



LEARNING OUTCOMES FOR
HEALTH INFORMATION MANAGEMENT
(VERSION 3)

DIPLOMA AND UNDERGRADUATE
DEGREE PROGRAMS

Copyright © CHIMA June 2015 Version 3

Second version © CHIMA 2010
First published © CHIMA 2006

Adapted from the Learning Outcomes for Health Records Education (LOHRE) © CHIMA 1995

by the Canadian Health Information Management Association.
All rights reserved. No part of this publication may be reproduced,
stored in a retrieval system, or transmitted in any form or by
any means, electronic, mechanical, photocopying, recording, or
otherwise, without the prior permission of the Canadian Health
Information Management Association.

Learning Outcomes for Health Information Management

Canadian Health Information Management Association
99 Enterprise Dr. S., Lower Level
London, ON N6N 1B9
Canada

Copyright ©2015 by the Canadian Health Information Management Association

Kelly Abrams, BHA, MPA, CHIM
Editor
Vice President, Education and Professional Practice
CHIMA

Neil Gardner, MPA, CPHIMS-CA
Chief Information Officer
Saskatchewan Health

Kerry Johnson, MAEd, CHIM
Academic Associate, HIM Program
Faculty of Health Sciences
University of Ontario Institute of Technology

André Lalonde, MHA
Executive Director
Corporate Planning and Quality Management
Canadian Institute for Health Information

Joan Roch, BHEc, MSc
Chief Privacy Strategist,
Canada Health Infoway

Sandra Cotton, BA, CHIM
Director, Special Projects
CHIMA

Claire Dixon-Lee, PhD, RHIA, CPH, FAHIMA
Executive Director
Commission on Accreditation for Health Informatics
and Information Management Education

Candace Gibson, PhD, CHIM
Associate Professor, Dept of Pathology
Program Coordinator, HIM
University of Western Ontario

Dr. Yuri Kagolovsky, MD, MSc
Professor, Health Informatics
School of Health and Life Sciences and
Community Services
Conestoga College ITAL

Margaret Penchoff, BA, CHIM
Classification Specialist,
Canadian Institute for Health Information

Paula Weisflock, BHA(HIM), MAEd (Cand), CHIM
Program Coordinator, Health Information Management
Fleming College

Gail Crook, CHE, CHIM
CEO and Registrar
CHIMA

ACKNOWLEDGEMENT FOR VERSION 3 DOCUMENT REVISIONS

The following are among the many individuals the Canadian Health Information Management Association wishes to thank for their contribution to the task of revising the Learning Outcomes for Health Information Management in Canada. An incredible amount of time and effort went into the creation of this document and we are sincerely grateful to those who participated.

Brenda Antliff, CHIM
Marikay Bailey, CHIM, RHIT, CCS
Roxanne Baldwin, CHIM
Manon Briere, AMA
Mona Calhoun, RHIA, MS
Kerri Carew, CHIM
Sheila A. Carlon, PhD, RHIA, FAHIMA
Samir Chaterjee, PhD
Sharon Coakwell, CHIM
Dominic Covvey, BA, MSc, FHIMSS, FACMI
Diane Dolney, CHIM
Heather Donovan, BA, CHIM
Brian Foran
Tara Fournier, CHIM
Ingrid Friesen, CHIM
Leah Grebner, RHIA, CCS, MS, FAHIMA
Leah Goguen, CHIM
Leslie Gordon, RHIA
Lisa R. Hart, RHIA, MPA, CPHQ
Patricia Hewes, CHIM, BA, BEd, MEd, CAE
Shannon H. Houser, PhD, MPH, RHIA
Noela Inions, QC

Laurie Kenward, BHRS, CHIM
Kathleen Lavoie, BSc, CIPP/C, PMP
Paula Lawlor, RHIA
Ferne Mardlin-Smith, DHSAs, CHIM
Cheryl D. Martin, RHIA, MA
Kris-Shae J. McCall, RHIA
Carolyn McGregor, PhD, SMIEEE
Shauna McMahon, CHE
Dr. Jochen Moehr, MD, PhD
Maria Muia, BHA, MHSc, CHE, CHIM
Carolyn Nicholson, BA, MDiv, CHIM
Cindy Nikiforuk, CHIM
Eileen Oleski, CHIM
Bonnie Penner, CHIM
Sharon Penney, CHIM
Jennifer Percival, PhD
Patt Peterson, MS, RHIA
Jane Piribauer, CHIM
Marion Prichard, MEd, RHIA
Lisa Proudfoot, CHIM, BRE
Gabriella Rattner, CHIM
Benjamin Reed

Joy Reyno, CHIM
Rebecca B. Reynolds, EdD, MHA, RHIA
Shalane Roth
Sue Schneider, BA, CHIM
Becky Scobie, CHIM
Debi Senger, CHIM
Jean Steward, BMRS, CHIM
Rachelle Stewart, DrPH, RHIA, FAHIMA
Linde Tesch, RHIA
Valerie J. Watzlaf, PhD., RHIA, FAHIMA
Debbie Whalen, CHIM
Cindy Zakoworotny, RHIA, MS, PMP
Dr. David Zitner, MA, MD, CCFP, FCFP

CHIMA RESOURCES

Jen Crook

The Learning Outcomes in Health Information Management (LOHIM) document provides the curriculum content for accredited Health Information Management (HIM) programs within Canada. This document is used for program development, program review, and for the creation of the National Certification Examination (NCE). The skills listed can be developed at any level for continuing education, graduate program development, or increasing core competencies in health information management. This document may be used as a comparison between HIM curriculum content and health informatics curriculum content. Such a comparison would show the similarities in specific content areas as well as the differences in application. Prospective HIM students can review the learning outcomes to familiarize themselves with what the program will offer. The public can use this document to educate themselves about the role HIM professionals have in regard to their personal health information and the safekeeping thereof.

Keywords: Health Information Management, Health Informatics, Education, Learning Outcomes, Canadian Health Information Management Association, CHIMA.

Kelly Abrams, BHA, MPA, CHIM
Editor

INTRODUCTION AND EXPLANATORY NOTES

Preamble	1
How this Curriculum Content Differs from Previous Curricula	1
The LOHIM Task Team and the Development Process	2
How to Use This Document	3

LEARNING OUTCOMES IN HEALTH INFORMATION MANAGEMENT

A. Biomedical Sciences	7
B. Health Care Systems in Canada	9
C. Health Information	11
C-1 Health Information Management	11
C-1-1 Data Collection and Grouping	11
C-1-2 Information and Data Standards	13
C-1-3 Data Quality	14
C-1-4 Records Management	15
C-2 Health Information Analysis and Business Intelligence	18
C-2-1 Statistics	18
C-2-2 Research Design and Methodology	19
C-2-3 Epidemiology	21
C-2-4 Decision Support and Data Analytics	22
C-3 Health Information: Privacy, Confidentiality and Access	24
C-3-1 Privacy – The Legal Basis and Requirements of Accountability Including Access, Collection, Use, Disclosure, Retention and Disposal of Health Information	24
C-3-2 Management of Access, Privacy and Confidentiality Obligations in Relation to Personal Health Information	26
D. Information Systems and Technology	28
E. Management	30
F. Ethics and Practice	31
G. Practicum	32

REFERENCES

33

APPENDICES	
Appendix A – Information technology procurement	35
Appendix B – Systems evaluation	36
Appendix C – Systems maintenance	37
Appendix D – Common administrative, technical and physical control methods for security of personal health information	38
Appendix E – Entry level role statements – Diploma	39
Appendix F – Entry level role statements – Degree	47
LOHIM – GLOSSARY OF TERMS	53
LOHIM – LIST OF ASSOCIATIONS AND ORGANIZATIONS	59
ABBREVIATIONS USED IN THE DOCUMENT	62

INTRODUCTION AND EXPLANATORY NOTES

PREAMBLE

This document outlines learning outcomes for curriculum content of Health Information Management (HIM) professional diploma and degree programs in Canada. These outcomes represent the skills and knowledge that a HIM professional is expected to have upon entry to practice. These learning outcomes will be achieved over the equivalent of a minimum two-year diploma or four-year undergraduate degree program.

The learning outcomes address the increasing need for education in the electronic health record, preparation for the current trend of rationalization in health care, and a shift toward an increasing HIM presence in the continuum of health care delivery. The four domains of practice for CHIMA are 1) Privacy, 2) Data Quality, 3) Electronic Health Information Management (e-HIM™), and 4) HIM Standards. It is expected that teaching of these four domains will be incorporated in courses throughout the program.

HOW THIS CURRICULUM CONTENT DIFFERS FROM PREVIOUS CURRICULA

In 2009, CHIMA partnered with Canada Health Infoway, COACH – Canada’s Health Informatics Association, the Information and Communications Technology Council (ICTC), and the Information Technology Association of Canada (ITAC) – Health to complete the *Health Informatics and Health Information Management Human Resource Report November 2009* sector study. The sector study confirmed the need for an expansion of HIM skills as health information technology (IT) is implemented across Canada – “...HIM professionals will require additional theoretical knowledge and practical insight into information technology systems and applications. The skill broadening that is required exceeds the learning that is associated with normal working experience. Formalized professional development will be required” (O’Grady 2009, 3).

Five years later, the same stakeholder group completed another study—the *Health Informatics and Health Information Management Human Resource Report 2014* which included a broader perspective of the needs of HI and HIM in the private and public sectors of health care. The study found there would be an increase in the demand for human resources focused on support, utilization, and optimization of eHealth technologies. Over the next 5 years, the combination of replacement demand due to an aging workforce and eHealth investment growth will generate hiring requirements ranging from 6,200-12,200 new individuals; more than 70% of these hiring requirements will be in information technology and health information management. With an increase in the demand for HI/HIM professionals and an increased need for an expanded skill set to support quality decisions, this learning curriculum is a living, breathing document that will continue to evolve to meet the needs of healthcare.

The LOHIM document’s focus on IT has shifted from learning about specific hardware and software to the concepts of electronic health information systems (EHIS). The HIM profession has traditionally focused on the collection of quality data. The focus must now shift to include the health system use of data including business intelligence and decision support based on a more complete understanding of the needs of the health care system in Canada. At the time of this publication, a pan-Canadian electronic health record is not yet a reality and the LOHIM task team decided to change the focus of the IT and EHR portions of this document to allow for the ongoing changes. As the students learn about the EHR and the HIM processes required to support and maintain it, the curriculum can be adapted to the changing environment.

There is confusion regarding the difference between health informatics (HI) and HIM professionals. HI professionals work more with the technology itself – IT management, architecture, application implementation and support, security, etc. HIM professionals work in privacy, standards, data quality management, decision support, health records management, and coding and classification. The learning outcomes for the emerging HIM professional are a starting point. Graduates from HIM programs must understand the requirement of continuing education. These learning outcomes are the minimum requirement for an entry level HIM professional and it is expected that they will continue to learn both formally and informally upon graduation and certification. Advanced HIM professionals work in project management, change management, analysis and evaluation, leadership, and there is a growing need for further education in these areas. The HIM profession is in transition and one of the main transition strategies is continuing education.

LOHIM emphasizes the team approach to health care. Health information management is a joint responsibility of health care professionals; all participants in the health care delivery system have a role in the generation, compilation, quality, exchange, comprehension and privacy and security of health information. The HIM professional provides the guidance and expertise to facilitate the processes between the different professions and across different organizations and care settings. The HIM professional participates as a member of the team to provide quality care to the individual supported by monitoring and evaluation processes including government reporting, funding and research.

The Generic Skills area has been removed from the LOHIM curriculum document and will be placed within the CHIMA program review document. Generic Skills are not core HIM curriculum and Canadian post-secondary schools are expected to teach generic skills as part of the general curriculum to ready students for graduation and employment in the workforce. An example of a generic skill from the LOHIM 2006 document is, “Apply mathematical concepts”. The specific statistical concepts that are required within the HIM curriculum are listed within the Statistics section. An entrance requirement for HIM student is Math 12 (or the equivalent). As such, it was believed that the Generic Skills section could be removed from the HIM curriculum content area.

THE LOHIM TASK TEAM AND THE DEVELOPMENT PROCESS

In 2010, a task team was formed to complete a major revision of the HIM learning outcomes document. The task team consisted of Kerry Johnson (Chair and Council on Education and Professional Practice representative), Dr. Candace Gibson (HIM degree program representative), Paula Weisflock (HIM diploma program representative), Dr. Yuri Kagolovsky (HI degree program representative), Neil Gardner (COACH and provincial Health Ministry representative), Joan Roch (Privacy representative), André Lalonde (Classifications, population health and decision support representative), Margaret Penchoff (Member-at-large – all care levels representative), Gabriella Rattner (HIM acute care facilities representative), Dr. Claire Dixon-Lee (international representative), Kelly Abrams (CHIMA executive office representative) and Jen Crook (CHIMA executive office support).

Job descriptions for HIM diploma and degree graduates were gathered from employers and amalgamated into generic role statements with entry level functions. These role statements were used to decide the level of learning needed for emerging HIM professionals. It was evident from the job descriptions received that diploma graduates are hired into technical positions (coder, registry and data integrity specialist, release of information analyst, privacy analyst, and the technical aspects of records management) and the degree graduates are hired into analytical positions (statistical analyst, records management, decision support analyst, standards analyst, research assistant, terminology asset management).

The approach taken was to divide the document into sections and assign sections to each expert group. Each task team member gathered a sub-group of experts to help review the assigned section(s). An impressive list of people reviewed the document and provided input and feedback. Some of the key questions for this review included:

- What are the HIM core competencies?
- What learning level would a diploma student need per Learning Outcome (LO)?
- What learning level would a degree student need per LO?
- What LOs require more advanced education or work experience?
- What is no longer relevant?
- What is missing?
- Are the LOs assigned to the appropriate competency?
- Is the LO specific enough or does it need further definition?

