

Welcome to the Health Care eBook developed by the Education Centre at eHealth Ontario.

The tables below describe how you can navigate this eBook and the meaning of each of the icons outlined in the content.

OPTIONS	COURSE NAVIGATION
	For both PDF versions (Plain & Interactive), use the arrow keys on your keyboard to navigate through the pages.
<u></u>	For the PDF interactive version only, you can move the mouse to the bottom right corner of the eBook to turn the page.

ICON	DESCRIPTION
	This home icon located at the top right corner of your eBook will take you to the contents page.
	This video icon is located at the top right corner of an image and indicates that you can play a video embedded in the eBook. Ensure you have your headphones connected.
P	This icon is located at the bottom right corner of an image and indicates that the image has some interaction (mouse over). Point the cursor over the image titles to display additional content.
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The health care informatics field generates interest from people with diverse professional backgrounds. Some professionals have experience from the health care sector, while others come from the technology field. This allows for the convergence of perspectives and experiences from a diverse base of knowledge in the technology, business, and health care sectors in support of different technologies as they are deployed within the health care sector. The health care ebook initiative provides eHealth Ontario's employees with the opportunity to develop and share knowledge from both a health care and technology perspective.

Going through this eBook you will:

- Make an international comparison of the health care systems.
- Get familiarized with the canadian health care landscape.
- Learn about key organizations and their links with health informatics.
- Develop an understanding of the different care settings and types of care available
- Examine the health care environment and technologies available.
- Understand clinical data sources, collection process, use for clinical decision making and impact on service delivery.
- Identify challenges faced by health care organizations.
- Get familiarized with the health care landscape and key organizations and agencies, care settings, types of care and trends contributing to the development of health care in Canada and Ontario.



Chapter 1:

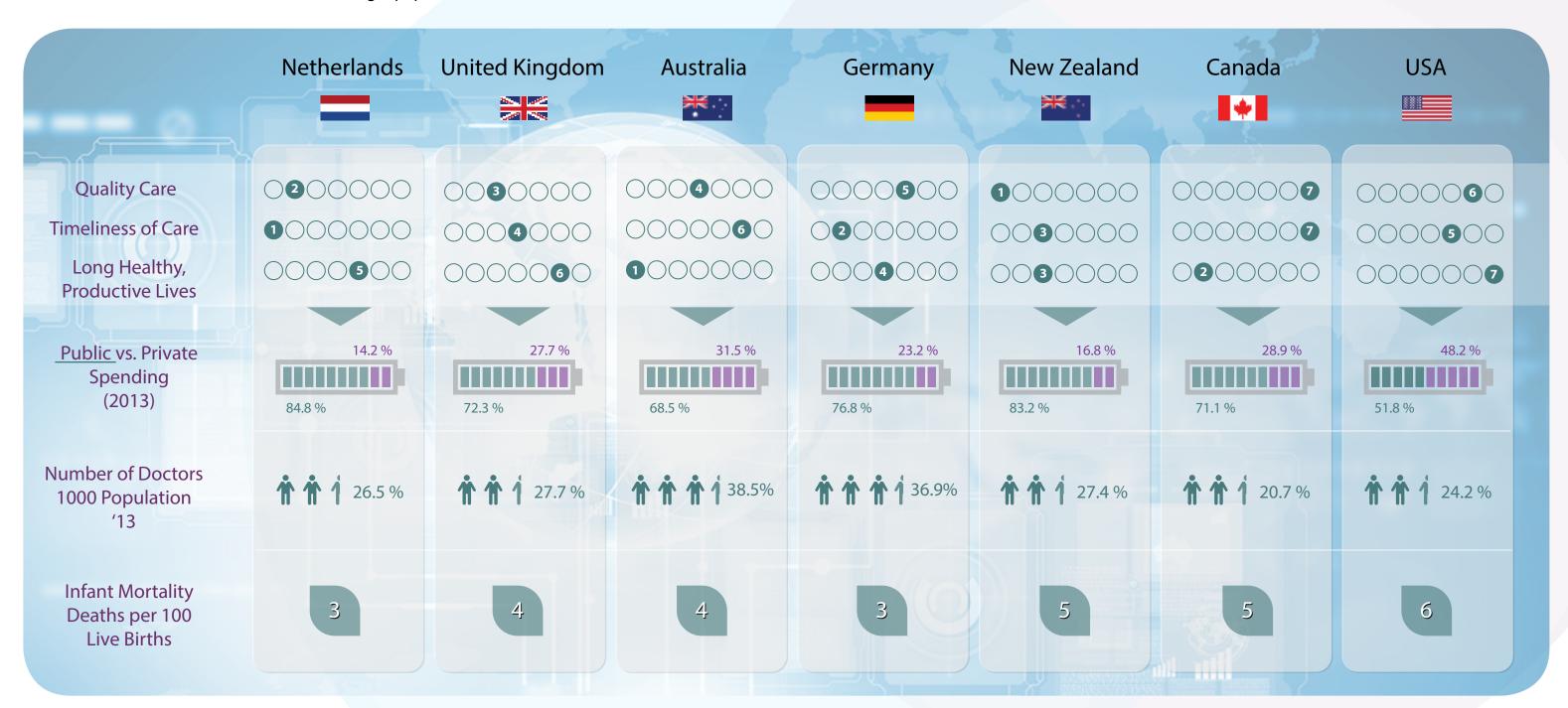
International Comparison of Health Care Systems

