Essentials of

HEALTH INFORMATION MANAGEMENT

Principles and Practices

Fourth Edition

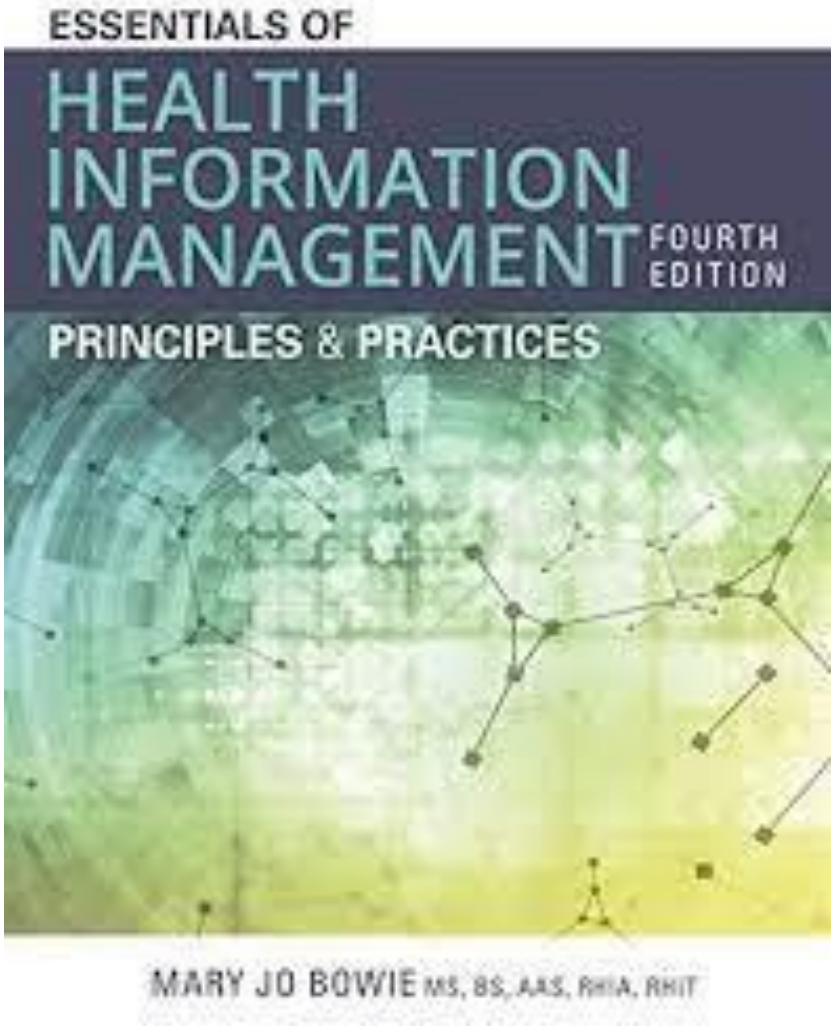
MARY JO BOWIE

Department of Health Information

University of Medical Technology(Yangon)

2022, June

Chapter 5
Electronic Health Records



3rd Year B.Med.Tech. (Health Information)

Subject – Health Information Management I

Chapter Outline

- Key Terms
- Objectives
- Introduction
- Overview of Computer Terms
- Evolution of Electronic Health Records
- Electronic Health Record System
- Regional Health Information Organization
- Components of Electronic Health Record System used in health care
- Beyond Health Data and Health Information

KEY TERMS

- Application software
- Bar code reader
- Bar codes
- Bar codes scanner
- Central Processing Unit (CPU)
- Character
- Clinical Data Repository
- Computer-based patient record (CPR)
- Computerized medical record

KEY TERMS Cont.

- Data
- Data Governance
- Document Imaging
- Electronic medical record (EMR)
- Field
- File
- Hardware
- Heath Data
- Health Information
- Health Information Exchange (HIE)

KEY TERMS Cont.

- Health Information Technology for Economic and Clinical Health Act(HITECH)
- Health Level Seven (HL 7)
- Indexed
- Information
- Information governance
- Input Device
- Longitudinal patient record
- Meaningful use
- Networking Equipment

KEY TERMS Cont.

- Operating Software
- Optical Disk Imaging
- Output Device
- Patient monitoring system
- Patient portal
- Personal health record (PHR)
- Record
- Record transitional template
- Regional Health Information Organization (RHIO)
- Registration-admission-discharge-transfer system(RADT)
- Scanner
- Software
- Storage Device (Memory Device)

Objectives

- Define Key terms
- Distinguish between computerized patient records, electronic patient records and electronic health records.
- Discuss electronic record implementation issues.
- Define and discuss the importance of Regional Health Information Organizations.
- Identify the administrative and clinical applications found in electronic health records

Introduction

- HI professional transformed from a paper environment to a virtual world.
- HI professionals have unique patient information management skills
- That will assist facilities in making the transition to electronic health record .
- HIM professionals to understand the expanding role of technology in health care, an understand of computer technology is necessary.

