace.

The Canadian Health Information Management Association (CHIMA) is the certifying body and national association for approximately 5,000 HIM professionals across Canada. In addition to setting and administering the national certification examination through its Canadian College of Health Information Management (CCHIM), CHIMA sets out HIM training curricula, accredits HIM educational programs at colleges and universities, and provides continuing education for HIM professionals in the workplace. Hence, CHIMA is uniquely situated to address the evolving skills and training necessary to support the transition to the EHR. In 2012, CHIMA completed two projects that examined HIM labor shortages and HIM skills upgrading necessary to support this transition. The first of these initiatives, addressing workforce transformation, described new roles, career paths, and skills training for the HIM profession. The second initiative, Evolve the College, detailed proposed changes to HIM certification, specializations, and training to develop skilled information professionals who can work in these new roles. This article briefly reviews the findings and recommendations of these projects and outlines the evolving roles and competencies of certified HIM professionals.

Keywords: health information management (HIM), HIM professional, electronic records, Canadian Health Information Management Association, HIM human resources

Background

The introduction of information and communications technologies across industries, in education, and in government is changing the way in which we do business. The healthcare industry has not been immune to these forces and, despite initially lagging behind many components of society, is now rapidly catching up with the adoption of electronic records in health facilities and physicians' offices in countries across the world.[1–3]

Healthcare in Canada is also undergoing significant transformation and change at regional, provincial, and national levels to better utilize scarce health resources to provide safe, high-quality care at lower cost. The electronic health record (EHR) is seen as a technological innovation that can enable this transformation and provide value in the use of health data for clinical diagnosis and treatment; planning, managing, and deploying resources; disease surveillance; research; and education.[4-7] Little attention has been paid to the human and fiscal resources needed to successfully implement and effectively manage the EHR.[8–13]

As health settings move from paper to fully electronic health records, the role of health information management (HIM) professionals needs to change to meet the demands of an increasingly digital workplace.[14,15] Health information management

takes place across the entire healthcare landscape in acute care hospitals, primary care practices, long-term care or mental healthcare agencies, community care agencies, and government agencies. HIM professionals ensure that quality health data are available for immediate patient care as well as for disease surveillance, resource planning and management, research, and many other health system uses. HIM professionals are highly skilled in data collection, coding and classification of health data, data analysis and use, and management of information and records. They understand the processes needed to maintain the paper and hybrid record and manage information through its lifecycle from its capture and collection to its organization, maintenance, and protection; access, use, and disclosure; retention; and final disposal or destruction. Critical health data and information must be available for physicians and allied healthcare professionals to ensure optimal care and health outcomes. HIM professionals play a key role in providing, maintaining, protecting, and managing that health information.[16–18]

In the next five years a number of technological and societal trends will add complexity to the management of health information and place a heavy emphasis both on data standards for the interoperable use of data from multiple sources and inputs and on data quality to ensure that the data are fit for use (see Table 1). A continuing expansion of EHR repositories to inform clinical decisions and electronic records in physicians' offices will be the norm.[19–21] Healthcare systems will have more multidisciplinary, multisite health teams and increased integration with other systems, which will create the need for more skill development and help with data management issues.

Table 1: The Impact of Emerging Trends in Healthcare on Health Information Management

Trend	Impact or Implications
Continuing expansion of electronic health record (EHR) repositories	Data standards, data quality, and information governance become more critical
Electronic records in physicians' offices; multidisciplinary, multisite teams; integrated information systems	Data standards (for vocabulary and transmission), information governance (information sharing agreements, information management); client/patient identity and identity management; data linkage
Introduction of SNOMED-CT coding into point-of-service systems (e.g., EHRs)	Data mapping, maintain data reference sets, monitoring data quality and coding; terminologies
Health system use of data	Data quality, data analysis skills, data mining, data visualization and presentation
Use of mobile applications	Data standards, interoperability, data privacy and confidentiality; data quality
Cloud computing	Privacy, security of data; information governance
Increasingly diverse range of data inputs (e.g., clinical devices directly connected to EHRs for direct data input)	Data standards, data quality, data capture
Involvement of consumers in entering and using their health information	Data quality, privacy, and confidentiality, information governance
Changes in health professions' practices and use of digital records	Expectations of ease of use and interoperability