A health care system is the organization of people, institutions, and resources to deliver health care services to meet the health needs of target populations.

There is a wide variety of health systems around the world, with as many histories and organization al structures as there are nations. In some countries, health system planning is distributed among market participants. In others, there is a concerted effort among governments, trade unions, charities, or other coordinated bodies to deliver planned health care services targeted to the populations they serve.

The following image describes an international health care comparison.

Based on the infographic below, how would you rank the following international health care systems?



Data taken from the Word Health Statistics 2013 (World Health Organization).

Chapter 2:

Health Care Landscape

The Canadian health care system is not a single entity, it is comprised of numerous organizations and agencies that exist on the national and provincial levels that are working together to promote valuable health services to Canadians. These organizations specialize in a variety of practices and functionalities, whether through the delivery of clinical services, or the management of broader health-related aspects. Together, these organizations connect to form the backbone of the Canadian health system.

This section will provide a comprehensive overview of the various organizations and agencies across Canada. The content will examine the many entities of the national and provincial landscape, as well as any related associations, organizations and regulatory colleges.

In this chapter you will:

- Gain an understanding of the national and provincial perspectives
- Identify the multiple health care associations and organizations supporting health care
- Develop an understanding of the relationships and connections between entities



Canada is a federated system with a division of governance between the federal and provincial levels of government. The British North America Act of 1867 placed the majority of responsibility for the delivery of health services at the provincial level.

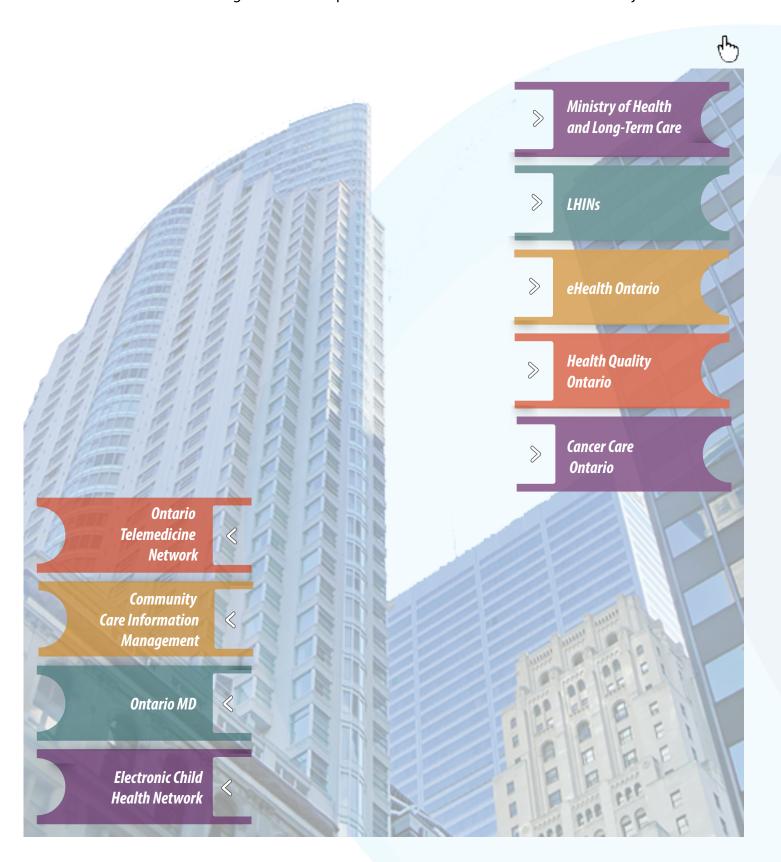
The role of the federal government is primarily in the administration of national principles for the health care system and provision of transfer payments to the province for health care. There is a federal government health portfolio that includes six major departments; Assisted Human Reproduction Canada, Canadian Institutes of Health Research (CIHR), Hazardous Materials Information Review Commission, Health Canada, Patented Medicine Prices Review Board and Public Health Agency of Canada. Each department is detailed further below.