Overview of Computer Terms

Basic understanding of computer terms is needed to understand the complex EHR records system in use today.

Hardware

- Central Processing Unit
- Input Devices
- Output Devices
- Storage Devices
- Networking Equipments

Software

- Operating System Software
- Application Software

Evolution of EHRs

- Many terms – used to describe automated medical record system from 1960s
- Terms changed d/t advanced technology
- Automated system have evolved from single computer applications to a combination of numerous system that are network together.
- Computerized Medical record was used to describe early medical record documentation efforts (1970-1980)
- Patient Registration, Finance, laboratory, radiology, pharmacy, nursing and radiation therapy

Evolution of EHRs Cont.

- Even Development of automated system slow, the vision of Electronic Record Systems was a goal of the Health Care Industry.
- The Institute of Medicine (IOM) released “The Computer based patient record: An essential technology for Health Care”
- Provide - A Longitudinal Patient Record

A Longitudinal Patient Record

- Contains record from **different episodes of care, providers and facilities** that are **linked to form a view**, overtime of a patient health care encounters.
- IOM conduct “Computer based patient record (CPR)”
- Ability to **link patient information at different locations** according to a **unique patient identifier**.
- Provide access to complete and accurate health problems, status and treatment data

Evolution of EHRs Cont.

IOM's 1991 report, electronic record should support the following:

- Physician access to patient information
- New and past test results in multiple-care settings
- Computerized order entry
- Computerized decision-support systems to prevent adverse drug interactions and improve compliance with best practices.
- Secure electronic communication among providers and patients.
- Patient access to records, disease management tools and health information resources.
- Computerized administration processes such as scheduling systems.
- Standards-based electronic data storage
- Reporting for patient safety and disease surveillance efforts.

Advantages and Disadvantages of Manual and Automated Record Systems

Type of System	Advantages	Disadvantages
Manual	• Low start-up costs • Training of staff – simple • Requires less technically trained staff • Paper record are available because there is no downtime	• Retrieval of Information is not easily customized • Hand-written information can be illegible • Difficult the abstract information • Undocumented services are not usually discovered until discharge analysis of record occurs.

Advantages and Disadvantages of Manual and Automated Record Systems Cont.

Type of System	Advantages	Disadvantages
Automated	• Improves access to patient information • Multiple users can access patient information simultaneously and remotely • Eliminates paper record storage • Improves readability of patient information • Timely capture of data • Views of patient record can be customized by users. • Updates of information can easily occur. • Retrieval of customized information • Enhanced security of patient information • Reduces administrative costs	• Increased start-up cost • Selection and development of system in time-consuming. • Staff training is time-consuming and can be expensive. • Technical staff need to maintain system • User resistance can occur.

Evolution of EHRs Cont.

- Merging of data from different data system into one centralized database (Clinical data Repository)
- Provide easy access to data in electronic form or printed form.
- Late 1990s – The term **Electronic Medical Record (EMR)** was used
- Vendors developed many medical record system (ambulatory care, primarily, physician office, inpatients facilities)
- **Limited networking** between inpatient and ambulatory worlds.

Evolution of EHRs Cont.

- 2004, USA President George W, Bush **supported the use of EHRs** to improve of care and reduce medical mistakes and costs.
- Establish the position of the National Coordinator for Health Information Technology within the office of the secretary of HHS.
- 2009 Feb- the **American Recovery and Reinvestment Art** (included an estimated net investment of S19 Billion for Health Information Technology)

