

Level 1 – Level 1 of *Nursing Documentation Using Electronic Health Records* includes chapters 1, 2, 3, and 4. These early chapters deal with the history and development of the EHR and trace the impact of standards development, certification, and the government's involvement with the EHR in the healthcare community. The theory, purpose, and types of nursing documentation are discussed with a focus on the MAR and the relevance of NIC and NOC. In Level 1 students are introduced to SpringCharts™ and learn essential documentation on an industry standard EHR program. They are introduced to the Nurse Note and are given hands-on practice in documenting chief complaints, vitals, and physical assessment on ten different disease case studies.

Chapter 1 - An Introduction to Electronic Health Records

In Chapter 1 the student is introduced to a concise history of the EHR and the multiple nomenclatures surrounding its evolution is unraveled. The standards development of the EHR and nursing's role in that development are explored. The student learns about the benefits of electronic health records in both the inpatient and ambulatory settings. The chapter concludes with a discussion of EHR Certification, the federal government's role in the promotion of the EHR, and the current financial remuneration being made available through the HITECH portion of the American Recovery and Reinvestment Act of 2009.

Learning Outcomes

After completing Chapter 1, the students will be able to:

- 1.1** Recall the brief history of electronic health records (EHRs).
- 1.2** Recall the history of standards development for the EHR and nursing's role in their development.
- 1.3** Identify certification bodies for the EHR.
- 1.4** Identify the benefits of the EHR.
- 1.5** Describe government involvement in the EHR.
- 1.6** Describe the role of nursing informatics in healthcare.

Key Terms & Definitions

Terms and abbreviations encountered in Chapter 1:

Ambulatory: The ability to walk or move from one place to another.

ARRA: American Recovery and Reinvestment Act. Legislation passed by Congress in 2009 to stimulate the economy through investments in infrastructure, unemployment benefits, transportation, education, and healthcare.

ASP: Application Server Provider. Enables access to an EHR via the Internet; the EHR software and database are housed and maintained by a separate company in a remote location.

CCD: Continuity of Care Document. A core set of provider oriented health data reflecting the most relevant and timely facts about a patient's health care. It is vendor and technology neutral, enabling the electronic access of patient information between healthcare providers and other entities.

CCHIT: Certification Commission for Health Information Technology. An independent initiative to accelerate the adoption of EHRs through a credible certification program.

CHI: Consolidated Health Informatics. A federal government initiative that seeks to provide adoption of health information interoperability standards for health vocabulary and messaging.

CMS: Centers for Medicare and Medicaid Services, formerly known as the Health Care Financing Administration (HCFA). Federal agency responsible for administering Medicare, Medicaid, the Health Insurance Portability and Accountability Act (HIPAA), and other health-related programs.

Connectivity: The ability to make and maintain a connection between two or more points in a telecommunications system allowing for viewing and/or transfer of data from one computer system to another.

COW/WOW: Computer on Wheels, known also as WOW - Workstation on Wheels. A computer placed on a mobile device to allow movement around an office, unit, and patient rooms.

DICOM: The Digital Imaging and Communications in Medicine Standard. Created to aid distribution and viewing of medical images, such as CT scans, MRIs, ultrasound, and x-rays.

E&M Code: Evaluation and Management Codes. Five-digit number used by healthcare providers to report evaluation and management services with a patient such as obtaining a health history, a physical examination, and healthcare decision making. E&M encounters may be inpatient, outpatient, or a consultation and occur in a variety of healthcare settings.

EHR: Electronic Health Record. Is a computerized systematic collection of health information in digital format about individual patients. An EHR is interoperable and capable of sharing information across different health care settings.

Encrypted: Change of electronic data from its original format so that it is secure and unintelligible to unauthorized parties and then "decrypted" back into its original form for use.

E-prescribing: Electronic prescribing. Use of computerized tools, usually embedded in an EHR program, to create and sign prescriptions for medicines; replaces handwritten prescriptions. Electronic prescriptions are sent to pharmacies over the Internet via a clearinghouse.

HL7: Health Level Seven. International computer language by which various healthcare systems communicate; currently the selected standard for the interfacing of clinical data between software programs in most institutions.