The provision of health care services to First Nations, RCMP, Canadian Forces, Veterans, inmates of federal penitentiaries is a constitutional responsibility of the federal government.

The provinces and territories have the primary responsibility for the administration and delivery of health services. This includes hospitals, health care clinics, and legislation, training, licensing and insurance. While the principles that guide health care are at the federal level, the implementation of them rests solely with the provinces and territories.



While the federal government funds health care, each province and territory is responsible for the management of their health care funding as well as the provision of health care services within their jurisdiction.







REGULATORY COLLEGES & TRANSITIONAL COUNCILS

Read More ...



Chapter 3:

Health Care Environment

↑ fter developing an understanding for the Canadian landscape and Ontario health care systems land-Ascape from a broad perspective, it is valuable to focus on the individual entities of the health care industry and their importance within it. After all, the care providers themselves and the services they provide are the fundamental pillars that allow the health care system to operate.

This section will instill knowledge of the health care environment such as the practice settings, the levels of care and the health care professionals, all of which cooperate to act as the 'building blocks' of our health care system.

In this chapter you will:

- Develop an understanding of the care settings, levels of care, and types of care.
- Get familiarized with the different health care professionals within Ontario.
- Understand the linkages between the different entities within the health care environment.



There are multiple practice care settings within the health care system that provide various levels and types of care to ensure that a patient's needs are met.

Office



Primary Care This care setting is often the first stop for a person seeking a medical consultation, and can include a request for diagnosis, a physical examination or even minor surgery.

Hospitals



A hospital is a health care institution that provides acute care patient treatment through specialized staff and equipment dedicated to clinical practices. Types (academic, community, specialty, rehabilitation, chronic/continuing care.

Emergency Care



Emergency care is provided to patients with an illness, injury or life threatening situation that requires immediate attention. Emergency departments are typically located in acute care facilities and are open 24 hours.

Ambulatory Care



Ambulatory care is a health care consultation, treatment or intervention using advanced medical technology or procedures to provide treatment for day admis-

Urgent Care



Urgent care is a category of walk-in clinic focused on the delivery of ambulatory care in a dedicated medical facility outside of a traditional emergency room. It provides immediate care, but not serious enough to require an ER visit.

Chronic Care



Complex continuing care provides continuing, medically sophisticated services for patients with long-term illnesses or disabilities that require technology-based treatment.

Palliative Care



Palliative care provides services to patients who are in the final stages of a terminal illness. Some of the services may be provided in a hospital, nursing home or in the home environment.

Community Care





The community care services provide personal care and support to clients with limitations in daily living activities.

Public Health



Public health focuses on the health of the community. Some of the functions of public health include assessing the health of the communities, developing public policies, and providing access to health care.

Telehealth



Telehealth is the use of electronic information and telecommunication technology to support delivery of health care services remotely.

Nursing Stations



Nursing stations operate in remote areas, providing primary and emergency services to people who would otherwise have limited or no access to health care services.

Family Health Teams



A Family Health Team can provide ongoing health care through a team of family doctors, registered nurses and other health care providers like dietitians and social workers.



There are four levels of care within the various care settings previously discussed. These levels vary in complexity and type of service offered. The four levels to be discussed are primary, secondary, tertiary and quaternary care.

Primary Care

Primary care is considered the first-level of entry into the health care system and includes the widest scope of services, offering a wide range of services regardless of demographic characteristics.