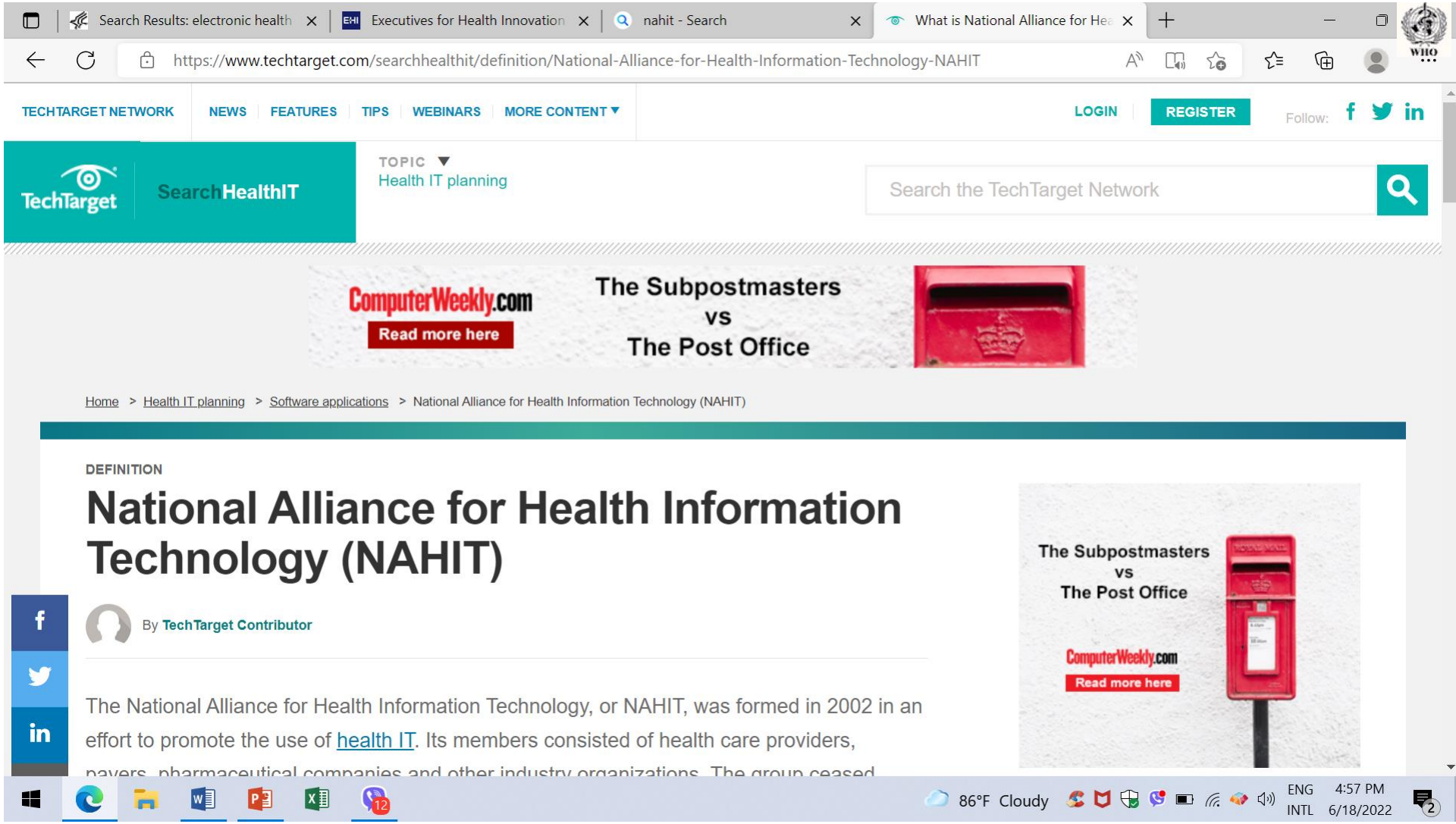
Evolution of EHRs Cont.

- Term “Electronic Health Records” is used the IOM and Health Level 7 (HL7) (development of standards that relate to the exchange of clinical health information)
- Standard outline the process for the exchange of health information and provide a nationwide interoperability plan with common parameters to be used for electronic data and record exchange.

Evolution of EHRs Cont.

- **National Alliance for Health Information Technology (NAHIT)** promoted Health IT initiative, from 2002 to 2009.
- NAHIT – health care providers, payers and other industry organizations (Stakeholder in the development of IT system in Health care)
- Accomplished many initiatives that had am impact on an advancement of IT in health care in USA.
- Work with the office of the National Coordinators for Health IT to define the terms EMR and EHR.

National Alliance for Health Information Technology (NAHIT)



The Definitions established by NAHIT

- An electronic medical record is “an **electronic record of health-related information** on an individual that can be created, gathered, managed and consulted by authorized clinicians and staff within one health organization”.
- An electronic health record is “an **electronic record of health-related information** on an individual that conforms to **nationally recognized interoperability standards** and that can be created, managed, and consulted by authorized clinicians and staff across **more than one health care organization**.

EMR, EHR, HIE, PHR

- One noticeable difference in the definition – EHR encompasses the transmission of health information that is standardization and shared between health care organization.
- EHR system advance – The Health information exchange (HIE) – describe the transmission of standardization health information between health care professionals
- Personal Health Record (PHR) – electronic or paper medical record maintained and updated by individuals for own personal use.