Interoperability: Ability of a software program to accept, send, or communicate data from its database to other software programs from multiple vendors allowing programs to exchange and use information.

Intranet Technologies: Privately maintained computer network that provides secure accessibility to authorized people enabling sharing of software, databases and files.

IOM: Institute of Medicine. Federal agency that gives advice and information about government policies affecting human health.

LAN: Local Area Network. A wired or wireless connection of computers on a single campus or facility.

Medicare Part A: Part of the federally funded Medicare insurance program that covers hospitals, skilled nursing facilities, home health agencies, and other non-ambulatory services.

Medicare Part B: Part of the federally funded Medicare insurance program that covers medical providers' supervision, outpatient hospital care, diagnostic tests, ambulance services, and other ambulatory services.

MIPPA: Medicare Improvements for Patients and Providers Act of 2008. Establishes Medicare reimbursement for providers, reduces racial and ethnic disparities among Medicare recipients, and places limits on certain rapidly growing Medicare supplemental insurance policies.

Nursing Informatics: Nursing specialty that integrates nursing, computer and information sciences to manage and communicate data, information, and knowledge in nursing practice; supports patients and nurses in decision making in a variety of healthcare settings.

ONC: The Office of the National Coordinator for Health Information Technology. The ONC is organizationally located within the Office of the Secretary for the U.S. Department of Health and Human Services (HHS). It is charged with coordination of nationwide efforts to implement and use the most advanced health information technology and the electronic exchange of health information.

PHR: Personal Health Records. Electronic access to personal health information via the Internet that allows individuals to update and send inquiries to their healthcare provider about prescriptions, appointments, or concerns.

Point of Care: Time and location of care being given to a patient from a healthcare provider.

Server: A main computer designed to provide services to client, workstation, or desktop computers over a local network or the Internet. Many network software programs have a server component and workstation component.

Standards: An approved format agreed upon by experts that establishes common terminology that supports interoperability, security, and privacy.

Tablet PC: Tablet Personal Computer. A portable, handheld computer that may allow the user to document directly on the screen with a stylus pen.

Telehealth: The use of electronic and communication technology to deliver health information and services from distances through a standard telephone line.

Presentation Outline

LO 1.1 The Electronic Health Record History

Power Point Slides: 1, 2, 3, 4, 5, 6, 7, 8, 9.

Concept Checkup 1.1

- A. What was the initial reason, and the ongoing reason, for the development of electronic health records?

Answer: Improvement of patient healthcare

Rationale: Having comprehensive health information available when needed spurred the innovation of storing patient information electronically. Improvement of patient healthcare has been the catalyst for implementation of the electronic health record.

- B. List four modes of data entry into EHR programs.

Answer:

1. Keyboard typing,
2. Voice Recognition,
3. Electronic Handwriting,
4. Templates

Rationale: Traditionally, a keyboard was the only source for data entry. However, the need for convenience, efficiency, and speed has mandated other methods of input. Voice recognition systems adapt to a person's voice and speech patterns so that the computer inputs data as the operator speaks. Electronic handwriting recognition is now available. Also, large bodies of preset text known as "templates" can be used to easily input data into the patient's record.

- C. What two types of technologies have increased the availability of healthcare databases and access to the EHR?

Answer:

1. Internet
2. Intranet

Rationale: Internet and intranet technologies have increased the availability of healthcare databases that can be shared and accessed across large distances. This remote access

gives healthcare providers accessibility to EHRs from remote locations such as nursing homes, a patient's home, a home office, or hospitals.

- D. What is the most commonly accepted term for electronically storing and accessing a patient's health information?

Answer: EHR- Electronic Health Record

Rationale: EHR — Electronic Health Record: Currently, this term is the most commonly accepted term for storing and accessing patient health information electronically. The EHR meets interoperability standards and therefore is able to be used across many healthcare organizations.

LO 1.2 Development of EHR Standards

Power Point Slides: 9, 10, 11, 12, 13, 14, 15.

Concept Checkup 1.2

- A. What was the purpose of the twenty criteria set up by the CHI by 2004?