The role of the primary level of health care is to promote health, prevent disease and identify diagnostic, curative, rehabilitative, supportive and palliative services required by the patient. Primary care facilities providing these services include physician's offices, nurse practitioners offices, community health centres and nursing stations.

Secondary Care

Secondary care services are provided by specialists and other health professionals who generally do not have first contact with patients. Patients are often sent to secondary care treatment upon referral from a primary practitioner or another specialist.

These services can be provided by a community hospital that provides the majority of hospital-based services such as general medical and surgical, obstetrics, dialysis, ambulatory care, rehabilitation, and some limited specialized services. Secondary care can also include acute care services which necessitate treatment for a short period of time, including skilled attendance services during childbirth, intensive care and medical imaging.



Tertiary Care

Quaternary care provides an advanced level of care which is highly specialized and not widely accessible. This care is usually provided by academic and teaching centres which may include experimental medicine, treatment of rare medical conditions/diagnosis and uncommon surgical procedures.

Quaternary Care

Examples of quaternary care centres include pediatric facilities (Sick Kids), mental health facilities (CAMH), and large academic centres (UHN, Sunnybrook and The Ottawa Hospital).

Tertiary care facilities provides specialized health care typically for inpatients, and is based on referral from a primary or secondary care provider. Tertiary care is provided is provided by an academic teaching facility or large community care facility with access to specialists and specialized equipment.

The services provided by a tertiary care facility can include cancer management, neurosurgery, cardiac surgery, burn treatment, specialized neonatology services, and other complex medical and surgical interventions.



HEALTH CARE PROFESSIONALS



ALLIED HEALTH CARE PROFESSIONALS

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OTHER HEALTH CARE PROFESSIONALS

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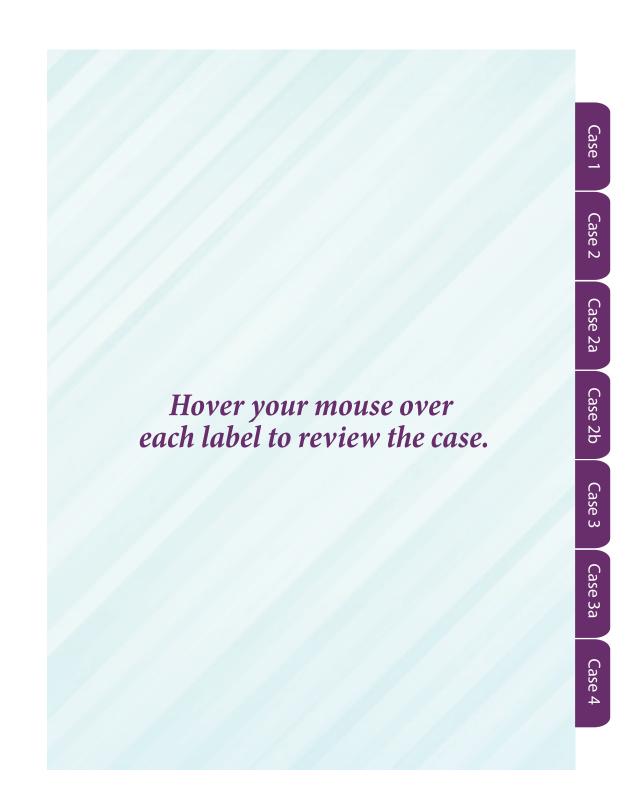
Let's meet the Smith family to review the practice settings of health care.

THE SMITH FAMILY...

Emily, little Sophia, Grandma Olivia, little Emma, and Jacob.



The Smith family has gone through a number of situations requiring health care attention. Let's discover the level of care and type of service required for each case:



Chapter 4:

Health Informatics Management

The Canadian health care system is not a single entity where different organizations specialize in a variety of practices and functionalities. After developing an understanding of the Canadian landscape and the Ontario health care system, it is valuable to focus on the different technologies that enable communication amongst the different health care delivery providers.

This section will instill knowledge about the health care technologies used in the different health care environments all of which cooperate to act as the 'building blocks' of our health care system.

In this chapter you will:

- Develop an understanding of the different clinical information systems and their use within health care organizations
- Understand how administrative systems are used by health care organizations.
- Develop an understanding of the administrative information systems.
- Understand the relationships between information systems in health care and the eHealth initiatives.
- Understand the impact of health informatics in the transformation of health care.