Electronic Health Record System

- Combination – various system of various facilities that integrate medical documentation needs into a electronic format.
- Health Information administrators may work with numerous facilities to implement electronic health record systems in a variety of types of health care organization
- Each implementation will be a unique journey based on the information needs, budget, existing automated system and other factors.

EHR Cont. Transition

- Many facilities use a **hybrid record**, a part of paper, part electronic record.
- Most important issues when managing a hybrid record is the facility's definitions of its legal record.
- The state Law is the primary basis for the definition of the legal patient record.

Issues impacting the Electronic Legal Health Record

- Many facilities use a **hybrid record**, a part of paper, part electronic record.
- Most important issues when managing a hybrid record is the facility's definitions of its legal record.
- The state Law is the primary basis for the definition of the legal patient record.

Issues impacting the Electronic Legal Health Record

- Facility need to clearly define their legal record to be able to respond to various requests for a patient's entire record.
- Content of the legal record must be defined in facility policy and standards for maintaining the security and integrity of the record need to be clearly defined.
- Hybrid system, part of the record will be retrieved manually while the remaining part will be housed in the automated system.

Issues impacting the Electronic Legal Health Record

- As facilities transition from paper to electronic formats, it is most helpful to develop a document that delineates the various sources of the component parts of the patient record,
- Should be used “record transitional template”
- Facility moves down the path to a full electronic format, the document should be modified to reflect the current state of the record.
- Should be addressed in facility policy is document completion and the time period in which documents can be changed before they become part of the legal record.
- Facilities need to establish policies that address the management of different versions of electronic documentation.

Issues impacting the Electronic Legal Health Record

- Which documents are final saved in electronic systems.
- Important for HIM professionals to identify the manner in which documents are final saved and to develop policies that facilities a complete and accurate record.
- Organizations need to establish policies that deadline the acceptable time period for a document is final saved.

Regional Health Information Organization

- The networking of electronic information between facilities has become a reality by the establishment of RHIOs
- RHIOs – electronic health network of patient medical information gathered from multiple health care organizations in geographical region.
- GOAL of RHIOS – to allow health care providers the opportunity to access patient information that was generated at other facilities, (allowing for health information exchange HIE)
- RHIOs allow access to multiple types of patient information such as lab reports, test results, encounter information and so on.
- The first steps in the establishment of RHIO is for a group of stake holders gains different benefits
- successful RHIOs are developed through the collaborative efforts of the following stakeholders.

Collaborative efforts of the stakeholders, Gains different benefits

- Hospitals
- Physicians
- Patients
- Health Plans and Insurers
- Public/governmental health agencies

Benefit for Hospitals

Benefit for hospitals include

- reduced administrative costs
- improved patient care
- reduced admission times
- improved testing results delivery
- a reduction in medical errors due to increased availability of clinical patient information.

Benefit for Physicians

- Rapid access to patient information occurs when providers use a RHIO.
- Provider can easily access information that was generated at various levels of care
- Streamlining access to timely information

Benefit for Patients

- Comprehensive documentation of medical information
- Improved coordination of care
- Improved patient safety

Benefit for Health Plans and insurers

- Administrative saving occur when health plans and insurers participate in a RHIO b/c they can more efficiently access medical records.
- A reduction in duplicate testing also helps to reduce costs.

Benefit for Public/governmental health agencies

- Participation by this type of stakeholder has been limited at this time.
- Increased ability to monitor public health issues through the use of aggregate data.

Impact of the American Recovery and Reinvestment Art (ARRA)

- Sign into Law on February 17, 2009.
- Impact – Health Information Technology will be a major force in moving the U.S health care system into the electronic record environment.
- Numerous sections within ARRA
- The Health Information Technology for Economic and Clinical Health Act (HITECH) section – provide incentive through the Medicare and Medicate EHR incentive program.
- Professionals, hospitals and critical access hospitals (CAHs) will receive financial incentives when they are meaningful using EHR.

Impact of the American Recovery and Reinvestment Art (ARRA) Cont.

- Meaningful use criteria are defined in stages.
- Rach stages include objectives that are specific eligible professionals, hospitals or CAHs.
- CMS maintains extensive information on this program.
- The advancement of health information exchange (HIE)
- New privacy regulations for both HIPAA and non-HIPAA entities.
- HIM workforce opportunities that will expand the opportunities for professionals.

Components of EHR system in HealthCare

- Numerous electronic health record systems used facilities.
- Regardless of the system used, the Goal is the same “to collect, analyze, process, display, and retrieve health care data and information”
- In any system, the collection of data must occur.
- Data is defined as raw facts that are not interpreted or processed, such as numbers, letters, images, symbols and sounds.
- Data is described and organized in a hierarchy that begins with the smallest piece of data, known as character.
- Lower letter, upper letter, numeric digit or specific character.
- A group of character form a field
- A collection of related forms a record.
- A collection of related record is a file.
- After data has been collected, it is given meaning and is useful for decision making.
- Data then becomes information.