The sub-groups provided input to the team lead for amalgamation and incorporation into the original LOHIM 2010 draft document. Once the feedback was amalgamated, the document was circulated for further review. Additional changes were made based on this feedback. An intensive two-day in-person meeting was held with the core Task Team, with the addition of Gail Crook and Sandra Cotton from CHIMA executive office, and a line-by-line review of the document was completed. The draft document was once again circulated to the sub-groups for confirmation. The final document was approved by the Council on Education and Professional Practice and the Board of Directors. This publication would not be possible without the hard work and dedication of all people involved. This 2015 document represents Version 3.

HOW TO USE THIS DOCUMENT

The learning outcomes within the LOHIM document are not stated as outcomes or objectives, but rather as learning content.

To articulate the differences between the diploma and the degree program and to provide clearer guidance on the expected level of cognitive learning per learning content area, the document has been reworked to state the specific item of content and the learning level at which it should be taught. The programs will determine how they will teach the content at the appropriate level. An example is provided below:

		LEARNING CONTENT AREA (LCA)	Diploma	Degree
1.		Statistical terminology and proper use of statistics, including but not limited to: null hypothesis, error, confidence intervals, significance.	Apply	Evaluate

The learning content states that the student must be taught statistical terminology and the proper use of statistics. Specific examples are included to provide a starting point. The diploma graduate must be able to apply this learning content; that is, must be able to calculate common statistics, solve statistical questions, examine or predict error, illustrate how a null hypothesis works. The degree training will go beyond this level. In addition to understanding statistical terminology and the proper use of statistics, the degree graduate will be able to evaluate research

studies and apply the appropriate statistical analysis needed for quantitative versus qualitative studies, calculate those statistics and explain their meaning, and defend the results.

There was an identified need within the HIM curriculum to provide more detail to clarify the intent of some of the learning content items; therefore appendices have been included to provide further clarification (e.g., IT procurement). A glossary of terms has also been included to clarify the specific definition used when developing this document.

CONTENT

Curriculum has been grouped according to the following core areas:

Biomedical Sciences

The Health Care System in Canada

Health Information Sciences

- a. Health Information Management
- b. Health Information Analysis and Business Intelligence
- c. Health Information: Privacy, Confidentiality and Access

Information Systems and Technology

Management

Ethics and Practice

Learning Outcomes for the Practicum

The order of presentation does not infer a required order for presentation of material in the program or an order of importance.

These learning outcomes represent the **minimum** standards for entry to practice as a certified HIM professional. Programs may enhance this foundation, as needed, according to jurisdictional requirements and in keeping with available resources.

LEARNING LEVEL

This document begins with the premise that all content is teachable within a two-year time frame at the diploma level or within a four-year time frame at the undergraduate level. To assist in curriculum implementation, depth of coverage has been indicated with the following terms: Knowledge, Understand, Apply, Analyze, Evaluate, and Create.

The learning level is based on the revised Bloom’s Taxonomy. The learning levels flow from lower order objectives (e.g., defines, comprehend) to higher order objectives (e.g., justify, create). The learning levels assigned within this document provide a framework upon which to build the core curriculum. For example, learning content in the knowledge and understand range will be taught within a shorter period of time than learning content within the apply and analyze range; the assignments and testing methods will be appropriate for the level (e.g., *recall* can be tested by asking questions to gage memory; *solve* can be tested by providing the student with a problem to be unraveled). The number of courses in a particular content or topic area, or the length of a course in a particular content or topic area should be suitable to teach the learning content at the level indicated. The content, in conjunction with the designated level, should assist educators in determining time spent on teaching the material and level of understanding expected of the students.

LEARNING CONTENT

The learning outcomes are stated in a *learning content* format rather than the documentation of objectives. The content and level combine to indicate the level of learning the graduate will possess upon the successful completion of the course of study.

Category	Definition	Key Words
Knowledge	Recall data or information. Awareness of facts.	Define, describe, identify, name, list, outline, recall, recognize, reproduce, select, state, examine, locate, memorize, quote, recall, reproduce, tabulate, duplicate, listen, observe, read, record, and repeat.
Understand	State a problem in one’s own words. Explain ideas or concepts, grasp the meaning of information.	Comprehend, convert, compare, defend, discuss, discover, distinguish, estimate, explain, extend, generalize, give examples, identify, infer, interpret, judge, observe, paraphrase, predict, re-write, report, select, summarize, and translate.
Apply	Use a concept in a new situation or unprompted use of an abstraction. Apply what was learned in the classroom into novel situations in the work place.	Apply, calculate, change, choose, compute, construct, demonstrate, discover, establish, examine, experiment, illustrate, interview, judge, manipulate, modify, operate, practice, predict, prepare, produce, relate, show, simulate, solve, teach, use.
Analyze	Separate material or concepts into component parts so that its organization structure may be	Analyze, compare, conclude, contrast, criticize, diagram, deconstruct, differentiate, discriminate, distinguish, estimate,

	understood. Distinguish between facts and inferences.	identify, illustrate, infer, outline, organize, relate, select, and separate.
Evaluate	Justify a stand or decision. Make judgments about the value of ideas or material.	Argue, assess, categorize, choose, combine, compile, compose, convince, criticize, defend, devise, design, explain, generate, justify, modify, organize, plan, rearrange, reconstruct, reframe, relate, reorganize, revise, rewrite, summarize, support, and test.
Create	Create new product or develop a new point of view. Put parts together to form a whole, with emphasis on creating a new meaning or structure.	Design, compose, create, formulate, invent, hypothesize, substitute, construct, develop, integrate, modify, produce, re-write, anticipate, assemble, collaborate, devise, facilitate, intervene, justify, originate, propose, reorganize, simulate, schematize, solve, test, and validate.

A. Biomedical Sciences

Description: The study of the human body in health and disease, including each body system according to its structure and function, pathological conditions, disease etiology, diagnostic and therapeutic interventions.

Applications: Knowledge in the area of biomedical terminology and concepts (e.g., anatomy, physiology, pathology, pharmacology, diagnostics, therapeutics, etc.) is vital for any position that the Health Information Management (HIM) professional will hold. Biomedicine, as all sciences, is based upon current models of our understanding of how biological systems work and function. These models and concepts are constantly being updated and modified as we learn more about disease etiologies, progression, and behaviour. It is important that the HIM professional understands that the models vary over time and among disciplines and as a result may affect the categorization or classification of a disease or illness (e.g., changes to HIV/AIDS coding since the 1980s).

Learning Content Area (LCA)		Diploma	Degree
1.	Biomedical terms typically encountered in health care documentation including pronunciation and spelling.	Apply	Apply
2.	Medical abbreviations and acronyms found in health care documentation with respect to their general medical meaning.	Apply	Apply
3.	Resource usage to clarify understanding of medical terms and conditions, including but not limited to: medical dictionaries, drug reference books, pathology textbooks, electronic resources.	Apply	Evaluate
4.	Structural units of the body including cells, tissues, organs and systems.	Apply	Apply
5.	Anatomical structures, their location and associated physiological functions. For each: tissue, organ, and body system.	Apply	Apply
6.	Course of a pathological condition in terms of etiology, including but not limited to: micro-organisms, genetic abnormalities, injuries, poisoning, adverse effects of correctly taken medications, nutrition, clinical manifestations (signs and symptoms), changes in structure and function, diagnostic and therapeutic interventions, and prognosis.	Apply	Apply
7.	Normal and abnormal results of the more common diagnostic interventions, including but not limited to: laboratory tests on urine and blood, cultures, diagnostic imaging, EKG report, EEG report.	Analyze	Analyze
8.	Role of the risk factors in health and disease, including but not limited to: genetics, lifestyle, environmental factors, preexisting conditions, and stress.	Understand	Understand
9.	Types of interventions, including but not limited to: counseling, surgical, pharmaceutical, physical, biological, radiological.	Apply	Apply
10.	Consistency or inconsistency between the health care professional's diagnoses and the content of the complete health record, including but not limited to: the ability to recognize whether an individual with pneumonia has been prescribed an antibiotic by referring to documentation such as orders and medication forms. For example, if there is documentation of a transfusion and low Hgb in lab but no diagnosis of anemia.	Evaluate	Evaluate
11.	Genetic composition and human genome.	Knowledge	Understand

B. Health care system in Canada

Description: The HIM professional “must have an understanding of the health care system, its regulation and operation, its practitioners and institutions, and the role of the HIM professional within the system. The health care system has evolved with the growth and evolution of the country, and demographic and economic forces and technological change are taking it in yet other directions. Health data and information collected in the context of the health care system are central to the efficient and effective delivery of health care and to sustaining the health of Canadians “(Gibson 2009, 28). The Canadian health care system is a complex and adaptive system and HIM professionals must understand how the pieces fit and how a change to one component may affect the system as a whole.

Applications: As noted above, the HIM professional must have an understanding of the health care system, its regulation and operation, its practitioners and institutions, and the role of the HIM professional within the system. The HIM professional may participate on a team involved in the development of proposals, research papers, and budgets or participate in the review and self-assessment of accreditation standards. They must be able to recognize trends and understand the changes that affect health information within the health care system.

Learning Content Area (LCA)		Diploma	Degree
1.	Historical and legal foundations of the Canadian health care system, including but not limited to: the British North America Act, the Canada Health Act, the Canada Health and Social Transfer Act.	Understand	Understand
2.	Health care governance in Canada including: federal, provincial/territorial, regional, and municipal, and First Nations.	Understand	Understand
3.	Regulations and legislation of the health care organizations operations (public, private) pertinent to HIM (minimum of documentation requirements, custodianship of record, privacy, consent) including Accreditation Canada standards applicable to HIM.	Understand	Understand
4.	Regulations and legislation of the provincial Regulated Health Professions Acts (RHPA) or equivalencies and the individual health professional organizations/associations.	Knowledge	Knowledge
5.	Basic concepts of health economics including but not limited to: provincial versus federal responsibilities, transfer payments, global funding, fee schedules, case costing.	Knowledge	Knowledge
6.	Other national agencies involved in health and health information related fields, including but not limited to: Accreditation Canada, CIHR, CPSI, CIHI, Infoway.	Knowledge	Understand
7.	International agencies and organizations influencing Canadian health care, including but not limited to: World Health Organization (WHO), International Organization for Standardization (ISO), International Health Terminology Standards Development Organization (IHTSDO).	Knowledge	Knowledge
8.	Levels of care (self-care, primary, secondary, tertiary, and quaternary) and the exchange of health information between the levels.	Understand	Understand
9.	Structure of continuum of care and the exchange of health information between the entities, including but not limited to: levels of care including hospitals/acute, public health, long-term, home care, pharmacies, palliative/end-of-life, mental health, cancer, ambulatory, rehabilitative, chronic, aboriginal health services, preventative, primary, specialist, and community.	Knowledge	Knowledge
10.	Current health care issues and trends, including but not limited to: sustainability, aboriginal health,	Knowledge	Understand

Learning Content Area (LCA)		Diploma	Degree
	multicultural health, cost of drugs, shortage of health professionals, wait times, health care quality, health care safety, EHR, PHR.		
11	<p>Health care systems as a complex and adaptive system. Consider:</p> <ul style="list-style-type: none"> • how the pieces fit together and if one component is changed, what happens to the rest? • re-structuring - the move to regional health authorities and how this affects everything from organizational structure to policies and procedures and flow of information. 	Knowledge	Analyze

C.1 Health Information Management

Health Information Management is “the discipline that focuses on health care data and the management of health care information, regardless of the medium and format. Research and practice in health information management address the nature, structure and translation of data into usable forms of information for the advancement of health and health care of individuals and populations” (Abrams 2009, 1). New graduates in HIM work in coding and classification, privacy, standards, data quality management, and health records management.

C-1-1 Data Collection and Grouping

Description: “Classification systems provide a means to catalogue and retrieve diagnoses and intervention data for statistical purposes. Classifications enable the study of incidence and prevalence of disease, the measurement of outcomes, the evaluation and monitoring of the quality of care and the management of resource utilization (determining where and how resources are best utilized to meet the health care needs of the population). Health data that are classified may be further grouped into heterogeneous groups to facilitate the study of conditions and interventions that utilize similar resources. Nomenclatures provide a specific pre-established and standardized term for each entity and are part of the foundation upon which the EHR is built... The data collected using a classification system, nomenclature or terminology are employed by clinicians, decision makers and researchers for continuity of care, for informed decision making and for allocation of resources, so timeliness and accuracy of the data are essential “(Fabry 2009, 186).

Applications: The HIM professional must demonstrate knowledge of classification, terminology systems and data reporting to participate in the decision of what works most effectively in different situations and levels of care. The in-depth training that the HIM student receives in ICD-10-CA and CCI is transferrable to all classification systems and allows for an understanding of the changes, updates, and mapping requirements that are required to stay up-to-date with national and provincial standards. The knowledge of the background requirements of a classification system, and the standards that accompany it, is transferable to terminologies as well.