Informatics

Informatics is the science of information, the practice of information processing and the engineering of information systems. The study of the processing, management and retrieval of information electronically as a result of the design, development, implementation, support or management of computer based systems.

Informatics includes human interaction, information sciences, information technology, mathematical algorithms and social sciences. It delivers systems that will provide its users with the right information, at the right time, and the right place.

Bioinformatics

Bioinformatics is the application of computer science and Information Technology (IT) to the fields of biology and medicine. It deals with algorithms, databases, information systems, web technologies, artificial intelligence, image processing, software engineering, data mining, modeling, simulation, and statistics.

Health Information Management (HIM)

It is the maintenance and care of health records either paper-based and/or electronic format such as microfiche, electronic record by Health Information Management professionals typically working in health record management. Record keeping activities occur in organizations that collect health information such as health care facilities, physician practices, clinics, community care, home care, etc.

The management of health information includes: records management, registry, coding, and transcription, release of information, compliance auditing, and utilization review and risk management.

Health Informatics (HI)

Health Informatics (HI) is the intersection of clinical, information management/information technology (IM/IT) and management practices to achieve better health (as defined by COACH, Canada Health Informatics Association).

Health Informatics covers all aspects of the health domain including Medical sciences (family, community, specialty, etc); Biological sciences; Nursing sciences; allied health disciplines; public health; prevention, promotion, population health; dentistry; management and administration; research, and education.

eHealth

eHealth is used to describe healthcare practices supported by electronic processes and communication. It is the application of informatics products and services to the healthcare area and includes systems, processes, frameworks, models, methods and evaluation. It is the integration of the internet in the healthcare environment to support better health for citizens and facilitate healthcare delivery.

eHealth is the use of emerging technologies to improve health and healthcare delivery by connecting healthcare professionals. From an outcome perspective, it focuses on benefits, improvements, enhancement, efficiency, enablement in services delivery.

mHealth

mHealth is the practice of health care delivery using mobile technologies to deliver services, regardless of the care setting. It includes all aspects of health care delivery from data collection to sharing of information with other healthcare providers to populating health care records.



Admission / Discharge / Transfer (ADT)

An ADT system tracks a patient throughout the organization and collects all basic patient information including demographics.

Health Information Management System

The management of health records occurs in settings when patient health data is collected and stored.

Human Resources Information Systems (HRIS)

The Human Resources Information Systems (HRIS) typically include all information about employees such as qualifications, education, start date, performance review due date, union affiliation and contract information, emergency contact information, etc.

Staff / Personnel Scheduling and Time Management

A staff or personnel scheduling system typically includes all scheduling rules such as union requirements, time between shifts, qualifications, areas where staff can work, certification, performance review due date.

Patient Scheduling

The patient scheduling system allows the organization the ability to schedule patients for any visits, with any providers, in any departments. This can include outpatient, clinics, ambulatory care, operating room, inpatient areas, office visits, etc.

Workload Analysis System

Workload analysis systems are often referred to as workload management system, acuity system, or patient classification systems. It is able to identify staffing resources required to deliver patient care based on required services.

Utilization Management

A utilization management system provides information on how services are being utilized in an organization.

Common Financial Systems

The financial systems support the different operational activities of the organization (i.e., Accounts receivable, Accounts payable, General ledger, Billing, Asset management, Materials management & supply chain).

Case Costing System

Case Costing Systems or Cost Accounting Systems provide information on the cost of delivering care to an individual or on a particular clinical service.



Administrative Systems

DEFINITIONS

Clinical applications directly or indirectly support the delivery of patient care. They maintain clinical data on the patient that can be accessed by clinicians involved in the treatment of the patient. Clinical applications are often refer to as EHR, EMR, EPR, PHR or ECR.

EHR - Electronic Health Records

The electronic health record is a systematic collection of electronic health information about individual patients or populations in a digital format capable of being shared across different health care settings.

Clinical Systems

EMR - Electronic Medical Record

The electronic medical record is a computerized medical record created by a practice such as a physician's office, clinician's office, family health team or community health centre which delivers care.

EPR – Electronic Patient Record

The electronic patient record is often used interchangeably with the EMR and EHR. However it is most often used by health care facilities to describe the system of collecting information about a patient.

PHR - Patient Health Record

The patient health record is the electronic health information that is controlled by the individual about their own health. It is also referred to as the consumer health record.