Components of EHR system in HealthCare Cont.

- The blood pressure reading also represents health data.
- Health data is comprised of health facts that are collected about patient or group of patients and that are describe a health issue.
- Facility has a collected the blood pressure readings on all patients on the coronary care unit – represent health data that relates to this group of patients.
- Blood pressure readings were analyzed and given meaning health information generated.
- Health Information is defined as health data that has been given meaning and has been proceed or organized in a manner that is useful for decision making.
- If the blood pressure of the coronary care unit patients were all found to be high, this information would be clinically relevant and would be used in the medical decision-making process.

Administrative and Clinical Electronic Health Record Applications

Two major components of all electronic health record system:

Administrative application and Clinical application

Administrative Application

- Patient scheduling, admission, registration, business, financial functions and other management application

Clinical Application

- The collection, storage and display of clinical information

Administrative and Clinical Electronic Health Record Applications Cont.

- One basic function found in all systems in the collection of patient demographic and insurance information.
- The accuracy of the data collected during the patient registration process is essential.
- Entered into – Registration-admission-discharge-transfer system (RADT)
- Application creates a centralized database of patient demographic information and has replaced the paper master patient index in the virtual world.

Patient Monitoring Systems

- System that collect, monitor and record patient physiological data
- For example – patient's vital signs are monitored in Intensive Care Unit
- Allow for continuous monitoring and collection of vital signs.
- Alert with occur if the patient's vital sign are abnormal

Pharmacy Application

- Auto various aspects of the processing of patient medications.
- Order entry, identification of drugs interactions, pharmacist review, medical label printing, pharmacy administrative reports such as inventory control and drug usage.

Laboratory Application

- Automation of laboratory functions includes the processing of laboratory orders and the management of laboratory functions.
- Ordering tests, the reporting of test results and report generation.
- Provide test results to providers via electronic health information exchange.
- Allow the provider to view test results from remote locations.

Radiology Application

- Include ordering of tests, the creation of radiological images, reporting of the test results and various administrative functions with the shortage of radiologist
- Developed that allow radiological images to be taken at a facility and reviewed by a radiologist at another location.
- Electronically generated and can be accessed by the ordering facility.

Nursing Application

- To support both clinical and administrative nursing functions.
- Automated clinical functions include the development of nursing intake assessment.
- Documentation of nursing care, Ongoing assessment of patients, medication administrative records,
- Many administrative nursing activities are also embedded in electronic nursing application and vary depending on the functionality of the system
- Report on late dosing of medications, infection rates, nursing responsive times, assessment quality of nursing services and personnel resource management.

Medical Documentation Application

- Include a multitude of charting functions including progress notes documentation, medication and diagnostic profiles, treatment planning and tracking of patient vital signs
- Illustrates a screen that is used to collect a past medical history on a patient and information recorded at the time of a patient exam.

Patient Access Application

- Can be considered both clinical and administrative application.
- Some EHR system allow patients to communicate with their health care provider via a patient portal, provide patients with secure access to their EHR and patient provider communication tools.
- Patient can review online medical records and financial account information, schedule appointment, and communicate with providers via an encrypted email system.
- Facility may limit the medical information that a patient can review online
- Although the patient has the legal right to access and to have a copy of his or her medical records, it would not be in the patient's best interest to view all medical information without having a provider present.
- Patient portals can include health and fitness information and request for prescription renewals.

Beyond Health Data and Health Information

- As more facilities use electronic health record system, the world of health information management is changing.
- HIM professionals are involved in assisting facilities with the use of data that is now at one's finger tips because of advances in technology.
- This data is used within facilities and is also shared via health information exchanges.
- Data governance must occur within facilities to ensure that only quality data is recorded in electronic health record systems.
- The data we collect in turn creates information that is used in patient care and throughout the health care industry.
- Given the growing amount of data and information, facilities need to develop governance processes that ensure high-quality information.

Beyond Health Data and Health Information cont.

- 2013- AHIMA – published a strategic plan identifying information governance as an essential strategic process that health care organization must address.
- AHIMA plan state that – “effective enterprise information management in health care requires governance of both data and information to improve health care”
- Governance has become a critical function as the health care industry uses ever more data and information to make clinical, financial and administrative decisions.

Beyond Health Data and Health Information cont.