Learning Content Area (LCA)		Diploma	Degree
1.	Data, information, knowledge, wisdom continuum.	Understand	Understand
2.	Data collection in Canada, including but not limited to: acute, rehabilitation, cancer care, chronic disease management, primary care, mental health, community, residential and ambulatory levels of care, continuing, long term.	Understand	Understand
3.	Classification systems implementation, including but not limited to: training, standards, minimum data set (MDS), cost, technology, care level, non-mandated implementation considerations.	Understand	Apply
4.	Terminology, nomenclature, classification, abstraction, encoding, and coding systems.	Understand	Apply
5.	ICD-10-CA and CCI classification systems.	Apply	Apply
6.	Canadian coding standards.	Apply	Apply
7.	Abstraction of data.	Apply	Apply

Learning Content Area (LCA)		Diploma	Degree
8.	Different classification and data abstraction systems in Canada including acute care, rehab, primary care, mental health, and community care. Including but not limited to: rehabilitation (FIM-FRGs), mental health (DSM IV TR or V), home care, cancer care (ICD-O), International Classification of Functioning, Disability and Health (ICF), primary care (ICPC 2).	Knowledge	Knowledge
9.	Commonly used terminologies, including but not limited to: SNOMED CT, LOINC, nursing terminologies.	Knowledge	Knowledge
10.	Uses and purpose of SNOMED CT, including but not limited to: direct patient care, decision support, statistical reporting, outcomes measurement, public health surveillance, health research, and cost analysis in the Canadian context.	Knowledge	Understand
11.	SNOMED CT hierarchies, axis and the levels of granularity.	Knowledge	Understand
12.	<u>Sourcing data</u> to address user information requests, including but not limited to: What data to use, how to assemble from which sources, how to solve business problems, including what is currently done.	Understand	Evaluate
13.	Data collection process based on user needs, including but not limited to: databases, surveys, forms, electronic collection, abstracting and how to get data when it does not exist.	Understand	Apply
14.	Grouping and case weighting methodologies used in Canada and how diagnosis and intervention coded data are used within these systems - Case Mix Groups (CMG), Resource Intensity Weight (RIW), Day Procedure Groups (DPG), and Comprehensive Ambulatory Classification System (CACS).	Apply	Apply
15.	Abstract nature of health concepts on coding evolution, data collection and grouping. Consider how models vary over time and among disciplines especially in regards to disease factors, such as: AIDS, SARS, H1N1.	Knowledge	Knowledge
16.	Health data and information repositories, including but not limited to: CIHI, Statistics Canada, Ministries of Health (MoH), National Library of Medicine (NLM).	Apply	Apply
17.	Data mapping and its uses.	Understand	Apply
18.	Registries including the creation, use, data collection methods, users, and maintenance.	Understand	Evaluate
19.	MIS standards and where, why and how they are used.	Knowledge	Apply
20.	Metadata and its characteristics, metadata repositories (data dictionaries), storage, and legal implications.	Knowledge	Understand
21.	Human and organizational cost/benefit of data collection.	Knowledge	Understand

C-1-2 Information and Data Standards

Definition: Information and Data Standards are documented agreements on representations, formats, and definitions of common elements. Information and Data standards improve the quality and comparability of data by improving the consistency and efficiency of data collection, and reducing data redundancy. The format and extent of health information capture is often dictated by both internal and external authorities or governing bodies that establish standards. Issues of timelines, minimum data sets, and reporting requirements can impact on how information is obtained and stored in the database.

Application: The HIM professional must demonstrate knowledge of common information and data standards, to support consistent and comparable collection and reporting of clinical and administrative data to meet the information needs of users.

Learning Content Area (LCA)		Diploma	Degree
1.	Development of standards (including the standards life cycle), their importance to health information management, importance of standards to interoperability and data and information sharing.	Understand	Understand
2.	Common standards development organizations (Infoway, CIHI, WHO, ISO, IHTSDO) and their roles in health data and information management.	Understand	Understand
3.	Information standards related to Electronic Health Records (EHR) solutions under development and deployment across Canada, including but not limited to: data messaging, information and data standards, standards collaborative framework.	Knowledge	Understand
4.	Internal and External Standards to support a Health Information Management System. Internal standards, including facility requirements for data collection and scheduled maintenance. External standards and requirements, including but not limited to: CIHI standards, HL7, LOINC, pCLOCD, DICOM.	Understand	Analyze
5.	Validation of standards, conformance, and certification where applicable (based on the type of data and the potential use of complex terminology code systems).	Knowledge	Analyze
6.	Health Level 7 (HL7) and HL7 Canada.	Knowledge	Understand
7.	ISO and the most common ISO health care standards and their application in Canada.	N/A	Understand

C-1-3 Data Quality

Description: The quality of health data is critical to the production of information that is reliable, trusted and usable for local, regional, provincial and national decision-making, health system management and policy development purposes. Coding standards, clinical documentation, and coder knowledge and experience all affect data quality. HIM professionals are responsible for knowing and applying standards and their technical skill while coding. While the HIM professional is not responsible for clinical documentation, they should be involved in the development of solutions to meet the challenges that affect their ability to code accurately, consistently and in a timely fashion. The coding labs and practicum placements within the HIM program are an asset to the emerging HIM professionals' education, however it must be recognized that it is the graduates' experience in the field that will allow for expertise this area.

Application: The HIM professional will extract data from the clinical record, code the data using the appropriate classification system and coding standards, abstract demographic data, and enter the translated data into a health information system. HIM professionals must participate in the development and implementation of appropriate processes, policies and practices and continually strive to improve the quality of the data they collect and information they produce.

		Learning Content Area (LCA)	Diploma	Degree
1.		Importance of data quality on users and uses of data and information across the health care continuum.	Apply	Evaluate
2.		Data quality management principles, including health information quality management.	Understand	Apply
3.		Current data quality frameworks, including but not limited to: Statistics Canada, CHIMA, AHIMA and CIHI.	Understand	Understand
4.		Dimensions of data quality within the context of intended use – accessibility, comprehensiveness, relevance, granularity, precision, timeliness, currency, consistency, accuracy.	Apply	Evaluate
5.		Organizational best practices for maintaining data quality, including but not limited to: audits, monitoring, staff activities, facility structure, etc.	Understand	Analyze
6.		Data integrity, including but not limited to: standards, WORM [write once read many], storage.	Understand	Evaluate
7.		System edits and checks for records management functions in electronic systems (such as missing or incorrect data).	Apply	Evaluate
8.		Relate organized data elements, including but not limited to: diagnosis to diagnosis type, gender to diagnosis, or postal code to address, ELOS, diagnosis and co-morbidity, and one day stays.	Apply	Analyze
9.		Health care practice environment and its impact on data quality management, including but not limited to: EMR, Home care.	Knowledge	Understand
10.		Relationship between data quality and standards development initiatives and uses of data in health care (including the flow backwards and forwards).	Understand	Analyze

	Learning Content Area (LCA)	Diploma	Degree
11.	Clinical indicators and their role in monitoring health care quality, including but not limited to: HSMR, readmission rates.	Understand	Analyze
12.	Risk management program concepts.	Understand	Apply

C-1-4 Records Management

Description: The primary purpose of the health record is as a forum for communication between health care providers in the assessment and delivery of current and future care for the individual. Secondary uses of the data collected from the record include epidemiological studies, clinical research, health care planning, utilization management, monitoring population health, and evaluating and allocating health care funds. To accomplish these requirements, the individual's health record must be managed to ensure it is complete, accurate, and timely. Records management deals with the collection, maintenance, storage, retrieval, retention and destruction of individual health records within a legislative/regulatory framework; the ethical aspects of health information management are interwoven throughout the record lifecycle.

Application: The HIM professional will participate in the records management functions in all levels of health care and in all media. The HIM professional must understand the health information flow and data collection requirements throughout various levels of care and must have a good knowledge of the legislative requirements related to health documentation to participate in the development and implementation of policy and procedures to support the legal health record.

	Learning Content Area (LCA)	Diploma	Degree
1.	Principles of the legal health record.	Evaluate	Evaluate
2.	Records management principles and practices (<i>see detailed Records Management content below</i>). All content must be covered at the appropriate level.	Apply	Evaluate
3.	Federal/provincial/territorial legislation requirements for health information documentation, including but not limited to: hospital act, community care act, reporting requirements for communicable disease.	Apply	Apply
4.	Records management analysis and completion tasks (quantitative & qualitative analysis guidelines & standards) within the record in paper, hybrid and electronic formats.	Analyze	Create
5.	Professional practice guidelines and requirements regarding documentation standards in different health care environments, including but not limited to: primary, acute, mental health, rehab, community care.	Apply	Apply
6.	Data and information collection formats, including but not limited to: surveys, questionnaires, interviews, standard forms, abstracting.	Apply	Evaluate
7.	Forms and view design, including but not limited to: paper, electronic, source and problem oriented health records (POMR) and associated committee structures.	Create	Create
8.	Error detection and correction procedures for documentation within a record, including but not limited to: edits and corrections to documentation in its various formats.	Apply	Evaluate
9.	Legal acceptability of medical abbreviations and acronyms found in health care documentation.	Evaluate	Evaluate
10.	Definition, development, functional requirements and maintenance of a MPI and EMPI.	Apply	Analyze
11.	Impact of technological change on records management, including but not limited to: retention of applications, versions of templates, supporting tools (such as terminologies), code systems used in association with systems, the issue of being unable to recreate if retaining the data without context.	Understand	Analyze

	Learning Content Area (LCA)	Diploma	Degree
12.	Technical strategies and concepts for data integrity, including but not limited to: redundant systems, downtime procedures.	Understand	Analyze
13.	Disaster recovery and records processes.	Understand	Analyze
14.	Risk management program concepts.	Understand	Apply

Records management principles and practice detail:

Records management deals with the collection, maintenance, storage, retrieval, retention and destruction of individual health records within a legislative/regulatory framework; ethical aspects of health information management are interwoven throughout the record lifecycle. While the health providers are responsible for their individual content, the HIM profession is the group that reviews the record in its entirety with a view to all purposes. The HIM professional will act as a resource to care providers, management and project teams. As the HIM professional will participate in records management functions in all levels of health care and in all media, the HIM professional must have a solid knowledge and understanding of the health information flow and data collection requirements throughout various levels of care. They must understand the legislative and regulatory requirements related to health documentation to participate in the development and implementation of policy and procedures to support the legal health record.

Records management includes:

- health information flow throughout the facility (includes internal and external sources)
- data collection (minimum data set, collection for specific use, the best format or view, etc.),
- access and use (audit trails of access, documentation changes, updates, and authentication),
- enterprise record management systems,
- variables considered for active versus inactive health information,
- storage,
- retention of data files including metadata and data stored in web applications, and
- destruction of data.

The HIM professional must have a thorough understanding of data collection formats (integrated, source-oriented and problem-oriented records; electronic formats and views) and recognize the risks related to access, storage, retention and destruction of health information documentation. The HIM diploma graduate must *understand* file organization as it relates to the management and storage of electronic information as they will participate in the development of a system or process to store, maintain and retrieve records kept and stored in different formats as technology changes. The HIM degree graduate will *analyze* the technological changes so they can compare solutions and participate in the selection of the best options to meet all user needs.

Records management includes the ability to outline risk, develop recommendations, and implement solutions to manage and mitigate risk related to privacy, access, storage, and retention and destruction of health information documentation.

C-2 Health Information Analysis and Business Intelligence

Description: The HIM professional must have analytical and business intelligence skills to understand and track emergent trends, typical and anomalous events revealed in the compilation and analysis of health information from multiple or single sources. The HIM professional must be able to respond to queries, anticipate the types of information clinicians, administrators, government, and other external agencies need, identify the appropriate sources of data, understand the limitations of data and its sources, and must have sufficient skills to utilize software packages that allow for analysis and presentation of the data.

C-2-1 Statistics

Description: This area involves the study of the process of collecting, organizing, computing, analyzing and interpreting numerical data for decision-making.

Applications: In reporting the results of data analysis and research studies, it is necessary to determine statistical significance of the findings; in reporting on performance parameters within and across health facilities it is necessary to understand basic descriptive statistics. Knowledge of statistical principles is important considering how data will be analyzed and how it will be presented. The HIM diploma graduate will apply their statistical knowledge when completing routine statistical reporting requirements while the HIM degree graduate can expect to be involved in decision support, research and data analytics. As the HIM professional progresses in their career in decision support, further education and experience in statistics will be required.

		Learning Content Area (LCA)	Diploma	Degree
1.		Statistical terminology and proper use of statistics, including but not limited to: null hypothesis, error, confidence intervals, significance, parametric and non-parametric, etc.	Apply	Evaluate
2.		Descriptive statistical theory for continuous and categorical health care data including: central tendency measures (mean, median, mode), nominal/ordinal/interval/ratio data, standard deviation, skewed data, normality; dispersion of data (range, standard deviation), and hospital statistics (% occupancy, ALOS, morbidity and mortality rates, census, patient days, etc.).	Apply	Evaluate
3.		Inferential statistical theory to health care data including but not limited to: chi-square, t-tests, frequency, frequency distribution, comparison of two or more groups; Z-tests, ANOVA.	Understand	Analyze
4.		Correlation and regression analysis in health care data.	N/A	Apply
5.		Representations of statistical analysis results using charts, graphs, plots, histograms, etc.	Apply	Create
6.		Commonly used statistical software systems, including but not limited to: SAS, SPSS, Graph Pad, Epi Info.	Knowledge	Apply

C-2-2 Research Design and Methodology

Description: Involves the study of basic principles and techniques used in conducting research. It is important that HIM professionals understand that a given set of facts can be measured in different manners; that the results of one approach to measurement can be translated into another and hence the recordings differ – even if the same set of facts is recorded. For instance, age can be recorded in years, in units of day-month-year or as child-youth-adult-elderly.

It is important for the HIM professional to realize that the transition from quantitative to qualitative measurement scales is continuous, subject to preferences and choice, and dependent on available measurement methods, practical circumstances, purposes of the measurement, etc. It is also important for them to realize that the recording of organs, disease entities, etc., is the recording of measurements – measurements that may be based on objective methods or human assessment.

Applications: The HIM professional may be employed in settings where information needs are identified and data is collected and analyzed. The HIM professional is expected, as part of a team, to carry out studies related to utilization and quality assurance and to participate in clinical trials and research studies. It is important for HIMs to realize that there is often a choice of measurement approaches and a duty to choose appropriately. This section is more specific to the HIM degree graduate; HIM diploma graduates who want to work in decision support or research will require further formal education. Advanced education and experience in research design and methodology will be required if the HIM professional wants to progress in decision support and research.