ORDER ENTRY

Order entry is the process used for entering orders in a software application. It is often referred to as the Computerized Provider Order Entry or CPOE. Based on the type of order (laboratory, medication, diagnostic imaging, treatments/procedures, nursing care, physiotherapy, etc...), the request is sent to the appropriate department for processing. *Read more...*

Results Reporting Read more...

Clinical Documentation Systems Read more...

Laboratory System Read more...

Radiology Information System (RIS) Read more...

Picture Archiving Communication Systems (PACS) ...

Pharmacy System Read more...

Dietary System (Clinical Nutrition) Read more...

Clinical Decision Support System (CDSS) Read more...



Chapter One: International Comparison of Health Care System

- Canada's Health Care System Read More
- Canadian Health Act (1984) Read More
- World Health Statistics 2013 Read More

Chapter Two: Health Care Landscape

National Landscape

- Constitution Act Read More
- Health Canada Read More
- Software as Medical Devices Read More
- Canada Health Infoway (CHI) Read More
- Public Health Agency of Canada (PHAC) Read More
- Canadian Institute for Health Information (CIHI) Read More
- Reference Data Holdings Read More
- Canadian Patient Safety Institute (CPSI) Read More
- Statistics Canada Read More
- Canadian Institute for Health Research (CIHR) Read More
- Canadian Mental Health Association (CMHA) Read More

Provincial Landscape

- Electronic Child Health Network (eCHN) Read More
- Ministry of Health and Long Term Care (MOHLTC) Read More
- Local Health Integration Networks (LHIN) Read More
- Community Care Information Management (CCIM) Read More

- eHealth Ontario Read More
- Architecture & Standards Educational Material Read More
- Cancer Care Ontario (CCO) Read More
- Ontario Telemedicine Network (OTN) Read More
- OntarioMD Read More

Associations

- Ontario Hospital Association (OHA) Read More
- Ontario Association of Community Care Access Centres Read More
- Association of Ontario Health Centres (AOHC) Read More
- Community Support Services Agencies (CSS) Read More
- Community Care Access Centres (CCAC) Read More
- Ontario Public Health Association (OPHA) Read More
- Ontario Long Term Care Association (OLTCA) Read More

Chapter Three: Health Care Environment

Regulatory Colleges

- Health Force Ontario Read More
- Federation of Health Regulatory Colleges of Ontario Read More
- Regulated Health Professions Act Read More
- College of Physicians and Surgeons of Ontario (CPSO) Read More
- ✓ College of Nurses (CNO) Read More

Chapter Three: Health Care Environment, continued

Regulatory Colleges

- Ontario College of Pharmacists (OCP) Read More
- College of Audiologists and Speech-Language Pathologists of Ontario Read More
- College of Chiropodists of Ontario *Read More*
- College of Chiropractors of Ontario Read More
- Royal College of Dental Surgeons of Ontario Read More
- ✓ College of Dental Hygienists of Ontario Read More
- College of Dental Technologists of Ontario Read More
- College of Denturists of Ontario Read More
- College of Dietitians of Ontario Read More
- College of Kinesiologists of Ontario Read More
- College of Massage Therapists of Ontario Read More
- College of Medical Laboratory Technologists of Ontario Read More
- College of Medical Radiation Technologists of Ontario Read More
- College of Midwives of Ontario Read More
- College of Occupational Therapists of Ontario Read More
- College of Opticians of Ontario Read More
- College of Optometrists of Ontario Read More
- The College of Physiotherapists of Ontario Read More
- College of Psychologists of Ontario Read More
- College of Respiratory Therapists in Ontario Read More
- College of Traditional Chinese Medicine Practitioners and Acupuncturists of Ontario Read More

Professional Organizations & Associations

Respiratory Therapy Society of Ontario Read More

Ontario College of Family Physicians (OCFP) Read More Ontario Medical Association (OMA) Read More Registered Nurses Association of Ontario (RNAO) Read More The Ontario Society of Chiropodists Read More Ontario Chiropractic Association Read More Ontario Dental Hygienists Association Read More Association of Dental Technologists of Ontario Read More Ontario Dental Association Read More Denturists Association of Ontario Read More Ontario Kinesiology Association Read More Registered Massage Therapist's Association of Ontario Read More Ontario Association of Medical Radiation Technologists Read More Ontario Society of Medical Technologists (OSMT) Read More Association of Ontario Midwives Read More Ontario Society of Occupational Therapists Read More Ontario Opticians Association Read More Ontario Association of Optometrists Read More Ontario Pharmacists' Association Read More Ontario Physiotherapy Association Read More Ontario Podiatric Medical Association Read More Ontario Association of Psychological Associates Read More Ontario Psychological Association Read More