Answer: Standardizing how information is coded or termed for use in exchanging data to or from an EHR.

Rationale: The CHI standards required common clinical vocabularies and standard methods for transmitting health information. By May of 2004, a set of 20 standards were announced and became the point of reference to standardize how information is coded or termed for use in exchanging data to or from an EHR.

- B. List five of the standards and/or organizations that regulate the standards used to promote interoperability between EHR systems.

Answer:

1. Health Level Seven (HL7),
2. National Council on Prescription Drug Programs (NCPDP),
3. Institute of Electrical and Electronics Engineers 1073 (IEEE),
4. Digital Imaging Communications in Medicine (DICOM),
5. The Laboratory Logical Observation Identifier Name Codes (LOINC)

Rationale: CHI standards are not required by law. However, vendors doing business with the federal government voluntarily adopt these standards. The federal government, as the largest purchaser of healthcare services, uses these standards to promote interoperability between EHR systems. The many different standards and organizations and their descriptions can be found on page 7.

- C. Why are standardization and interoperability important?

Answer: Standardization and interoperability promote safety, quality, cost savings, research, and identification of nursing's contribution to patient outcomes.

Rationale: The nursing profession has recognized the importance of standardization in promoting the exchange of information since the days of Florence Nightingale and has taken steps to ensure nursing input into the standardization of the EHR. Standardization

and interoperability promote safety, quality, cost savings, research, and identification of nursing's contribution to patient outcomes. Safety and quality are enhanced by the communication of information such as patient allergies, past health history, and current medications across organizations and from one level of care to another. Cost savings are achieved by reduction in duplicate tests and procedures. Finally, standardization promotes data collection for research purposes and allows nursing to identify the relationships among nursing interventions and patient outcomes.

Lo 1.3 EHR Certification Agencies

Power Point Slides: 16, 17, 18.

Concept Checkup 1.3

- A. What is the mission of CCHIT?

Answer: Accelerate the adoption of health information technology by creating an efficient, credible and sustainable product certification program.

Rationale: The Certification Commission states its mission is “to accelerate the adoption of health information technology by creating an efficient, credible and sustainable product certification program.”

- B. List three requirements for CCHIT certification of EHR products.

Answer:

1. Functionality
2. Interoperability
3. Security

Rationale: CCHIT certification demonstrated that an EHR product had met basic requirements for:

- Functionality – ability to carry out specific tasks.
- Interoperability – compatibility and communication with other products.
- Security – ability to keep patients' information safe.

- C. What is the purpose of the ONC-ATCB?

Answer: Testing and certifying both ambulatory and inpatient EHR programs for the ONC.

Rationale: Several IT organizations across the country were selected to fulfill the task of testing and certifying both ambulatory and inpatient EHR programs. Each entity is known as an ONC-Authorized Testing and Certification Body (ONC-ATCB).

Lo 1.4 Benefits of the EHR

Power Point Slides: 19, 20, 21, 22, 23, 24, 25.

Concept Checkup 1.4

List four benefits of implementing an EHR program.

Answer:

- A. Enhanced Accessibility to Clinical Information
- B. Patient Safety
- C. Quality of Patient Care
- D. Efficiency and Savings

Rationale:

- A. EHRs provide enhanced accessibility of clinical information for the healthcare provider. Access to the patient's healthcare information is not limited to the location of the paper chart, but is available at the point of care. The healthcare provider can easily retrieve information such as past health history, family health history, and immunization records. Up-to-date data, including test results, routine and current medications, and allergy information are crucial for informed decision making.
- B. The EHR contributes to patient safety in several ways. For example, illegible handwriting is recognized as the source of many medical errors. The challenge of reading handwritten notes, orders, and prescriptions has been eliminated with the EHR. Patient information is clear and legible. Reports and letters to other specialists and patients are comprehensive, professional, and easy to create, promoting safe patient handoffs and continuity of care. As discussed earlier, information is readily accessible in the EHR.
- C. As healthcare becomes more complex, healthcare providers rely increasingly on evidence-based practice guidelines to support their practice. Through incorporation into the EHR as decision support systems, these guidelines are readily available to healthcare professionals, and promote adherence, ensuring quality care for patients.
- D. An obvious financial savings is in the elimination of the paper-based chart, storage costs, and retrieval costs. Electronic messaging enables speedy communication between staff members. Job processes can be streamlined and reporting expedited. Often the need for a transcriptionist can also be eliminated.