HIM professionals are adapting to this increased use of health information technology (HIT) and are increasingly working outside of their traditional roles in coding and record management as educators or trainers, project and program managers, workflow analysts, privacy and security officers, and data management and health information analysts.[22] The American Health Information Management Association (AHIMA) has addressed the need to define HIM professionals' roles proactively and look at emerging themes in HIT where their expertise and skills can be used in areas such as privacy and security, interoperability, electronic record adoption, and collaborative information governance.[23-25] A joint task force of the American Medical Informatics Association (AMIA) and AHIMA has defined core competencies for individuals working with electronic records.[26]

In the United States, AHIMA has repeatedly urged that HIM professionals move beyond traditional task-oriented roles and skills to roles that include strategic planning and design and management or leadership activities.[27] AHIMA warns that "while

the EHR hasn't changed the need or demand for HIM professionals' skills, it has dramatically changed the way those skills are applied and has accelerated the need for professionals to add new electronic-based abilities. . . . a failure to adapt . . . could lead to obsolescence, or at least provide an opportunity for non-HIM professionals to move into traditional and emerging HIM roles and take their place."[28] AHIMA's bold new Reality 2016 plan maps out educational paths for advancement as well as the development of a career matrix to assist professionals in advancing to leadership positions in 54 current and 13 emerging HIM roles.[29]

In the United Kingdom and Australia, where *health informatics* is broadly defined to include the work and expertise of health information managers, similar concerns regarding skills and labor shortages have been voiced.[30-32]

The first Health Informatics and Health Information Management Sector Study undertaken in Canada[33] confirmed a significant skills and labor shortage and increasing demand for HIM and health informatics (HI) professionals. In 2009 about 32,500 individuals within the professions of HI and HIM were identified, with a projected need of an additional 6,320 to 12,330 workers by 2014 depending on growth and availability of resources. The researchers reported: "The implementation of large-scale investments in EHIS [electronic health information systems] technologies has two consequences for human resources. The first is to increase the number of HI & HIM professionals who are required. The second is to increase the proportion of HI & HIM professionals whose skills will need to be broadened as a result of the implementation of EHIS technologies."[34]

Within the HIM field, severe skill shortages, as evidenced by greater than average industry vacancy rates, were seen in the areas of standards, decision support, privacy, and data quality management.[35] Several management area functions were also absent or short-staffed; these included change management and product/service management, as well as senior project managers. IT workers that were needed included quality assurance and testing and help desk workers. Study findings suggested that HI and HIM skill deficits would significantly delay the development and implementation of EHRs in Canada; a survey by the Ontario Health Association found that 55 percent of hospitals identified skill shortages as a barrier to adopting electronic health information systems.[36]

A 2014 update of the sector study confirms the low growth scenario with 39,900 workers now identified in the sector and similar risk of shortages of HIM professionals in standards, data quality management, records/information management, and information governance.[37] Change and project management is still needed. Data analytics (analysis and evaluation) is a new role identified as at risk in three scenarios of low to medium to high investment. Gains to be made by EHR implementation will not be realized without a corresponding systematic effort to develop the human resources needed to support the implementation, maintenance, and use of EHRs.

In the follow-up study, similar numbers of jobs are predicted over the next five years ranging from 6,161 to 12,209 in the low investment to high investment scenarios, with some significant shifts due to the increasing deployment and use of electronic records in both hospitals and physicians' offices.[38] The emphasis will shift to demand for human resources that are focused on support, utilization, and optimization of e-health technologies, increasing the breadth and the complexity of skill requirements. Replacement demand arising from an aging workforce will be of significantly greater importance as a driver of hiring requirements. And although replenishment of the e-health workforce through new graduates will be a priority, "employers also need to be mindful of the fact that the majority of professionals who will be using or supporting e-health technologies over the next five years are already in the workforce. Upgrade and advanced training of currently employed HI and HIM professionals will therefore take on greater importance."[39]

The Canadian Health Information Management Association (CHIMA) is the certifying body and national association for approximately 5,000 HIM professionals across Canada. In addition to setting and administering the HIM national certification examination through its Canadian College of Health Information Management (CCHIM), CHIMA sets out HIM training curricula, accredits HIM educational programs at colleges and universities, and provides continuing education for HIM professionals in the workplace. In Canada, CHIMA is uniquely situated to address the evolving skills and training needed to support the transition to the EHR.