The terms data governance and information governance

- **Data governance** is the creation of policies, processes, and procedures that focus on the management of data and information that relates to patient care and operations of the health care organization.
- Primary focus – to focus on data accuracy and management of information that is an output from systems.
- **Information governance** – is the creation of organization-wide policies, principles, and practices that focus on the management of information that is produced by the various systems within the health care organization.
- Involves a commitment to managing all types of information for all department of a organization regardless of the type of media used to store the data and information.

Information Governance Principles for Healthcare (AHIMA)

- Principle of Accountability
- Principle of Transparency
- Principle of Integrity
- Principle of Protection
- Principle of Compliance
- Principle of Availability
- Principle of Retention

Principle of Accountability

- Requires that the governing body of the organization selects a member of the senior leadership to be accountable for the information governance of the organization.

Principle of Transparency

- All members of the workforce should have available to them **documentation of the organization's information governance plan**

Principle of Integrity

- This principle denoted that all data and information within the organization's should be authentic, timely, accurate and complete.

Principle of Protection

- All information within system must be protected from breach, loss and corruption to maintain privacy and security regardless of the form of media used.

Principle of Compliance

- This principle addresses the need to comply with all federal state, and other laws, regulations, standard and organizational policies that impact the management and maintenance of health information

Principle of Availability

- All information must available for retrieval in a timely, accurate and efficient manner

Principle of Retention

- Information must be retained according to all regulatory, legal, clinical operational and other requirements that speak to retention of information.
- Information retention schedules must be created and reviewed periodically.

Principle of Disposition

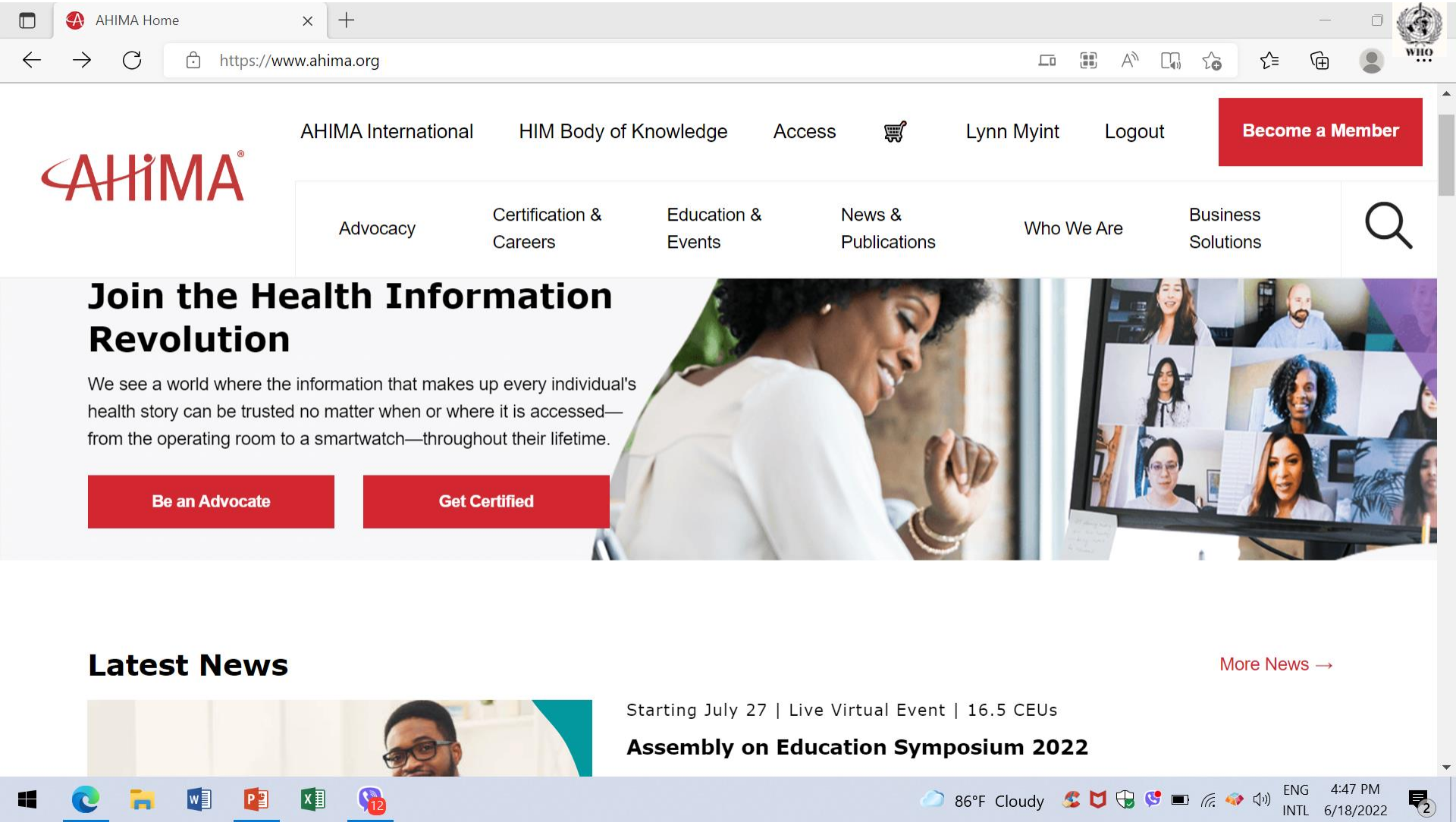
- Organization needs to establish policies that ensure a secure manner in which to destroy or transfer information at the end of the retention period for the information.
- The policies need to address all types of information in a facility to include patient information such as meeting minutes financial records, human resources information, and other type of information.