	Learning Content Area (LCA)	Diploma	Degree
1.	Major sources of research funding in Canada.	N/A	Apply
2.	Research ethics approval process, why ethics approval is important, and the situations where ethics approval is required.	Knowledge	Apply
3.	The principles of scientific investigation: objectivity, replication and reliability, precision and validity.	Knowledge	Apply
4.	Qualitative and quantitative research approaches and methodologies.	Knowledge	Apply
5.	Literature search using appropriate databases, including but not limited to: PubMed, ProQuest.	Apply	Evaluate
6.	Strategies for data collection such as interview, participant observation, social survey, content analysis, and experimentation.	Understand	Evaluate
7.	Data collection tools.	Understand	Create
8.	Steps in research design and methodology.	Understand	Apply
9.	Medical and scientific literature appraisal.	Understand	Evaluate
10.	Legal and institutional standards in research.	Knowledge	Apply
11.	Publication for a trade journal or scholarly publication.	N/A	Create
12.	Oral presentation based on a research study or paper.	Apply	Create
13.	Poster presentation.	N/A	Create

C-2-3 Epidemiology

Description: Epidemiology is the study of factors affecting health and illness of populations, and serves as the foundation and logic of cause and effect patterns of disease, treatment interventions made in the interest of public health and predictive models for preventive medicine. It is fundamental to evidence-based medicine for identifying risk factors for disease and determining optimal treatment approaches to clinical practice. Epidemiology involves a study design, data collection and analysis including the development of statistical models to test hypotheses and the documentation and presentation of results.

Applications: The HIM professional must be able to understand the concepts of epidemiological research and apply various approaches and techniques to the collection, analysis and presentation of health data and information products. The HIM professional may participate in epidemiological and other clinical research studies.

	Learning Content Area (LCA)	Diploma	Degree
1.	Concepts of health, wellness, disease, illness and sickness.	Knowledge	Analyze
2.	Role of epidemiology in disease prevention and health promotion.	Knowledge	Apply
3.	Physical and social determinants of health and the use in health policy.	Knowledge	Apply
4.	Epidemiological terms such as agent, host, outbreak, endemic, epidemic, population at risk, pandemic, natural history of disease.	Knowledge	Apply
5.	“Number needed to treat” as an epidemiological measure of the effectiveness of therapeutic interventions.	N/A	Apply
6.	“Number needed to harm” as an epidemiological measure of risk in therapeutic interventions.	N/A	Apply
7.	Test sensitivity and specificity and their relationship to the prevalence of a disease in a population.	N/A	Apply
8.	Authoritative sources of routinely collected administrative and population data, including but not limited to: CIHI, Statistics Canada, Health Canada, provincial and federal registries, MSP, Canada Census, WHO, Organization for Economic Co-operation and Development (OECD).	Knowledge	Evaluate
9.	Epidemiologic measures, including: incidence rate, prevalence rate, mortality rate, confidence intervals, case fatality rate, relative risk, and age standardization.	Understand	Analyze
10.	Type of study (cross sectional study, case control study, cohort study, and randomized control study) and the rationale for using a specific type of study in a specific circumstance.	Understand	Evaluate

C-2-4 Decision Support and Data Analytics

Description: The HIM professional must have statistical and analytical skills to source, extract, and analyze data from multiple sources. Through understanding the nature and limitations of existing data collection systems, the HIM professional can respond to queries, and assist users to identify the data required for reporting purposes. The HIM professional will facilitate the required data extraction processes, perform the data quality ‘fit for use’ checks, and do the analysis for the requestor based on the understanding of the request. The HIM professional must be able to respond to requests, anticipate what types of information clinicians and administrators need, and must have sufficient skills to utilize software packages that allow for analysis and presentation of the data.

Applications: Data is collected, extracted, organized, interpreted, analyzed and presented. The HIM professional must be able to determine the best methods to present data in a user-friendly format so as to best meet the needs of individuals requesting information. The HIM professional may function as a health information analyst for a sector or organization. This section is more specific to the HIM degree graduate; HIM diploma graduates who want to work in decision support and data analytics will require further formal education. Advanced education and experience in decision support, data analytics and business intelligence will be required if the HIM professional wants to progress in this area.

	Learning Content Area (LCA)	Diploma	Degree
1.	Relevant sources of demographic, clinical and financial data/evidence across the continuum of care, including but not limited to: DAD, RAI, MIS.	Knowledge	Evaluate
2.	Information and data integration and linkage theories and concepts.	Knowledge	Apply
3.	Data mining.	Knowledge	Understand
4.	Trends in health data	Apply	Analyze
5.	Consistent matrices for comparison of individuals, such as the MPI provides or organizations, such as HIMR and wait times.	Knowledge	Apply
6.	Graphical and tabular presentation of health care data to facilitate decision making, including but not limited to: balanced score cards, dashboards.	Apply	Create
7.	Methods for assessing and improving the quality of care and services, including but not limited to: cost benefit analysis, fishbone diagrams, process mapping.	Apply	Create
8.	Business intelligence tools to locate, store, retrieve, analyze and present data and information from multiple sources, including but not limited to: COGNOS, Microstrategy, Microsoft EXCEL.	Knowledge	Evaluate
9.	Impact analysis.	Apply	Apply
10.	Needs assessment methods and tracking tools to ascertain the nature of health data and information requests, including but not limited to: study request forms.	Understand	Create
11.	Data extraction.	Apply	Apply
12.	Performance indicators, standards and benchmarks.	Knowledge	Analyze
13.	Relationship between outcome measurement and quality management initiatives.	Knowledge	Apply
14.	Presentation of Health care data and information using presentation software.	Create	Create

C-3 Health Information: Privacy, Confidentiality and Access

Description: This area of study deals with the concepts, principles and application of the rights and obligations related to individual access, privacy and confidentiality of personal health information in both the paper and electronic environments. This area will also describe how these concepts and principles relate to security and information management. Major components of this area will deal with giving effect to personal privacy rights while managing the organization and health care provider obligations to collect, use, disclose and retain information. It will also deal with privacy breach protocols and building a culture of privacy within the organization.

Applications: The HIM professional must be cognizant of these key concepts and principles if they are to be responsible for respecting rights of access and implementing the privacy obligations of an organization. As well, the HIM professional must be aware of how the principles of privacy, confidentiality and access apply when managing health information in all its forms and formats (e.g., verbal, written, images, coded, digitized, identifiable and aggregate).

C-3-1 Privacy – the legal basis and requirements of accountability including access, collection, use, disclosure, retention and disposal of health information

Description: The HIM professional must be aware of the privacy rights of individuals and groups as well as of the information obligations of health care providers and organizations. These access and privacy rights and obligations are set out in statutes and in health professional or ethical codes of conduct. The principles in these foundational documents lay the groundwork for managing the personal health information of the person and the organization. They apply to health information in all its forms (e.g., voice, text, video, wireless, coded, etc.).

The HIM professional must also be aware of the range of roles and disciplines involved in managing the privacy, confidentiality and security of health information collaboratively in an organization. This section will cover the relevant statutes and other authorities as well as the roles that organizations, professionals and other stakeholders have in the system.

Application: The HIM professional must have knowledge of notification practices, roles and authorities, audit systems, breach protocols and security safeguards in order to put them into practice, to use systems effectively and to support the management of personal health information in its life cycle within health organizations. The diploma graduate will be able to apply this learning content locally or departmentally while the degree graduate will be able to apply this learning content to the overall health system.

		Learning Content Area (LCA)	Diploma	Degree
1.		Privacy rights of individuals and groups and the basis for those rights.	Knowledge	Understand
2.		Canadian and Provincial/Territorial privacy statutes that affect health information, including but not limited to: Freedom of Information and Privacy Acts, Hospital Acts, Mental Health Acts, Health Information Protection, e-Health legislation, and other applicable Statutes.	Knowledge	Apply

	Learning Content Area (LCA)	Diploma	Degree
3.	CSA Model Code for the Protection of Personal Information, the Pan-Canadian Health Information Privacy and Confidentiality Framework, the concepts of fair information practices, COACH guidelines, CHIMA resources, and health professional practice.	Knowledge	Apply
4.	The relationship between Canadian Privacy Laws and select International Privacy Laws, Directives, and Regulations, including but not limited to: HIPAA, European Directives, IHR Regulations.	N/A	Knowledge
5.	Key provisions, principles and definitions addressed in health information, data protection and privacy statutes, including but not limited to: access, consent, collection, use, disclosure, access, obligations of custodians/trustees and information managers.	Understand	Understand
6.	The role of and responsibility for 'accountability' and for 'compliance with' statutes, codes of conduct, etc., as they relate to privacy and security in an organization.	Understand	Analyze
7.	Retention and destruction for the privacy of health information, including but not limited to: the review of and adherence to data holding standards as pertains to access, storage, retention and destruction of health information documentation and release of information.	Understand	Analyze
8.	The privacy considerations in risk management.	Understand	Apply

C-3-2 Management of access, privacy and confidentiality obligations in relation to personal health information

Description: There are many administrative, technical and physical tools and mechanisms used in the management of privacy and confidentiality of personal health information. This unit will consider tools that give effect to rights of access and organizational management of health care provider and custodian obligations, including management of the disclosure, retention and disposal of health information and related storage media in both the paper and the electronic environments.

Applications: The HIM professional must have knowledge of notification practices, roles and authorities, audit systems, breach protocols and security safeguards in order to put them into practice, to use systems effectively and to support the management of personal health information in its life cycle within health organizations. The diploma graduate will be able to apply these learning outcomes locally or departmentally while the degree graduate will be able to apply these learning outcomes to the overall health system.

		Learning Content Area (LCA)	Diploma	Degree
1.		The application of privacy, security and confidentiality principles in health information practice, including but not limited to: how client privacy is respected, confidentiality maintained and security ensured during data collection, use, disclosure, management, retention and destruction, and in a spectrum of settings including health care delivery institutions, physician offices, Telehealth, remote locations, statistical organizations, etc.	Evaluate	Evaluate
2.		Tools used to: <ul style="list-style-type: none"> • support and operationalize the statutes, • manage privacy in the health care setting, in paper, physical (including but not limited to: private interview space for clients) and electronic environments, and • continuously reinforce a culture of privacy and confidentiality. This would include tools such as: policies and procedures; notification documents; consent management practices, and privacy training programs.	Apply	Evaluate
3.		Tools used to assess and manage privacy risk. This would include tools such as Privacy Impact Assessments, threat risk assessments, corporate risk frameworks.	Understand	Analyze
4.		Tools used to control and monitor access to systems that hold personal health information. This would include tools such as confidentiality agreements, Role Based Access policies and tables, user authentication practices, and policies and protocols related to review and management of audit information, as well as policies and practices related to special groups such as health care providers or specific disease groups.	Understand	Apply
5.		Tools used to give effect to an individual's wishes respecting access to his/her information by others and, release/disclosure of his/her information to others. This would include tools such as: consent management systems, data access request policies and procedures, and data disclosure tracking systems.	Understand	Apply
6.		Obligations and procedures related to an individual's right to access their own information and to request changes or corrections to his/her own personal health information. This would include for	Understand	Apply

	Learning Content Area (LCA)	Diploma	Degree
	example, tools used to notify individuals of their rights, and the processes for actioning those rights.		
7.	The definition and management of differing levels of information, for example: - identifiable personal health information - de-identified information, and - aggregate health information	Apply	Apply
8.	Obligations and practices related to the management of privacy or security breaches.	Understand	Apply
9.	Policies, practices and tools used to manage the disclosure/release of information for secondary purposes, including but not limited to: data access request forms and agreements, completing a line-by-line review for third party information, consideration for broad Freedom of Information releases.	Apply	Apply
10.	Design and development of policies/rules to support the appropriate release of health information.	Understand	Apply
11.	Manual and electronic systems to log and track access and disclosure of health information.	Apply	Analyze
12.	Education of health care consumers about health information rights and options, including but not limited to: brochure development.	Understand	Create
13.	Individual health information rights and pertinent privacy policies and processes, including but not limited to: request for change to personal health information, request for lock box.	Understand	Apply

D. Information Systems and Technology

Description: The HIM professional needs to understand the underlying concepts for electronic health records and how the various types of information systems used in health care must interact to securely exchange the health information that is required to support decision making and improve how health is delivered. This involves knowledge of information system and technology terms and concepts; an understanding of the information systems lifecycle; and an appreciation of the challenges inherent in acquiring, implementing, maintaining and optimizing the appropriate use of information and systems in a health care context.

Applications: The new professional must recognize the health information management considerations involved in integrating the many systems required to manage the capture, access and use of information throughout the health care system so that they can play an important role in ensuring that the increasing breadth of information captured, accessed and used from these electronic systems follows sound HIM practices. HIM professionals have very important roles to play in the selection, implementation and operation of these systems since high quality and accessible information will be the life-blood of health care organizations in meeting the health system challenges of today and tomorrow.

Learning Content		Diploma	Degree
1.	Concepts of database management including: design, update and maintenance capabilities, including Entity Relationship Diagrams for database design.	Apply	Apply
2.	Systems development life cycle.	Understand	Apply
3.	General systems theory, including: models, data modeling, complex adaptive systems, data flow diagrams.	Understand	Apply
4.	IT Procurement processes (see Appendix A).	Knowledge	Apply
5.	Systems implementation, including but not limited to: establishing IT infrastructure support, training, testing, implementing conversion plans.	Knowledge	Apply
6.	Systems evaluation (See Appendix B).	Knowledge	Apply
7.	Systems maintenance (see Appendix C).	Knowledge	Apply
8.	Concepts of EHR PHR, EMR, EPR.	Understand	Understand
9.	EHR conceptual architecture, including but not limited to: system architecture including data repository structures, data modeling, data flow diagrams, etc.	Knowledge	Understand
10.	Transition to EHR.	Understand	Apply
11.	Systems communication and integration from an information flow perspective, including but not limited to: portals, messaging, HL7 and XML.	N/A	Apply
12.	Hardware, software and networking concepts and terminologies, including but not limited to: systems design as applied in healthcare, patient journey modeling, data modeling, etc.	Knowledge	Understand
13.	Types of health care information systems and information flow between them, including but not limited to: registration system, ADT, Telehealth, a clinical information system, a data warehouse, health records and administrative systems.	Understand	Analyze
14.	Process mapping including work flow analysis techniques.	Knowledge	Apply
15.	Common administrative, technical and physical control methods for security of personal health information including policy, procedures, standards and guidelines, audits. (see Appendix D)	Understand	Apply

E. Management

Description: This domain of competence provides a strong foundation in the theories and concepts of management. This includes understanding the business aspects of health care organizations, the principles of human resource management and concepts relating to organizational behaviour and culture, financial and business management, and work flow analysis. Management techniques such as strategic planning, critical pathways, project management, change management and standard setting are included.