Workforce Transformation

Over the past two to three years, CHIMA has focused on two critical initiatives to help pave the way for the evolution of the HIM profession and for CHIMA to articulate the roles, functions, and jobs that HIM professionals will be trained to do in the

future. CHIMA worked with key stakeholders to characterize future roles and functions of HIM professionals in two strategic initiatives:

1. The development of e-health competency profiles; and
2. HIM workforce transformation with Alberta Health Services

In 2011–2012, the Information and Communications Technology Council of Canada (ICTC) led a comprehensive eHealth Competency Profiles Project to identify key clusters of e-health occupations that were HI and/or HIM related and that had a significant technology component.[40-42] Collaborators included CHIMA, COACH: Canada's Health Informatics Association, ITAC (Information Technology Association of Canada) Health, and Canada Health Infoway, and hundreds of HIM professionals provided input through a series of workshops held across the country.

Twelve clusters of e-health competencies or e-health occupations and domain knowledge areas that represent HI, HIM, and HIT expertise were identified. These clusters included the following:

- Architecture and Development
- **Health Systems Integration and Deployment**
- Clinical Informatics
- **Decision Support**
- **eHealth Business Analysis**
- ***eHealth Change & Transition Management***
- **eHealth Privacy Management**
- ***eHealth Project Management***
- ***eHealth Standards Management***
- **Health Application Implementation**
- **Health Information Management**
- **C-Suite Level**

Bolded profiles in this list are ones for which a background in HIM is recommended or where knowledge of HIM is beneficial; bolded and italicized items indicate areas that many HIM professionals may encounter as they move up the career ladder and gain experience in the field (for example, many HIM professionals are already working in areas of standards development and management, change management, and project management).

These profiles are "a description of the occupations, educational background, job titles, key activities and tasks with the corresponding performance indicators, as well as technical, business and interpersonal competencies required for occupations within the Electronic Health Information System (EHIS)."[43]

More than half of these twelve profiles directly relate to current or future roles of HIM professionals, and the HIM credential, training, and experience provide the competencies and skills deemed necessary for these occupations. In the eHealth Privacy Management category, for instance, the job profile involves performing electronic health information privacy impact assessments; developing policies and procedures; educating and training personnel; and monitoring and auditing record access and use. HIM professionals in these roles provide leadership, advice, and guidance to all levels of the organization on relevant privacy legislation requirements and standards by maintaining their knowledge of applicable federal and provincial privacy laws and accreditation standards. They may also monitor advancements in information privacy technologies to ensure organizational adaptation and compliance. Typical job roles and titles in this area include the following:

- Privacy officer
- Privacy strategist
- Privacy advisor
- Privacy analyst
- Privacy specialist
- Privacy consultant

HIM professionals also play a role in many of the developing e-health functions such as health information analysis and decision support, business intelligence and analysis, change management, and project management.

Profiles such as eHealth Architect and Developer may not be directly applicable to HIM professionals; rather, the HIM professional has the skill set to work as part of a team developing a technology solution that needs to include consideration of the proper management of information, such as in the areas of privacy and confidentiality, data quality, and/or data integrity.

Within the HIM skill set itself, HIM strengths are described as

> designing, consulting, implementing, evaluating, managing and maintaining e-Health information processes, systems and programs; developing eHealth strategies, planning, implementing initiatives and new information management technologies; ensuring best practices in information management, accommodating medical, legal, and ethical standards; maintaining, collecting and analyzing eHealth data, working with information technologists, database developers/administrators and ensuring data quality, accuracy, availability, privacy, security and integrity; communicating with other healthcare professionals to offer clarity regarding information-related issues; ensuring compliance with all legislation and all levels of ministry reporting and standards.[44]

These items demonstrate how the expertise of HIM professionals in information lifecycle management is used to address policies and processes needed within the new electronic environment. The following are some sample job titles for this cluster:

- Director of health information management
- Manager, health information management
- Data quality manager
- EHR specialist
- Record management specialist
- Health information management specialist
- Health information support analyst
- Health data analyst
- Health information implementation analyst

In 2011 CHIMA began work with a group of dedicated HIM professionals from Alberta Health Services (AHS) as that entity underwent a sectorwide human resources workforce transformation. AHS represents the centralized authority overseeing health services delivery to more than 4 million people in Alberta (Canada's fourth largest province). The HIM portfolio identified a strategic program of business transformation initiatives and related projects to support the AHS organization in its strategic, tactical, and operational delivery of care, programs, and services to the Alberta population.

The advent, deployment, and development of the EHR through Alberta Netcare (http://www.albertanetcare.ca/) necessitated the evolution of HIM departmental systems and operational processes while AHS continued to manage a hybrid record and provide the full suite of HIM services within an increasingly complex and changing healthcare system. This situation required a workforce transformation strategy in which the staffing complement and the roles, functions, skills, and educational requirements of staff were articulated, and plans for preparing staff to meet these new roles are being developed and implemented.