Beyond Health Data and Health Information cont.

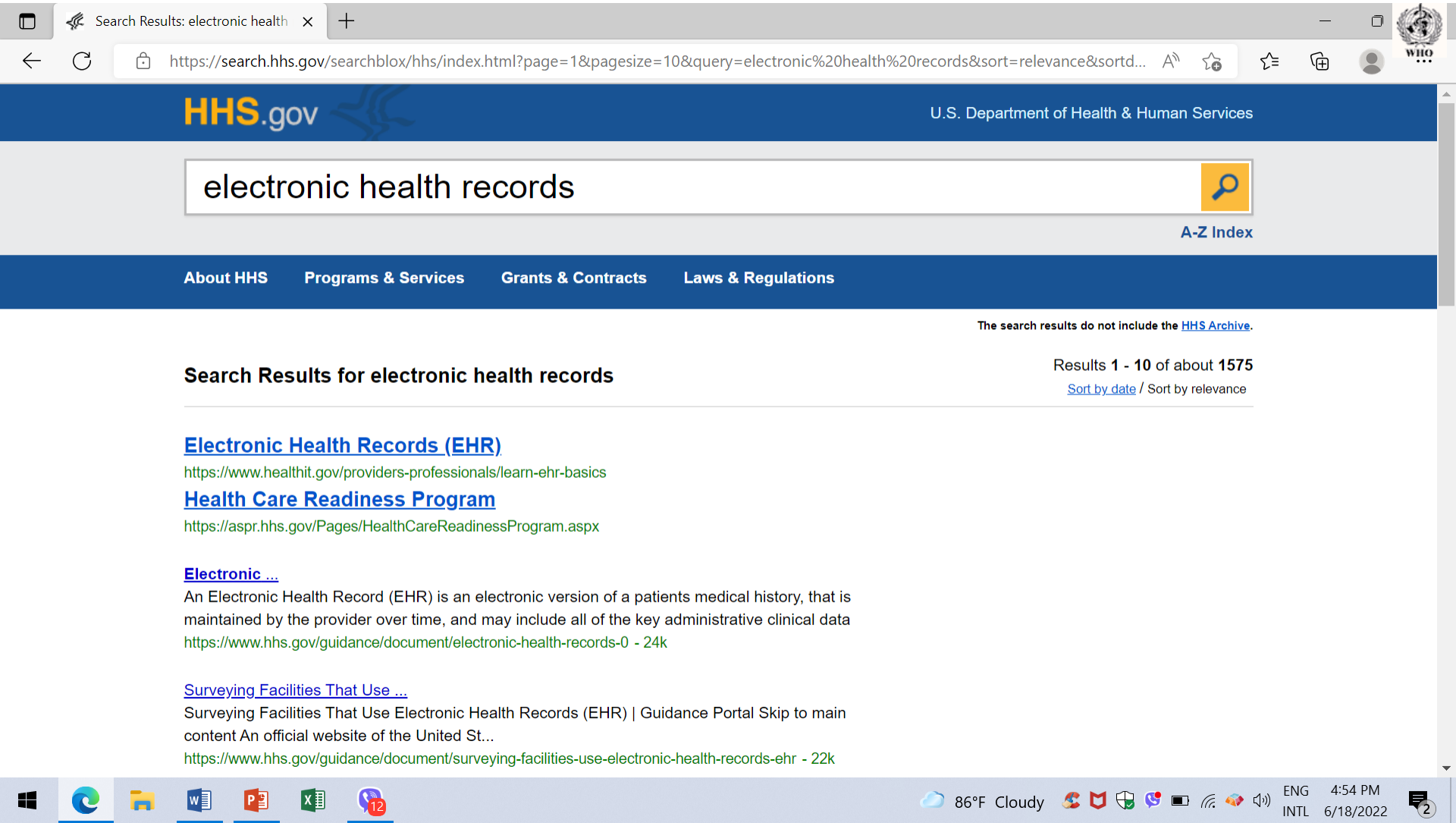
- The health care industry is becoming increasingly information-rich and the information wealth impacts all clinical, financial, operational, research and compliance aspects of the health care industry.
- All individuals within the health care industry must be educated about data and information governance.
- Health Information professional must understand the purpose and functions of data and information governance.
- Health Information professionals will play an active role in ensuring that data and information governance occurs in health care organization to protect all type of information that is created, used and maintained by the organization.