Application: The HIM professional must have an understanding of management principles, whether or not a person is hired into a management position. Project management and change management are increasingly important due to the ongoing changes with technology and the health care system, as well as the move to team work and projects.

	Learning Content	Diploma	Degree
1.	Organizational structure including organization charts, bylaws, and human resources.	Understand	Apply
2.	Strategic planning and the steps in developing a strategic plan.	Understand	Apply
3.	Health information management services alignment with the strategic plan of the overall organization.	Understand	Apply
4.	Performance indicators, standards and benchmarks.	Knowledge	Analyze
5.	Program management.	Understand	Understand
6.	Program evaluation or the systematic collection, analysis and reporting of data to support decision-making by measuring against specific criteria to help determine the need, performance, effectiveness or cost-effectiveness of a program.	Understand	Apply
7.	Principles of common leadership theories.	Knowledge	Understand
8.	Human relations including interpersonal relations, psychology, and psychosocial principles in managing in the health care environment.	N/A	Understand
9.	Steps in team building.	Apply	Apply
10.	Labour relations in health care including: bargaining, unions, collective agreements, contracts, negotiation.	Knowledge	Understand
11.	Change management concepts.	Understand	Apply
12.	Project management and techniques.	Apply	Apply
13.	Quality management practices and the steps required to introduce and maintain, including but not limited to: CQI, LEAN.	Knowledge	Apply
14.	Work flow analysis techniques.	Knowledge	Apply
15.	Business management including office management, efficiency expertise, ergonomics, and meeting management.	Understand	Apply
16.	Resource management (e.g. human, financial, materials).	Knowledge	Apply
17.	Risk management program concepts.	Understand	Apply
18.	Presentation skills.	Apply	Apply

F. Ethics and Practice

Description: In this component the student will study what constitutes professional behaviour ethics and values. “The CHIMA HIM professional code of ethics was created to guide, persuade, promote and ultimately achieve ethical behaviour. As much as it identifies the essence of the morals, values and principles that the HIM professional is to uphold, the code of ethics is not able to guarantee ethical behaviour” (Crook 2009, 340). It is important that the HIM professional understand the complexity of ethical issues they will encounter during their career and that they can apply the principles of the code of ethics to guide their behaviour. It is also important that the HIM professional understand the consequences of a breach of ethics. This area also covers the history, purpose and activities of the Canadian Health Information Management Association (CHIMA), the Canadian College of Health Information Management, the provincial HIM associations and the educational programs, including the importance of lifelong learning for the HIM professional.

Applications: The HIM professional must have an understanding of their scope of practice and their role. It is important for them to promote the HIM profession. The HIM professional has an ethical and legal duty to protect personal information and to behave in an ethical manner during their career.

	Learning Content Area (LCA)	Diploma	Degree
1.	Structure and role of CHIMA and CCHIM.	Understand	Understand
2.	Credentialing and certification process for HIM professionals, including but not limited to: the development and maintenance of CPEs, student membership.	Apply	Apply
3.	Role of the HIM professional within the Canadian health care system at all levels of care and in various settings.	Understand	Understand
4.	CHIMA Code of Ethics.	Apply	Apply
5.	HIM professional as a consumer advocate, including but not limited to: confidentiality, security, legislation entitlements, right to access.	Apply	Apply
6.	CHIMA Professional Practice Briefs (PPB) and practice guidelines.	Understand	Apply
7.	HIM professional as a valuable contributor to the health care team.	Apply	Apply
8.	Health information management and health informatics organizations, including but not limited to: AHIMA, CAHIIM, provincial HIM associations, IFHIMA, COACH, HIMSS, American Medical Informatics Association (AMIA).	Knowledge	Understanding

G. Practicum

Description: The practicum represents the culmination of the program of study where, as an outcome, there is synthesis, consolidation, and application of the learning that has taken place. Greater emphasis should be placed on the completion of a special project or equivalent activity as opposed to a reiteration of the skills already acquired and practiced in the classroom setting. Practicum placements should take place in a broad range of settings. For the HIM diploma graduate, at least one practicum should contain a significant portion of time spent on coding classification, privacy issues and records management functions. It is important that the student understands the flow of information throughout the facility, whether or not the information was originally created within the facility itself. The practicum content is presented in a learning outcome format as the student will be completing these tasks in a work environment.

		Learning Outcome	Diploma	Degree
1.		Synthesize and evaluate accountability for all actions taken during practicum.	Apply	Apply
2.		Conduct self-evaluation of performance against documented standards to ascertain and articulate whether more practice in a skill is required.	Apply	Apply
3.		Integrate privacy, confidentiality, and professional ethics during practicum.	Apply	Apply
4.		Demonstrate and synthesize appropriate professional attitudes and conduct.	Apply	Apply
5.		Participate effectively and cooperatively on a team, project or committee.	Apply	Apply
6.		Discriminate between clinical facility practices and theory taught in the classroom and rationalize differences.	Apply	Apply
7.		Demonstrate time management and problem-solving skills.	Apply	Apply
8.		Adapt to a variety of technologies and software packages.	Apply	Apply
9.		Apply learned theory to the practicum setting.	Apply	Apply
10.		Complete major practicum research or administrative project including assessment and evaluation.	Apply	Apply
11.		Demonstrate verbal and written communication skills.	Apply	Apply
12.		Prepare and present an information session on the HIM profession to non-HIM staff and/or managers. Include the history, current state – education and certification, and a discussion on the role of the HIM professional in health care.	Apply	Apply

REFERENCES

Abrams, K. (2009) Introduction CHIMA. *Fundamentals of Health Information Management*. Ottawa. CHA Press.

Canadian Health Information Management Association (2009). *Fundamentals of Health Information Management*. Ottawa CHA Press.

Crook, G. et al (2009). Ethical Aspects of Health Information Management and Professional Practice. CHIMA. *Fundamentals of Health Information Management*. Ottawa. CHA Press.

Fabry, P., et al. (2009) Clinical Classifications, Nomenclatures and Terminologies. CHIMA. *Fundamentals of Health Information Management*. Ottawa. CHA Press.

Gibson, C. (2009) The Canadian health Care System. CHIMA. *Fundamentals of Health Information Management*. Ottawa. CHA Press.

O'Grady, J. (2009). *Health Informatics and Health Information Management: Human Resources Report*. Toronto. Prism Economics and Analysis.

WEB REFERENCE

Bloom's Taxonomy. http://www.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

APPENDICES

Appendix A - Information Technology Procurement

It is expected that a diploma graduate may be involved on a team to select one specific piece of technology or a department specific system. The diploma level graduate should be able to *understand* the following content in relation to the procurement of IT:

- Development of criteria to assess, evaluate and select new information systems (including software, hardware and networks) using expected standards for functionality, conformance, and certification.
- Development of a business case, a request for proposal (RFP) and a response to an RFP
- Literature, product review and site evaluations into the process of system acquisition.

It is expected that the degree graduate will be involved on a team to select multiple or organization-wide IT systems. The degree level graduate should be able to be an active participant in the IT procurement process and *apply* the following learning content:

- Development of criteria to assess, evaluate and select new information systems (including software, hardware and networks) using expected standards for functionality, conformance, and certification.
- Development of a business case, a request for information (RFI), a request for proposal (RFP) and a response to an RFP.
- Procurement processes and ethical practices including gating processes and other technology lifecycle and project management processes.
- Contractual processes, participation in negotiations, specific language to meet privacy, licensure, conformance with standards, and other HIM related needs, and who to engage for optimal contractual arrangements (e.g., Service Level Agreements, Licensing Agreements – software, terminology systems).
- Assessment of technology options based on health information practice guidelines, standards and legislative requirements.
- Literature, product review and site evaluations into the process of system acquisition.
- Assessment of health information systems for purchase, conduct equipment and product analyses and other analyses as appropriate to ensure systems are able to meet needs and implementation and doesn't put the organization or the health information at risk (such as Privacy Impact Assessments, Threat/Risk Assessments, Data Sharing Agreements, Licensing requirements, functionality, etc.).
- Implementation of health information systems to ensure project includes awareness of agreements, assessments, functionality, conformance with expected integration standards, messaging and terminology standards.
- Post implementation evaluation including a validation of functionality, standards conformance/certification and data quality validation and alignment with business needs of users.

Appendix B - Systems Evaluation

It is expected that a diploma graduate will *understand* some of the risks involved with common Health Information Systems (HIS) (must meet Canadian standards, security needs such as ability to track access and changes, passwords, firewall protection, etc.) and that they will have knowledge of evaluation protocols and criteria-based audits.

It is expected that the degree graduate will be involved on a team to *evaluate* multiple or organization-wide IT systems. The degree level graduate should be able to be an active participant in the system evaluation process and apply the following learning content:

- Criteria-based audits to evaluate the effectiveness of current and proposed health information systems.
- Standards compliance processes (e.g., regular updates, implementation of new versions and testing).
- Evaluation protocols.
- Systems effectiveness by objective assessment using established criteria.
- Risks associated with health information systems (e.g., interfaces, security, downtimes, disaster recovery).

Appendix C - System Maintenance

It is vital that systems are maintained and updated for currency and continuity to allow for historical analysis and trending of data in ever-changing technology. This involves updating systems as required to meet changes in reporting or recording methodologies. System maintenance functions also require the HIM professional to determine what constitutes active versus inactive health information in order to evaluate alternative storage options. It is imperative to optimize the effective use of health information, which changes as the use of information itself changes.

It is expected that a diploma graduate may participate in the maintenance of the systems that they use on a daily basis. The diploma graduate should have *knowledge* of the following content in relation to ongoing system maintenance; the degree graduate will be expected to maintain systems and *apply* the following learning content:

- Currency of automated and manual systems including version control, error detection and control
- Consistent error detection and correction procedures (e.g., duplicate records in EMPI, filing audits)
- Data and process edits and checks in management of data in electronic systems.

Appendix D - Common administrative, technical and physical control methods for security of personal health information.

Access to health information within the organization must be a regulated and monitored process. There are administrative, technical and physical control methods for ensuring or promoting and monitoring the security of personal health information. The diploma graduate will *understand* these safeguards and the degree graduate will be able to *apply* these safeguards.

Administrative safeguards and methods of control relate to the policies and culture of confidentiality within the organization. Organizational policies should be based on external and internal standards as well as federal and provincial legislation and rules from both government and governing bodies.

Technical safeguards and methods of control include the processes and checks incorporated within a system. Some examples of technical safeguards including quantitative analysis (e.g., is the lab report on the right record?), authentication of electronic data entry, audit trails, passwords, level and types of role-based access, firewalls, backup systems and routines, etc.

Physical safeguards and methods of control include consideration of the physical location of record storage. Considerations for physical safeguards include fire and flood protection; on-site versus off-site storage; retrieval systems; centralized versus de-centralized location of files and servers; positioning of computer screens; blackboard use in ER, etc.

Appendix E – Entry level role statements – Diploma

Role: **Coding Specialist**

Role Description: The coding specialist codes and abstracts according to CIHI standards, provincial Ministry of Health and organization guidelines and rules. The coding specialist is accountable for the accuracy of all coded data. The coding specialist consults with health professionals to ensure code assignments are accurate and consistent with clinical documentation..

Key Functions	
i.	Performs coding and abstracting functions to accurately reflect the diagnosis and treatment according to standards and guidelines for classification systems, administrative and clinical databases and data holdings.
ii.	Incorporates knowledge of CMG and RIW methodology to correctly rank and assign diagnostic and intervention codes.
iii.	Ensures that database submissions are complete, accurate and meet submission targets by following established procedures.
iv.	Performs data quality and validation activities and processes database error corrections and other related communications.
v.	Consults with health providers to ensure code assignments are accurate according to classification rules and consistent with clinical documentation in the record.
vi.	Maintains up-to-date knowledge of standards and guidelines for classification systems and reporting requirements.
vii.	Prepares statistics for administrative and clinical use, and prepares ad hoc statistics for authorized requesters as required.
viii.	Participates in quality improvement, audit and research studies/projects by collecting, analyzing data and reporting on findings.
ix.	Participates in multidisciplinary committees as required.
x.	Participates in the quality improvement program of Health Information Management Services to monitor compliance with established guidelines, external regulatory and accreditation requirements and to facilitate consistency of quality data for the organization's internal data needs.

Educational Requirements:

Diploma in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Data Quality

Professional Level:

Entry level

Role: Data Integrity Analyst

Role Description: The Data Integrity Analyst position maintains the integrity of the database ensuring the completeness, consistency and accuracy of the provincial or organizational Registry system. The Data Integrity Analyst also provides assistance with data analysis, production of special reports, and responds to queries from internal and external clients. This is technical, analytical work in processing data to supply integrated strategic and operational health information.

Key Functions	
i.	Monitors data integrity of the Registry system by reviewing database for potential errors and responds to and resolves stakeholder queries.
ii.	Resolves potential errors through the coordinated efforts of both stakeholders and the appropriate team; contacts stakeholders when errors are flagged; makes corrections in data.
iii.	Monitors accuracy of Registry records by identifying and performing appropriate data quality checks.
iv.	Maintains appropriate data tables and ensures consistency of content.
v.	Monitors stakeholder compliance to provincial or organizational standards.
vi.	Verifies existing data through regular audit processes.
vii.	Generates standard and custom reports developed for the Registry.
viii.	Supports the Registry by responding to stakeholder requests for assistance; serves as go-between between the organization and stakeholders to ensure data integrity.
ix.	Exercises independent judgment in the resolution of problems within well-established procedures.

Educational Requirements: Diploma in HIM
Relevant Qualifications: CHIM certification
HIM Domain of Practice: Data Quality
Professional Level: Entry level

Role: Junior Data Analyst

Role Description: The Junior Data Analyst participates in the preparation and maintenance of statistical information for reporting and research purposes and presentation to the organization’s administration, health professional staff and pertinent committees.