The transformation of the AHS HIM services will be incremental; some changes are needed and being implemented now, and many will take place several years into the future. The workforce transformation process, through the HIM Workforce Transformation Framework and Transition Plan, is expected to provide service optimization and support AHS's three strategic goals of access, quality, and sustainability.

The HIM portfolio includes about 2,800 individuals with a broadly differentiated set of skills, knowledge, and experience, working in roles such as leadership and management, coding, medical transcription, HIM application support, and clerical support. These roles cover areas as diverse as patient registration and scheduling; management of records; data integrity; management of data, information, and technical standards; access and disclosure; and transcription.

During a two-day workshop, facilitated by a project management team from CHIM Consulting, Inc., 35 participants made up of the entire AHS HIM leadership team (consisting of Kathleen Addison, vice president of health information management, and her regional directors and managers), representatives from CHIMA, and an expert advisory panel (from industry, university, Canada Health Infoway, and the Canadian Institute for Health Information [CIHI]) began the identification of the future roles, skills, and knowledge inventory needed for these roles and the identification of education and credential requirements. Building on previous work of the leadership team in identification of the key domains and main HIM services

(the AHS HIM Strategic Visioning diagram—e-HIM Delivery Model, 2010), nine services were identified during a one-day brainstorming session (see Table 2). During the second workshop day, the attendees split into five breakout groups to define the specific functions and roles within a specific service. The project team consolidated and evaluated the workshop output, completed the definition and scoping of services, and identified the specific skills, knowledge, and education needed for each role within each service/function using the current Learning Outcomes for Health Information Management,[45] CHIMA publications (professional practice briefs), and other material on future roles in other jurisdictions to complete the details of the HIM services, functions, roles, skills, knowledge, and education for the AHS HIM service (personal communication from Kathleen Addison, March 30, 2011; also, the first author of this article attended the workshop representing CHIMA). These future roles will continue to be defined, expanded, and fine-tuned on the basis of the requirements and functions necessary to accomplish comprehensive and meaningful information management within a healthcare organization or region and as they are actualized in practice in Alberta. The broader applicability of these roles will be tested across other Canadian provinces.

Table 2: New Health Information Management (HIM) Roles Based on Job Functions in Managing Health Information

Function/Category	Service Scope	New Roles
Data capture	The data capture service performs all tasks associated with the capture of health data. This includes data coded directly from clinical documentation or auto-coded using systems for that purpose, voice and speech recognition systems, and scanning or creating a digital image of text-based documents. This service will perform audits of the service functions to ensure that best practice and current standards are implemented.	Clinical data specialist Data profiler Concurrent coding specialist Code mapping specialist Data mapping specialist Data quality analyst Standards coordinator/standards specialist Research associate
Information integrity	This service evaluates the integrity of health information holdings, identifies risks, and implements risk mitigation strategies. This service will respond to inquiries into information integrity and complete an auditing role for both internal and external requests.	Health information safety officer (includes hybrid record) Data integrity specialist Risk management analyst Forensic investigation officer Information reconciliation officer Auditor
Identity management	This service manages the systems responsible for the unique identification of consumers, providers, organizations and services.	Identity management coordinators Registry managers (e.g., client, provider, location) Registry data quality specialist
Access and disclosure	This service protects and promotes data and information privacy for consumers, providers, users, and the organization. It manages the access, disclosure, retention, archiving, and destruction of personal health information from organizational systems.	Privacy specialist Data/information steward Release of information analyst Access and disclosure specialist Request coordinator Privacy officer

Information management governance	Using best practices and information management principles, this service develops, maintains, and monitors the accountability framework for information. It includes policies, processes, standards, and metrics to ensure unified data and information, as well as efficient, effective, and secure information assets.	Information management governor Information management liaison Policy analyst
Content compliance	This service is responsible for management of the clinical content to ensure that it meets information management best practices including performing quality assurance audits on the content. This is the bridge between the provider content for clinical need, and the information needs of the organization as well as internal and external stakeholders.	Information brokers Compliance specialists
Information/knowledge asset management	This service is responsible for developing, auditing, evaluating, maintaining, and mapping clinical information and knowledge assets.	Health information/semantics content experts Data modeler Clinical terminology standards specialist
Customer support	This service promotes excellent public relations by fostering and maintaining positive communication with customers in the areas of the personal health record (PHR) and registration systems (registration, booking, registries, self-registration).	Registry agents Portal agents Information broker Customer service agent
Information analysis and business intelligence	Information needs are identified and data is collected and analyzed. Utilization management and quality improvement practices are supported and enhanced via the services offered. Data analytics, clinical trials, and research studies are areas of focus.	Health information and performance analyst Decision support analyst Process improvement specialist Health analyst

Source: Canadian Health Information Management Association (CHIMA). *Transforming Health Information Management: The Evolution of the HIM Professional*. London, Ontario, Canada: CHIMA, 2012.