Chapter Three: Health Care Environment, continued

Professional Organizations & Associations, continued

- The Ontario Association of Speech-Language Pathologists and Audiologists Read More
- The Chinese Medicine and Acupuncture Association of Canada Read More

Chapter Four: Health Informatics Management

Health Informatics Asociations

- COACH, Canada's Health Informatics Association Read More
- American Medical Informatics Association (AMIA) Read More
- Healthcare Information and Management Systems Society (HIMSS) Read More
- International Medical Informatics Association (IMIA) Read More

Additional Resources

- ✓ Lalonde Report (1974) Read More
- Romanov Commission (2002) Read More
- Kirby Report (2002) Read More
- Mazankowski Report (2001) Read More
- Drummond Report (2012) Read More
- Health System Organization and Governance in Canada and Australia Read More

Bibliography

- Krohn, Rick, and David Metcalf. mHealth From Smartphones to Smart Systems. HIMSS, 2012.
- Glandon, Gerald L., Detlev H. Smaltz, and Donna J. Slovensky. Information Systems for Healthcare Management. HIMSS, 2008.
- Miller, Holly Dara, William A. Yasnoff, and Howard A. Burde. Personal Health re cords, The Essential Missing Element in 21st Century Healthcare. HIMSS, 2009.
 Ong, Kenneth R. Editor. Medical Informatics: An Executive Primer. HIMSS, 2007.
- Anderson, Daniel J., et al. Transforming Health Care, Action Strategies for Health Care Leaders. American Hospital Publishing Inc., 1998
- McKinney, Cynthia, Ray Hess, and Michael Whitecar. Implementing Business Intelligence in Your Healthcare Organization. HIMSS 2012.
- Glaser, John P., and Claudia Salzberg. The Strategic Application of Information Technology In Health care Organizations, Third Edition. Jossey-Bass, 2011.
- Osheroff, Jerome A., et al. Improving Outcomes with Clinical Decision Support: An Implementer's Guide, Second Edition. HIMSS, 2012.
- Ball, Marion J., et al. Healthcare Information Management Systems, A Practical Guide. Springer-Verlag, 1995.
- Degoulet, Patrice, Marius Fieschi. Introduction to Clinical Informatics. Springer, 1997.
- HIMSS. Preparing for Success in Healthcare Information and Management Systems. The CPHIMS Review Guide, Second Edition. HIMSS, 2013.
- Wager, Karen A., Frances Wickham lee, John P. Glaser. Health Care Information Systems. A Practical Approach for Health Care management. Jossey-Bass, 2009.
- Wager, Karen A. Frances Wickham lee, and John P. Glaser. Managing Health Care In formation Systems. A Practical Approach for Health Care Executives. Jossey-Bass. 2005.
- Federal Commissions on Health Care Read More
- Assisted Human Reproduction Canada (AHRC) Read More
- ✔ Hazardous Materials Information Review Commission (HMIRC) Read More
- Patented Medicine Prices Review Board (PMPRB) Read More
- Office of the Privacy Commissioner of Canada Read More
- Ontario's Action Plan for Health Care Read More
- COACH. CPHIMS-CA, Canadian Health Informatics Review and Reference Guide. COACH, 2013.
- HIMSS. HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations, Third Edition. HIMSS, 2013.
- Arlotto, Pam, Editor. Rethinking Return on Investment: The Challenge of Account able Meaningful Use. HIMSS, 2012.
- Hannah, Kathryn J., Marion J. Ball, and Margaret J.A. Edwards. Introduction to
- Nursing Informatics, Third Edition, Health Informatics Series. Springer, 2006.

Acknowledgement

A sincere thanks to all who contributed to this eBook. Specially:

- Procurement Team Navin Churaman
- Communications Team

Feedback & Suggestions

Please leave your feedback and comments <u>here.</u>

For any questions and/or suggestions please contact the Education Centre at education@ehealthontario.on.ca