Key Functions	
i.	Prepares case mix information reports to support program decisions and Impact Analysis.
ii.	Prepares data and information using existing hardware and software to support the organization’s statistical reporting.
iii.	Performs basic data integrity checks and works with clients to correct the data.
iv.	Interprets case mix and resource intensity data.
v.	In collaboration with senior analyst, determines reliable sources of data to meet requester needs.
vi.	Works collaboratively and contributes to project planning, implementation, monitoring and evaluation.
vii.	Assimilates and compiles data from multiple sources for organizational information management or analytical purposes.
viii.	Organizes and transforms data into reliable and meaningful information for diverse audiences
ix.	Assists in the completion of program audits and research
x.	Provides support to professional staff for audit, research and statistics.
xi.	Collaborate with and support all members of clinical and administrative committees in by analyzing, interpreting, preparing, presenting and distributing organization information and statistical reports.
xii.	Provides support to senior staff by serving as a resource person for the design, implementation and maintenance of health information databases.
xiii.	Provides support during Accreditation Canada survey activities related to statistical reporting requirements.

Educational Requirements:	Diploma in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Data Quality
Professional Level:	Entry level

Role: Records Management Analyst

Role Description: This position is responsible for monitoring compliance of documentation standards. This includes client records analysis and the identification, maintenance, and correction of client record deficiencies.

Key Functions	
i.	Performs audits on client records to determine data collection issues and problems.
ii.	Tracks and trends documentation data quality issues and records management principles and presents report to appropriate committees.
iii.	Participates in the development of solutions to data quality and records management issues.
iv.	Liaises with health professionals and their office staff to meet compliance requirements.
v.	Provides continuing education and support as to best practice in health care documentation practices.
vi.	Presents audit and trending results to audience using the appropriate tools and technology
vii.	Incorporates risk management principles when dealing with unresolved or ongoing records management and data quality issues.

Educational Requirements:

Diploma in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Data Quality and Electronic Health Information Management

Professional Level:

Entry level

Role: Release of Information Analyst

Role Description: The ROI Analyst applies facility policies and rules to monitor personal health information (PHI) under the custody of an organization. Under the supervision of the Privacy Officer, the ROI Analyst reviews prioritizes and fulfills ROI requests as appropriate under policy and legislation. The ROI Analyst will interact with stakeholders in the consistent and timely processing of access/disclosure requests.

Key Functions	
xi.	Completes the day-to-day activities in the Release of Information area related to the access and disclosure of personal health information.
xii.	Advises clients, stakeholders and staff regarding the process for release of personal health information, including: <ul style="list-style-type: none"> • Access, viewing and release of information to clients and families • Release of PHI to facilitate care • Release of PHI for non- medical purposes to third parties (e.g., insurers, lawyers) • Release of PHI for research and clinical trials • Correcting personal (health) information
xiii.	Ensure compliance with requests for the organization to secure PHI for the purposes specified by the client.
xiv.	Prepare and submit invoices according to policy. Accept and process fees per policy.
xv.	Complete and maintain ROI statistics log.
xvi.	Staff education in relation to release of PHI.
xvii.	Participate in the development of strategies to inform clients, stakeholders, and the community regarding the organization’s Release of PHI practices.
xviii.	Promote awareness of privacy & confidentiality.
xix.	Compile data and reports as required (e.g., office to the IPC, administration).
xx.	Prepare and accompany chart to court, or for eDiscovery, and testify for legal cases as required.
xxi.	Effectively communicate with clients and stakeholders.

Educational Requirements:	Diploma in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Privacy
Professional Level:	Entry level

Role: Registry Administrator

Role Description: The Registry Administrator supports the seamless interface integration between the registry, interface or data translation program, and end user (e.g. Pharmacies). This position is responsible for the support, maintenance and coordination of provincial or organizational registries. The Registry Administrator will monitor interfaces, implement error correction activities and promote best practices in data submissions from source. As system interfaces vary from individual source to registry, this position is responsible to implement data quality edits and reports to proactively identify and correct errors at source.

Key Functions	
i.	Provides delivery of data management services on data quality, standardization, monitoring, reporting, testing, training and business solutions support.
ii.	Provides help desk support (issue research, analysis, recommendations and documentation) for registry users.
iii.	Supports activities for EHR services related to data standards initiatives.
iv.	Facilitates and coordinates issues and feedback from stakeholders of EHR services
v.	Applies knowledge of current technology and its role in business process improvement. e.g. registries, identity management concepts and waitlist management processes
vi.	Provides guidance and direction to Registry stakeholders.
vii.	Extracts, synthesizes, conceptualizes and applies ideas, processes and information to create solutions in a constantly changing technological and business environment.
viii.	Is highly organized, logical and has attention for detail in order to thoroughly test system changes
ix.	Exercises independent judgment in the resolution of problems within well-established procedures.

Educational Requirements:	Diploma in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Data Quality
Professional Level:	Entry level

Role: Registry Integrity Coordinator

Role Description: Coordinates the development and implementation of registry integrity policies; reviews and updates policies and procedures designed to ensure the completeness and accuracy of data within the specific registries. Within the parameters of the organization’s policies and applicable legislation, ensures Registry’s security and confidentiality by enforcing security and confidentiality procedures with internal users and external stakeholders.

Key Functions	
i.	Plans and leads the maintenance of a major specialized provincial program to build and maintain secure, consistent, accurate, relevant, integrated and accessible information systems.
ii.	Contributes to the improvement of the Registry and its services to internal and external clients; educates personnel on the new policies; and recommends course of action where deficiencies exist.
iii.	Monitors data integrity of the Registry by reviewing database for potential duplicates, incomplete records and incorrect data fields; resolves potential duplicates through the coordinated efforts of stakeholders and the registry team; identifies and follows up on incorrect data fields and incomplete records; monitors stakeholder compliance to agreed standards and verifies existing data through regular audit processes.
iv.	Monitors access and usage, including stakeholder compliance to confidentiality guidelines and enforcement of password standards.
v.	Processes applications from I clients requesting Registry access. Assigns user ids, passwords and the level of access. Ensures applications are complete and notifies applicant of policies and processes regarding use of the system. Maintains a database on users and monitors usage.
vi.	Tests system upgrades as new versions of software are implemented, as well as testing for integration with new systems as they are installed such as Provider Registry, Pharmacy Network, etc.
vii.	Facilitates and coordinates issues and feedback from stakeholders of services
viii.	Extracts, synthesizes, conceptualizes and applies ideas, processes and information to create solutions in a constantly changing technological and business environment.
ix.	Is highly organized, logical and has attention for detail in order to thoroughly test system changes
x.	Exercises independent judgment in the resolution of problems within well-established procedures.

Educational Requirements:	Diploma in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Data Quality
Professional Level:	Entry level

Role: **Business Intelligence Analyst (e.g., Wait Time Strategy)**

Role Description: This position supports decision-making and reporting of wait times information through structured data collection processes.

Key Functions	
i.	Coordinates the collection and submission of required information to the wait time office as mandated by the provincial Ministry of Health and organizational requirements.
ii.	Participates in the development and automation of data quality audits to monitor the accuracy and integrity of information within the specific systems, (e.g., OR booking system, ADT, etc.)
iii.	Consults and works closely with physician's offices, OR Booking staff, Wait Time office, Decision Support, and other groups to facilitate data completeness and accuracy.
iv.	Investigates and resolves database errors within the relevant systems.
v.	Investigates and resolves complex issues through detailed analysis, provides recommendations for improvements.
vi.	Participates in the design and development of clinical and administrative databases and reports, integrating new reporting systems as required.
vii.	Generates ad hoc reports using analysis tool to query databases or data warehouses.
viii.	Develops functional and technical specifications and user documentation to support databases and applications.

Educational Requirements:

Diploma in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Data Quality

Professional Level:

Entry level

Appendix F – Entry level role statements – Degree

Role: Clinical Data Specialist

Role Description: The Clinical Data Specialist is responsible for the accuracy and completeness of coding, abstracting and data collection; validating the contents of databases used for outcomes management and specialty registries; and performing clinical research.

Key Functions	
i.	Designs and uses audit tools to monitor clinical coding and data collection accuracy.
ii.	Monitors compliance with policies and procedures relevant to clinical data management and proposes suggestions for improvements.
iii.	Interprets data for grouping and/or funding applications.
iv.	Validates coded and abstracted data.
v.	Validates data for registries.
vi.	Validates data for the outcomes management.
vii.	Collects, analyses and reports data.
viii.	Experience with data manipulation and statistical software.
ix.	Prepares client demographic reports.
x.	Prepares provider profiles.
xi.	Collects and analyzes data for special clinical research projects.

Educational Requirements:

Degree in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Data Quality

Professional Level:

Entry level

Role: Decision Support Analyst

Role Description: The Decision Support Analyst monitors, integrates from sources and systems, reports and analyses data for clinical and non-clinical activities. The Decision Support Analyst coordinates the provision of statistical information necessary to support the allocation of health care resources, monitor service delivery and promote fiscal responsibility. The Decision Support Analyst assists in establishing and implementing performance measurement tools.

Key Functions	
i.	Develops, produces and analyzes reports to assist in planning, performance measurement, utilization management, population health, quality initiatives and program evaluation compiling data and information from many complex information systems.
ii.	Researches benchmarks and best practices.
iii.	Provides assistance and analytic support in the development of indicators and performance measures.
iv.	Works collaboratively with users to supply data to meet information needs and to develop and/or enhance standardized reporting formats.
v.	Monitors and evaluates the quality of data received from information systems and sources.
vi.	Participates in the recommendation and implementation of mechanisms to improve the quality and consistency of information received from these systems/sources utilizing local, provincial and national data standards.
vii.	Develops in-depth knowledge of source feeder systems to promote data quality and reliability and to educate others in the use of the data.
viii.	Provides guidance, interpretation and analysis of information.
ix.	Provides leadership in the integration of financial and statistical information.
x.	Advises administrative and clinical personnel establishing data collection methodologies and in the interpretation of data to enable better management of programs and services.
xi.	Promotes excellent public relations by fostering and maintaining positive communications with both employees and customers.
xii.	Works collaboratively.
xiii.	Establishes and maintains contact with the Ministry, decision support staff across the province, and other organizations across Canada including CIHI for benchmarking and other purposes. Participates in and represents the organization at provincial and national meetings and on external committees, as required.

Educational Requirements:	Degree in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Data Quality
Professional Level:	Entry level

Role: **Health Systems Analyst**

Role Description: The Analyst assists in compiling data, information and evidence from a variety of data, research activities, literature and other sources that contribute to the production of health information products. The Analyst works closely with other analysts to research data sources, define data and other reporting requirements and assist with broader more complicated analysis as a member of a team.

Key Functions	
i.	Conducts basic quantitative and/or qualitative analyses to support the development of reports and studies. Provides support and assists with broader more complex analysis/replication under the direction of senior analysts.
ii.	Under direction from senior staff, coordinates specific ad hoc requests/analysis (e.g. annual updates to analysis/indicators).
iii.	Represents program on project teams and participates in external meetings and prepares documentation as required.
iv.	Assists with data quality and quality assurance process and fact checking activities as directed.
v.	Prepares technical notes/definitions. Drafts written text for organization reports or analytic projects within agreed outline under guidance from senior staff.
vi.	Contributes to the development and production of products and services from the databases such as ad hoc and standard reports, publications and compiling data for media releases.
vii.	Liaises with stakeholders to identify data and/or analytical requirements and assists with interpretation of results, related to specific analyses.

Educational Requirements:	Degree in HIM
Relevant Qualifications:	CHIM certification
HIM Domain of Practice:	Data Quality
Professional Level:	Entry level

Role: **Team Lead – Data Standards**

Role Description: The Team Lead – Data Standards will possess knowledge of the highly specialized technical requirements for EHR interoperability and the complex organizational collaborations related to adopting, adapting and developing standards provincially and nationally. The team lead works with stakeholders and participates in the determination of the organizational/provincial standards, as well as contributing to and influencing national standards development.

Key Functions	
i.	Participates in designing and supporting data standards and data quality technology for registries and repositories.
ii.	Collaborates with team members and stakeholders to include processes and methodologies for adopting, adapting and creating standards for the EHR and registries.
iii.	Assesses and addresses stakeholder requirements through vocabulary management and cross mapping code set tables where appropriate.
iv.	Provides recommendations, expertise, and direction, based on specialized knowledge of specific clinical area for use in code sets and code set combinations of provincial registries using various standards.
v.	Maintains library of provincial standards.

Educational Requirements:

Degree in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Electronic Health Information Management

Professional Level:

Entry level

Role: Terminology Asset Manager - Mapping

Role Description: The Terminology Asset Manager will manage terminologies linked to clinical content in electronic environments. This position will assist in the linkage of terminologies for data management and the mapping of one terminology to another.

Key Functions	
i.	Demonstrates an understanding of how data maps reuse data stored in one terminology or “source” – “collect once, use many” – by matching concepts to another “target” terminology.
ii.	Participates in the determination of the terminology most suited for its intended use or clinical domain.
iii.	Demonstrates knowledge of the requirements of facility, regional, provincial, national and/or international standards development organizations and the need to achieve interoperability when evaluating terminologies for implementation.
iv.	Applies knowledge of standardized clinical terminologies and their appropriate use to champion their adoption.
v.	Applies knowledge of vocabulary browsers, enterprise application software, natural language processing, interfacing, core and aggregate terminology as they relate to terminology mapping.
vi.	Locates pre-existing maps developed by recognized standards organizations or terminology developers.
vii.	Applies best practice related to terminology mapping to ensure consistency, interoperability and data integrity.
viii.	Applies work flow analysis in relation to TAM
ix.	Identifies terminologies that are “fit for use”.
x.	Develops use cases to demonstrate the implementation of a specific terminology.
xi.	Provides support for implementation, utilization and maintenance of encoded concepts within computerized systems.