Note: This list has been modified from the source; the list of jobs/titles are representative of new roles and functions and not meant to be exhaustive.

Evolving the College—Educational and Curricular Requirements

Complementing the work on identifying new roles and the skills and training needed for these functions among working professionals, CCHIM went through an extensive "Evolve the College" exercise in which an expert advisory committee looked comprehensively at the current college functions and asked what it should be doing in the future to adapt to new roles and address the training required for electronic health systems. Advisory members were chosen from all sectors and included representatives from regional health authorities, hospitals, provincial chief information officers, industry, education (both college and university representatives), HI and HIM professional associations, and the nongovernmental health information agencies Canada Health Infoway and CIHI. The advisory members met monthly during 2011–2012 to undertake the review based on published material and presentations from each sector to the committee (education, health authorities, provincial chief information officers, industry).

Resounding support was given for the current credentialing program for college and university graduates and the application of the newly revised Learning Outcomes in Health Information Management (2010).[46] These outcomes were developed with future requirements in mind and will provide entry-level HIM graduates with knowledge and skills in the following areas:

- Biomedical sciences
- Healthcare systems in Canada

- Health information
    - Health information management
        - Data collection and grouping
        - Information and data standards
        - Data quality
        - Record management
    - Health information analysis and business intelligence
        - Statistics
        - Research design and methodology
        - Epidemiology
        - Decision support and data analytics
    - Health information: privacy, confidentiality, and access
        - Privacy—the legal basis and requirements of accountability including access, collection, use, disclosure, retention, and disposal of health information
        - Management of access, privacy, and confidentiality obligations in relation to personal health information
    - Information systems and technology
    - Management
    - Ethics and practice

On the basis of recommendations of the expert advisory committee, CCHIM is also considering advanced certification and/or specialization in the following areas: terminologies (identified as a top emerging trend), clinical documentation specialist, coding classification, and decision support. Development of specialization or advanced certification will be completed in partnership with other organizations (industry, government, educational institutions).

The business case for a specialization in terminology has been developed, and partnering educational institutions have been identified and will be developing content suitable for training programs with subject-matter experts from industry, government, and healthcare. Continuing professional education in terminologies in the form of extended workshops (e.g., in SNOMED-CT, clinical documentation improvement) is also being developed to assist those currently working in the field.

HIM professionals will be, and need to be, seen as leaders in the lifecycle management of health information from data collection through use, maintenance, and protection to final disposal. With technological development, the focus of coding activity will shift from coding and abstracting to working with clinicians to improve the quality of documentation and information and to auditing and supporting health professionals at the point of care. Increased monitoring and auditing of health data will be needed. Understanding of natural language processing will be needed as the healthcare industry moves toward auto-coding of applications, classifications, and terminology frameworks. HIMs will become data editors rather than data coders to ensure that data remain of high quality for optimum healthcare use. The need for HIM support for business applications, business process workflow, organizational change management, and the ongoing operational support of new systems will increase.

Along with data analytics, data quality management initiatives will need to include data quality and integrity in source systems, EHRs, and registries, as well as metadata management and enterprise data dictionary maintenance and management. The focus on *record* management will decrease, and the focus on *information* management will increase. In this regard, CHIMA is also taking the opportunity to add unique value as the leader for health information lifecycle management. Through development of guidelines for health information lifecycle, it is guiding the evolution in HIM practice from leadership in record management to leadership in information lifecycle management.

Members of the Council on Education and Professional Practice are developing a career matrix and online interactive tool to provide information about dozens of new roles and jobs and potential career paths that lead from one level to another (entry-level to intermediate to advanced to master) or from one domain of expertise to another (coding specialist to health information

analyst). Guidance for current members in choosing courses and continuing professional education activities has also been developed as an online, interactive Transition Roadmap. CHIMA and CCHIM are providing the roadmap and calling on all HIM professionals to lead the way to a new future.

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