For More Further Study

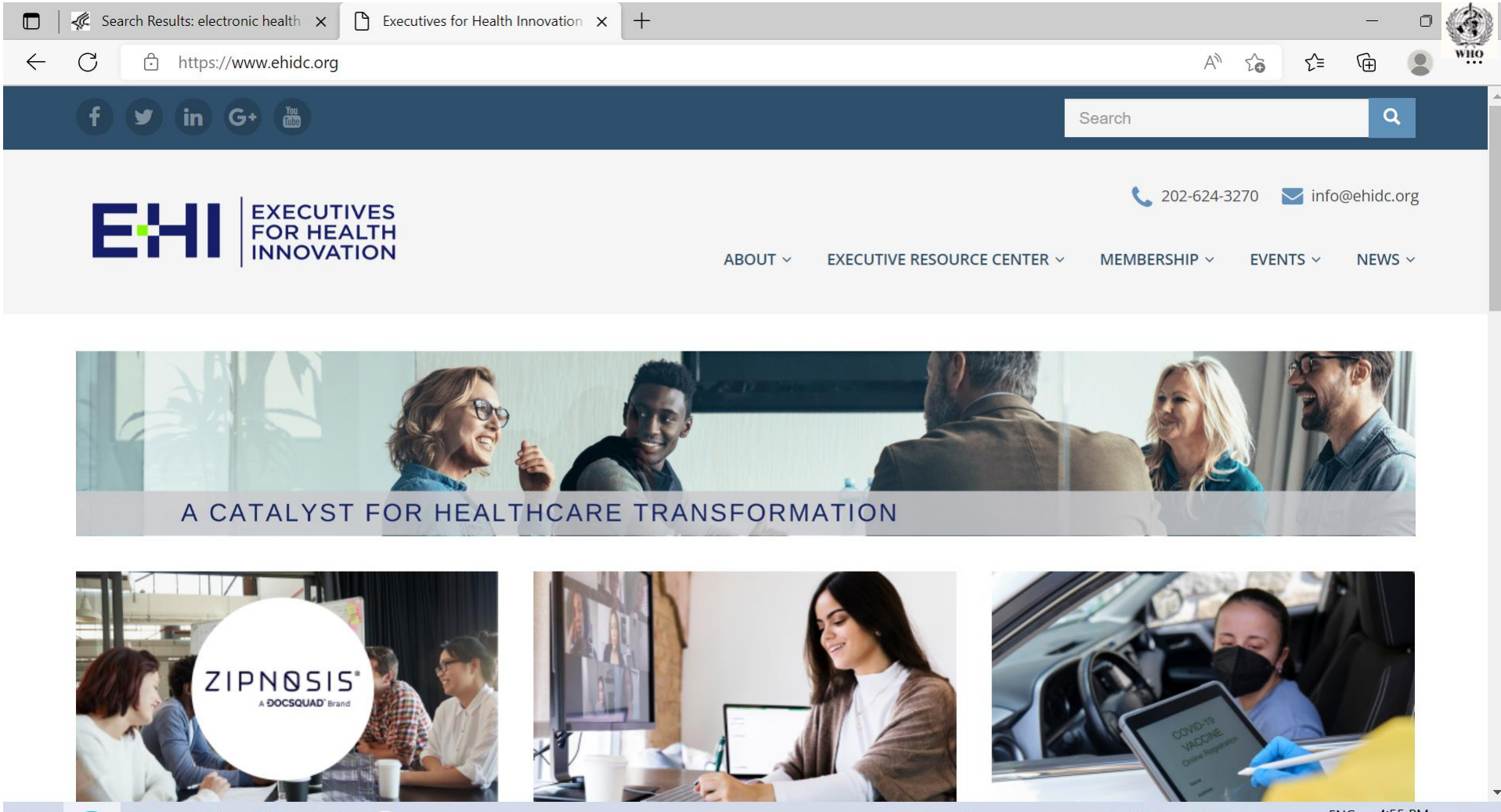
AHIMA Home (http://www.ahima.org)



http://www.hhs.gov



https//www.ehidc.org



“Creativity is thinking up new things
Innovation is doing new things”
Theodore Levitt