Educational Requirements:

Degree in HIM

Relevant Qualifications:

CHIM certification

HIM Domain of Practice:

Electronic Health Information Management

Professional Level:

Entry level

Role: Business Intelligence Analyst - Example - Wait Time Strategy

Role Description: This position supports decision-making and reporting of wait time information through structured data collection processes.

Key Functions	
i.	Coordinates the collection and submission of required information to the Wait Time Information Office (WTIO) as mandated by the provincial Ministry of Health and organizational requirements.
ii.	Participates in the development and automation of data quality audits to monitor the accuracy and integrity of information within the specific systems, (e.g., OR booking system, ADT, etc.)
iii.	Consults and works closely with physician’s offices, OR Booking staff, WTIO, Decision Support, and other groups to facilitate data completeness and accuracy.
iv.	Investigates and resolves database errors within the relevant systems.
v.	Investigates and resolves complex issues through detailed analysis, provides recommendations for improvements.
vi.	Participates in the design and development of clinical and administrative databases and reports, integrating new reporting systems as required.
vii.	Generates ad hoc reports using analysis tool to query databases or data warehouses.
viii.	Develops functional and technical specifications and user documentation to support databases and applications.

Educational Requirements: Diploma in HIM
Relevant Qualifications: CHIM certification
HIM Domain of Practice: Data Quality
Professional Level: Entry level

LOHIM - GLOSSARY OF TERMS

Abstract: 1 – A brief summary of the major aims, hypothesis, results and methodology of a research paper; 2 – Specific demographic, administrative and clinical data that are extracted from a source document, coded and submitted to health databases for use in planning, management, funding or research; 3 - something that concentrates in itself the essential qualities of anything more extensive or more general, or of several things; 4 - an idea or term considered apart from some material basis or object. In the latter case abstract concepts can only be understood and assessed with respect to the model that one chooses to apply, models vary over time and among disciplines and may influence our interpretation of illness and disease (e.g. AIDS, SARS, H1N1) or how data is collected, categorized and grouped. Also see *Model*.

Access: The ability of patients, clients or members of the public to examine or obtain information about themselves.

Accuracy: The degree to which a measurement or value (or an estimate based on measurements) represents the true value of the attribute being measured. Not the same as *precision*.

Aggregate Data: Data that have been collected or combined from many different sources or records to form anonymized or de-identified information about groups of patients that can be compiled into meaningful categories to facilitate comparison and analysis. See also *Personal Health Information*.

Benchmarking: The process of comparing one's health care practice/performance to that of the finest in the business or to the best practices in that sector; improves the quality of care or services by observing the practices of the most efficient comparable organization, and adopting or incorporating them.

Business intelligence: The process of gathering information about a business or industry matter; a broad range of applications and technologies for gathering, storing, analyzing, and providing access to data to help make better decisions.

Business intelligence tools: BI tools and technologies provide historical, current, and predictive views of business operations. Common functions are reporting, online analytical processing (OLAP), analytics, data mining, business performance management, benchmarking, text mining, and predictive analytics.

Case Mix Groups+: Categorizes patients into statistically and clinically homogeneous groups based on the collection of clinical and administrative data; groups acute care patients with similar clinical and resource utilization characteristics (based on most responsible diagnosis, comorbidities, age and selected interventions that have been determined to affect resource utilization).

Circle of Care: Individuals and activities related to the direct care and treatment of a particular patient for a particular episode of care; includes the health care providers who deliver care and services for the primary therapeutic benefit of the patient as well as related activities, such as laboratory work and professional or case consultation with other health care providers.

Classification: The systematic arrangement of the elements of a subject into groups or categories according to established criteria (e.g. based on structure, function), e.g. the International Classification of Diseases (ICD) developed by WHO for the collection of morbidity and mortality statistics.

Collection: In relation to personal health information means to gather, obtain access to, acquire, receive or obtain personal health information from any source.

Complex adaptive systems: Special cases of complex systems; they are complex in that they are diverse and made up of multiple interconnected elements and adaptive in that they have the capacity to change and learn from experience, e.g. the health care system. See also *System* and *Systems Theory*.

Confidentiality: Obligation upon an organization or person to protect information that has been entrusted in its care for a specific purpose, and to ensure that the information is accessible only to those authorized; confidentiality refers to organizational or professional duties with respect to limiting disclosure or improper use of information without authorization, whereas privacy refers to the individual's right to determine how their information is handled; the property that information is not made available or disclosed to unauthorized individuals, entities or processes.

Consistency: With regard to data quality, data consistency summarizes the validity, accuracy, usability and integrity of related data between applications and across information systems.

Continuum of Care: The full range of health care services provided to patients from routine to intensive care, including primary care, acute care, long-term care, home care and public health; the seamless communication and documentation taking place allowing the patient to move between health care providers and levels of care.

Controlled Vocabulary: Schemes that mandate the use of pre-defined, authorized terms, which have been pre-selected by the designer of the controlled vocabulary (e.g. Medical Subject Headings (MeSH) is used by the National Library of Medicine in indexing the medical literature).

Data: Collection of elements on a given subject; the raw facts and figures expressed in text, numbers, symbols and images, which have no inherent meaning on their own. Part of the data – information – knowledge continuum.

Data Dictionary: Serves as the central repository for all information about a database and functions as a catalogue for identifying the nature of all the data in a system; provides the central resources for ensuring that standard definitions for data elements and data structures are used throughout the system.

Data Integrity: Procedures that keep data from being modified or otherwise corrupted, to ensure the accuracy and completeness of data; refers to the data in the database, as well as to the organizational processes, users and activities involved in maintaining the integrity.

Data Linkage: Process that allows data from different data sets to be linked.

Data Mining: The process of extracting useful information from large data sets and then quantifying and filtering discrete, structured data.

Data Mapping: The process of creating data element mappings between two distinct data models or databases. Data mapping is used as a first step for a wide variety of data integration tasks including converting data from a source data format into destination data, consolidation of multiple databases into a single database, and identifying data relationships.

Database Life Cycle: Traces the history of a database within an information system; consists of six phases: initial study, design, implementation and loading, testing and evaluation, operation, and maintenance and evolution.

Data Standards Life Cycle: The processes used to create, adopt, implement and maintain a data standard.

Data Quality: The extent to which health care data are complete, accurate, consistent and timely.

Data Warehouse: A centrally managed and easily accessible copy of data (often anonymized or de-identified) collected from transaction-based information systems; access to data from multiple databases with the ability to combine the results into a single query and reporting interface.

De-identified Data: Data that have been stripped of elements that may readily identify a person.

Disclosure: 1 – the act of making information known; 2 -In relation to personal health information means to make the information available or to release it to another health information custodian, trustee or to another person, but does not include use of the information.

Grouping Methodology: A way of relating the types of individuals a health care facility treats to the resources utilized by the health care facility; designed as a quality improvement tool (e.g. Case Mix Groups). See *Case Mix Groups*[†].

Granularity: The extent to which a system is broken down into parts, either the system itself or its description or observation; granularity of data refers to the fineness with which data fields are sub-divided. For example, a postal address can be recorded, with low granularity, as a single field: 1. address = 200 Highbury Street, London, ON N6A 1Z8 Canada or with high granularity, as multiple fields: 1. street address = 200 Highbury Street; 2.city = London; 3.postal code = N6A 1Z8; 4.country = Canada. Requires more data input and storage but offers benefits in flexibility of data processing in treating each data field in isolation if required.

Health Record: The legal and business record for the health care professional or facility; contains all data on an individual's health status including birth, immunization and death records, and the records of all services received, illnesses and treatments performed in any health care setting.

Interoperability: The ability, generally by adoption of standards, of systems to work together and exchange information or services directly among users; with respect to software, used to describe the capability of different programs to exchange data via a common set of exchange formats, to read and write the same file formats, and to use the same protocols.

Knowledge: An organized body of information, or the comprehension and understanding consequent on having acquired and organized a body of facts; derived from information once it has been organized, analyzed and synthesized. As in data-information-knowledge continuum.

Management Information System Standards (MIS): Framework for the collection of financial and statistical data relating to staffing, costs, workload and department activities, which are submitted to provincial ministries of health and then to CIHI. CIHI develops and publishes MIS Standards (the Standards for Management Information Systems in Canadian Health Service Organizations), which outline a standardized framework for the collection and reporting on the day-to-day financial and statistical data on the operations of health service organizations across the continuum of care; these are updated on a regular basis.

Master Person Index (MPI): A list or database created and maintained by a health care facility to record the name and unique identification number of every person who has ever been admitted or treated in a facility; also known as Master Patient Index, Central Patient Index, Enterprise Master Person Index (across multiple facilities).

Metadata: Data about data; the descriptive data that characterize other data to create a clearer understanding of their meaning, characteristics and usage and to achieve greater reliability and quality of information; the metadata required for effective data management vary with the type of data and context of use; in the context of an information system, where the data form the content of the computer files, metadata about an individual data item would typically include the name of the field and its length; metadata repositories (data dictionaries).

Model(s): 1 - a simplified representation or description of a system or phenomenon, with any hypotheses required to describe the system or explain the phenomenon; 2- a standard or example for imitation or comparison. These models may change over time. For example, a heart is a distinct organ but if it is severed from the body it is a non-functional artifact. It is now a model of a heart that is useful for some purposes, and useless for others. For instance, it might serve to understand it as a mechanical pump, but it is useless for understanding it as an organ involved in producing hypertension. With the other structures intact, it extends to and is part of the brain, the cardiovascular system, etc. and interacts with other subsystems as part of a complex system. Health, wellness, diseases, etc. are theoretical models and artificial constructs that impact on data collection, grouping and analysis (e.g., malaria used to be considered “bad air”, now we understand it is caused by an infectious agent but this changes data collection and its categorization).

As pertains to data – a **data model** is a picture or abstraction of real conditions used to organize the fields and records and to determine their relationship in a database.

Modeling: the act of planning or creating according to a model; as pertains to **data modeling** represents the process of determining user’s information needs and identifying relationships among data.

Nomenclature: A set or system of names or terms used to name things. More specifically, in a nomenclature, codes are assigned to medical concepts, and medical concepts can be combined according to specific rules to form more complex concepts (e.g. SNOMED-CT®).

Personal Health Information: Information about an identifiable individual that relates to the physical or mental health of the individual or provision of health services to the individual that may be recorded or transmitted in any form (e.g., paper, electronic, digital, voice or video, wireless, etc.). Also see *Aggregate data; De-identified data; Health Record*.

Precision: The quality of being sharply defined or stated; does not imply *accuracy*. Examples of measures of precision include the number of significant digits in the measurement; the standard error of the measurement; and the standard deviation of a series of replicate determinations.

Privacy: The right of individuals to be left alone, and to determine when, how, and to what extent they share information about themselves with others and control who has access to his or her personal information and under what circumstances; the right to determine what information is shared, when, how and with whom.

Technology Procurement: The advanced planning and steps that go into the purchase and acquisition of new technology, i.e. the development of criteria through literature and product review, needs assessment, site evaluations to assess, evaluate and select new information systems (including software, hardware and networks) using expected standards for functionality, conformance, and certification; the development of a business case, a request for proposal (RFP) and a response to an RFP; an understanding of contractual processes, participation in negotiations, and application of specific language to meet privacy, licensure, conformance with standards, and other HIM related needs; implementation of health information systems to ensure project includes awareness of agreements, assessments, functionality, conformance with expected integration standards, messaging and terminology standards; and final completion of a post implementation evaluation including a validation of functionality, standards conformance/certification and data quality validation and alignment with the needs of users.

Release of Information: The disclosure of documents containing personal health information to a third party.

Security: The technical, physical and administrative/procedural methods by which access to confidential information is controlled and managed; examples of common administrative control methods for security of personal health information include policy, procedures, standards and guidelines, audits; aspects of technical security controls include passwords, firewalls, data encryption, access control and intrusion detection; aspects of physical security controls include the ability to monitor and control the environment, smoke and fire alarms, cameras, separation of duties, doors closed and locked, location of servers and computer screens, levels of access and types of access to health information databases.

Sourcing (data): Analysis of user information requests by determining what data are needed, what data is currently being collected, how to get data if it isn't being collected within existing data capture structures and capabilities, and how to assemble all necessary information to meet user's needs.

System(s): A group of interacting, interrelated, or interdependent elements forming a complex whole; can be anything from a naturally occurring set of objects (e.g. the solar system), a biological organism as a whole, or a group of physiologically or anatomically complementary organs or parts (e.g. the nervous system), a group of interacting mechanical or electrical components, a network of structures and channels, as for communication, travel, or distribution, or a network of related computer software, hardware, and data transmission devices (e.g. an information system), or a social, economic, or political organizational. See also *Systems Theory*.

Systems Development Life Cycle (SDLC): A conceptual model that describes the stages involved in an information system development project (its history or life cycle), from an initial feasibility study through maintenance of the completed application. Various SDLC methodologies have been developed to guide the processes involved, including the waterfall model (the original SDLC method) and rapid application development (RAD). In general, an SDLC methodology follows the following steps:

1. The existing system is evaluated and deficiencies are identified.
2. The new system requirements are defined. In particular, the deficiencies in the existing system are addressed with specific proposals for improvement.
3. The proposed system is designed including plans for the physical construction, hardware, operating systems, programming, communications, and security issues.
4. The new system is developed and new components and programs obtained and installed. Users of the system are trained in its use, and all aspects of performance tested. If necessary, adjustments are made at this stage.
5. The system is put into use either by phasing the system in according to application or location or in some cases, it may be more cost-effective to shut down the old system and implement the new system all at once.
6. Once the new system is up and running it is evaluated. Maintenance is kept up rigorously at all times and users of the system kept up-to-date concerning the latest modifications and procedures.

Systems Theory: Systems Theory: (General) systems theory is an interdisciplinary theory about the nature of complex systems in nature, society, and science, and is a framework by which one can investigate and/or describe any group of objects that work together to produce some result. This could be a single organism, any organization or society, or any electro-mechanical or informational artifact. Living systems contain critical subsystems that are defined by their functions and visible in numerous systems, from simple cells to organisms, countries, and societies. Within software and computing applications general systems theory (GST) was the basis of most commercial software design techniques and transformed system analysis (defining what's needed in a system) into a system design (what's actually implemented).

Terminology: The technical or special terms used in a business, art, science, or special subject.

Use: Means to handle or deal with information and includes reproducing the information, but does not include disclosing the information.

LOHIM - LIST OF ASSOCIATIONS AND ORGANIZATIONS

Accreditation Canada (AC): National, independent, non-profit, non-government, voluntary accrediting body, which itself is accredited by the International Society for Quality in Health Care; guides clients to reach standards of excellence by assisting health care facilities and organizations to define, measure, report and improve their quality of care and services; formerly Canadian Council on Health Services Accreditation (CCHSA). www.accreditation.ca

American Health Information Management Association (AHIMA): the professional community that improves healthcare by advancing best practices and standards for health information management and the trusted source for education, research, and professional credentialing in HIM in the United States. www.ahima.org

Canada Health Infoway (Infoway; CHI): Federally-funded, independent, not-for-profit organization whose members are Canada's 14 federal, provincial and territorial Deputy Ministers of Health; the organization overseeing the implementation and use of electronic health information systems and electronic health records (EHRs) across the country. www.canadahealthinfoway.ca or www.infoway-inforoute.ca/

Canada's Health Informatics Association (COACH): An organization bringing together individuals from health care, industry, government, and academia that is dedicated to promoting a clear understanding of health informatics within the Canadian health system through education, information, networking and communication. www.coachorg.com

Canadian Health Information Management Association (CHIMA): The association that represents more than 3,700 certified Health Information Management (HIM™) professionals from across Canada in addition to 1,300 affiliate, student and retired members. HIM professionals are employed in: hospitals; in the community health and extended care sectors; government; health and education institutions; the private sector including insurance and pharmaceutical companies; technology vendors; and consulting firms. The skills and knowledge of the HIM professional support clinical research and provide the information for medical and health care statistics. www.echima.ca

Canadian Institute for Health Information (CIHI): The independent, not-for-profit, pan-Canadian organization that provides essential data and analysis on Canada's health system and the health of Canadians; focuses on health care services, health spending, health human resources, and population health through its health databases; responsible for the development and maintenance of the Canadian Classification of Health Interventions (CCI) and application of the ICD-10-CA coding standards. www.cihi.ca

Canadian Institutes for Health Research (CIHR): The agency designated by the federal government to support health and medical research in Canada. Through its 13 virtual institutes it provides grant funding for fundamental bio-medical research, clinical research, and research respecting health systems, health services, the health of populations, societal and cultural dimensions of health and environmental influences on health. www.cihr-irsc.gc.ca

Canadian Medical Association (CMA): Umbrella national organization for physicians, including specialists and general practitioners; provides advice and expertise to the provincial associations. www.cma.ca

Canadian Patient Safety Institute (CPSI): Established in 2003 to reduce the patient's risk of health system adverse events and to ensure that patients in Canada receive optimal health care. www.patientsafetyinstitute.ca

Canadian Standards Association (CSA): A not-for-profit membership-based association serving business, industry, government and consumers in Canada and the global marketplace to develop (technical) standards that address real needs such as enhancing public safety and health. The Model Code for the Protection of Personal Information is an example of one of the CSA standards. www.csa.ca

Centre for Information Technology Leadership (CITL): Organization that assesses information technologies, disseminates its research findings, and provides additional services designed to help healthcare providers realize greater value and improve quality of care. www.citl.org

Commission on Accreditation for Health Informatics and Health Information Management (CAHIIM): The accrediting organization for educational programs in health informatics and health information management in the United States. www.cahiim.org

European Informatics Standard Setting Organization (CEN/TC 251 [CEN Technical Committee 251]): The workgroup within the European Union working on standardization in the field of Health Information and Communications Technology (ICT). The goal is to achieve compatibility and interoperability between independent systems and to enable modularity in Electronic Health Record systems. CEN stands for: Comite Europeen de Normalisation or the European Committee for Standardisation. www.cen.eu/cen/pages/default.aspx

Health Canada: The cabinet level federal agency that oversees all health related activities of the federal government and administers federal regulations. www.hc-sc.gc.ca

Health Level 7 (HL 7): An international organization that develops messaging, data content, and data document standards for the exchange of clinical information. www.hl7.org

International Federation of Health Record organizations (IFHRO): World-wide organization that supports national associations and health record professionals to implement and improve health records and the systems that support them. www.ifhro.org

International Health Terminology Standards Development Organization (IHTSDO®): Organization established as an association under Danish Law to administer the rights to SNOMED CT and other health terminologies and/or related standards. www.ihtsdo.org

International Organization for Standardization (ISO): A world-wide network of the national standards institutes of 159 countries, one member per country, with a coordinating Central Secretariat in Geneva, Switzerland, that develops and publishes international standards. Its 18,000 standards range from standards for traditional activities, such as agriculture and construction, through mechanical engineering, manufacturing and distribution, to transport, medical devices, information and communication technologies, and to standards for good management practice and for services. Standards are developed by technical committees; the committee for Health Informatics standards is designated as TC 215. www.iso.org

Joint Commission on Accreditation of Healthcare Organization (JCAHO): A private, non-for-profit US based organization that evaluates and accredits hospitals and other healthcare organizations on the basis of predefined performance standards. www.jointcommission.org

National Institutes of Health (NIH): An American federal agency which funds health and biomedical research through its various institutes and whose overall mission is to improve the health of the people of the United States. <http://nih.gov>

National Library of Medicine (NLM): World's largest medical library located in the United States that collects materials in all areas of biomedicine and health care, as well as works on biomedical aspects of technology, the humanities, and the physical, life, and social sciences. www.nlm.nih.gov

Office of the Privacy Commissioner of Canada (OPC): Organization of the Canadian Government responsible for overseeing compliance with both the Privacy Act, which covers the personal information-handling practices of federal government departments and agencies, and the Personal Information Protection and Electronic Documents Act (PIPEDA), Canada's private sector privacy law. www.priv.gc.ca

Organization for Economic Cooperation and Development (OECD): Brings together the governments of 30 countries committed to democracy and the market economy from around the world; provides the world's largest and most reliable source of comparable statistics and economic and social data. As well as collecting data, OECD monitors trends, analyses and forecasts economic developments and researches social changes or evolving patterns in trade, environment, agriculture, technology, taxation, health, education and information and communications technologies. www.oecd.org

Public Health Agency Canada (PHAC): Established in 2004 to protect and promote the health and safety of all Canadians; activities focus on preventing chronic diseases and injuries, health promotion, and responding to public health emergencies and infectious disease outbreaks. www.phac-aspc.gc.ca

Standard Development Organization (SDO): A private or government agency involved in the development of healthcare informatics standards at a national or international level.

World Health Organization (WHO): Directing and coordinating authority for health within the United Nations; responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends. www.who.int

ABBREVIATIONS USED IN THE DOCUMENT:

BS = Balanced Scorecard: A strategic planning and management tool that aligns activities related to the vision and strategy of the organization, improves internal and external communications, and monitors organization performance against strategic goals.

CCI = Canadian Classification of Health Interventions: National standard for classifying diagnostic, therapeutic and other associated health care interventions; the companion classification system to ICD-10-CA that provides the diagnosis codes.

CMG+ = Case Mix Group+: Categorizes patients into statistically and clinically homogeneous groups based on the collection of clinical and administrative data; groups acute care patients with similar clinical and resource utilization characteristics (based on most responsible diagnosis, comorbidities, age and selected interventions that have been determined to affect resource utilization).

CACS = Comprehensive Ambulatory Classification System: Grouping methodology for ambulatory care patients, such as those in emergency departments, clinics and same-day surgery. Patients are grouped according to principle procedure, main diagnosis and visit disposition data collected via the National Ambulatory Care Reporting System (NACRS).

CQI = Continuous Quality Improvement: A component of Total Quality Management (TQM) that emphasizes the importance of knowing and meeting customer expectations, reducing variation with processes, and relying on data to build knowledge for improvement; a continuous cycle of planning, measuring and monitoring performance.

DAD = Discharge Abstract Database: National CIHI database containing standard clinical, demographic and administrative data pertaining to each patient hospital discharge and some day surgery events.

DPG = Day Procedure Groups: Classification system for ambulatory hospital patients that focuses on the area of day surgery to which individuals are assigned; categorizes according to the principal procedure or intervention; assignment to the same DPG category represents a homogeneous group with similar clinical episodes and resource utilization.

EHR = Electronic Health Record: Computer-based clinical data for an individual across multiple locations. This longitudinal health record includes data from a number of different interoperable EMRs and EPRs and is shared across multiple jurisdictions.

EMR = Electronic Medical Record: Computer-based clinical data for an individual that are kept by a single physician office or practice, or community health centre.

EPR = Electronic Patient Record: Computer-based clinical data for an individual that are kept by a single health care organization (e.g. hospital, acute care facility, regional health authority).

HIAL = Health Information Access Layer: An interface specification that constitutes the integration layer between all point of service (PoS) applications (e.g. pharmacy system, physician's office, radiology information system, hospital electronic patient record) and the EHR

infrastructure; defines service components, service roles, information models and messaging standards required for the exchange of EHR data and execution of interoperability profiles between EHR services.

HL7 = Health Level 7: An international organization that develops messaging, data content, and data document standards for the exchange of clinical information.

ICD = International Classification of Diseases: Standardization method to identify mortality and to facilitate the collection and tabulation of vital statistics. **ICD-10-CA** is the Canadian modification of ICD-10, produced for use in Canada by CIHI under a license agreement from the World Health Organization (WHO) for classifying mortality and morbidity data.

ICD-O = International Classification of Diseases for Oncology: Developed by the WHO, primarily used in tumour or cancer registries for coding the topography and morphology of neoplasms obtained from a pathology report. ICD-O-3 is the current version in use.

ICPC = International Classification of Primary Care: Classifies patient data and clinical activity in the primary care setting. Created in 1987, it is in its second edition (ICPC-2).

ICF = International Classification on Functioning, Disability and Health: Classification of health and health-related domains that describe body functions and structures, activities and participation.

LIS = Laboratory Information Systems: A class of software that receives, processes and stores information generated by medical laboratory processes.

LOINC[®] = Logical Observation Identifier Names and Codes: Developed in 1994 by Regenstrief Institute to facilitate the exchange and pooling of laboratory results (e.g. blood hemoglobin) or vital signs for the purposes of clinical care and research by providing a set of universal codes and names to identify laboratory and other clinical observations.

MAC = Major Ambulatory Cluster: In the CACS (Comprehensive Ambulatory Classification System), methodology cases are grouped into 19 categories, or Major Ambulatory Clusters, based on the main problem code assigned to each case.

MCC = Major Clinical Category(ies): In determining case mix grouping (for CMG+), assignment of each case begins with organization into one of 21 categories, or Major Clinical Categories, based on the most responsible diagnosis (e.g. Diseases and Disorders of the Nervous System; Diseases and Disorders of the Cardiovascular System; Pregnancy and Childbirth; Newborns and Neonates).

MeSH = Medical Subject Headings: a controlled vocabulary of terms that have been developed by the National Library of Medicine to index the world medical literature.

NACRS = National Ambulatory Care Reporting System: Data acquisition and reporting standards related to hospital- and community-based private and public ambulatory care activity that occurs in clinics, emergency departments and some day surgical units.

OLAP = Online Analytical Processing: A data access architecture that allows the user to retrieve specific information from a large volume of data.

PHR = Personal Health Record: An individual's longitudinal health record, maintained by the individual, encompassing a complete record of their health (e.g. immunizations, allergies, health encounters, lifestyle choices); may contain links to health information held by a health care provider or health care facility. The concept of the PHR continues to evolve as more health information is available electronically and it is possible to provide linkage via the Internet.

PACS = Picture Archiving and Communications Systems: A system used for storage and management of clinical image data, primarily digital radiology images; can provide timely access of data to physicians both within the institution and at remote sites.

QA = Quality Assurance: A set of activities designed to measure the quality of a service, product, or process with remedial action, as needed, to maintain a desired standard.

QI = Quality Improvement: A set of activities that measure the quality of a service or product through systems or process evaluation and then implements revised processes that result in better health care outcomes for patients, based on standards of care.

QM = Quality Management: Evaluation of the quality of health care services and delivery using standards and guidelines developed by various entities, including the government and accreditation organizations; includes Quality Improvement, Utilization Management and Risk Management.

RAI = Resident Assessment Instrument: Used in a variety of health care settings including continuing care, home care and mental health, the Resident Assessment Instrument (RAI) helps staff to gather definitive information on a resident's strengths and needs which must be addressed in an individualized care plan. It also assists staff to evaluate goal achievement and revise care plans accordingly by enabling a facility to track changes in the resident's status.

RFP = Request for Proposal: A formal document that publicly announces an organization's intention to acquire and implement new products or services, and that sets out the required specifications. Interested vendors or suppliers that respond to the RFP must demonstrate that they meet the specifications and provide an associated cost. Usually the company who meets all the specifications and who has submitted the lowest bid wins the contract.

SNOMED[®] = Systematized Nomenclature of Medicine: Comprehensive clinical health care terminology; provides a formal representation of concepts, terms and relations between concepts in the medical domain.

SNOMED-CT[®] = Systematized Nomenclature of Medicine, Clinical Terminology: The most comprehensive, multilingual clinical health care terminology in the world; provides the core general terminology for the electronic health record and contains more than 357,000 concepts with unique meanings and formal logic-based definitions organized into hierarchies.

WORM = Write once, read many. WORM refers to computer data storage systems, data storage devices, and data storage media that can be written to once, but read multiple times. WORMs can prevent accidental or intentional erasure and tampering.

XML = Extensible markup language: A standardized computer markup language that allows the user to specify data elements and that facilitates the sharing and interchange of data as a structured text across different information systems.