LO 1.5 Government Involvement in the EHR

Power Point Slides: 26, 27, 28, 29.

LO 1.6 Nursing Informatics

Power Point Slides: 30, 31

Concept Checkup 1.5

- A. In what year did President George W. Bush set as a goal for most Americans to have EHRs?

Answer: 2014

Rationale: President George W. Bush, in his 2004 State of the Union address stated, “By computerizing health records, we can avoid dangerous medical mistakes, reduce costs, and improve care.” President Bush subsequently created a sub-Cabinet-level position for a national health information coordinator at the Department of Health and Human Services (HHS). Then in April of 2004, he outlined a plan “to ensure that most Americans have electronic health records within the next 10 years.”

- B. List three mechanisms by which electronic prescribing promotes greater patient safety and efficiency

Answer:

1. Automatic drug and allergy interaction checking
2. Elimination of medication errors due to poor handwriting
3. Greater efficiency to prescribing process

Rationale: Electronic prescribing is intended to bring greater safety to patients by providing for automatic drug and allergy interaction checking and the elimination of medication errors due to poor handwriting. E-prescribing is also designed to bring greater efficiency to the prescribing process for providers. It will dramatically decrease communication from pharmacies requesting clarification of prescriptions, resulting in enhanced efficiency and faster medication delivery to the recipient.

- C. What is the purpose of the HITECH Act?

Answer: To aid in the development of a healthcare infrastructure and to assist individual providers and hospitals in adopting and using EHRs.

Rationale: The Health Information Technology for Economic and Clinical Health (HITECH) Act was passed as part of ARRA and included over \$20 billion to aid in the development of a healthcare infrastructure and to assist individual providers and other entities such as hospitals in adopting and using health information technology, including EHRs.

- D. List three areas of interest for nursing informatics specialists.

Answer: Any three of the following: streamlining documentation, integrating safety measures online, participating in new medication distribution systems, telemedicine, privacy protection programs, and wireless applications.

Rationale: This growing field promotes access to current evidence-based nursing practice for integration into patient care. Nursing informatics specialists are involved in streamlining documentation, integrating safety measures online, participating in new medication distribution systems, telemedicine, privacy protection programs, and wireless applications.

Chapter 1 Review Key

Using Terminology

1. F

2. A
3. J
4. H
5. C
6. D
7. B
8. G
9. I
10. E

Rationales:

1. EHR—Electronic Health Record: Currently, this term is the most commonly accepted term for storing and accessing patient health information electronically. The EHR meets interoperability standards and therefore is able to be used across many healthcare organizations. The EHR encompasses a full range of functionalities and information, for both inpatient and outpatient settings.

2. On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA) into law. The ARRA provided \$787 billion to accelerate the nation's economic recovery through investments in infrastructure, unemployment benefits, transportation, education, and healthcare. The Health Information Technology for Economic and Clinical Health (HITECH) Act was passed as part of ARRA and included over \$20 billion to aid in the development of a healthcare infrastructure and to assist individual providers and other entities such as hospitals in adopting and using health information technology, including EHRs.

3. CCD—Continuity of Care Document: The CCD is a health provider oriented snapshot of a core set of data reflecting the most relevant and timely facts about a patient's healthcare. The CCD is a subset of the EHR. Typically, it includes patient information, diagnoses, recent procedures, allergies, medications, and future treatment plans. It should be accessible to all care providers whenever needed. The electronic CCD is designed to be vendor and technology neutral, that is, accessible and readable by other electronic systems. It provides a means for one healthcare practitioner, system, or setting to aggregate all pertinent data about a patient and forward it to another practitioner, system, or setting, whether inpatient, outpatient, or community-based to support the continuity of care. For patients, it provides continuity of care by allowing easier access to vital health information from other providers.

4. PHR—Personal Health Record: The PHR allows the patient to become an interactive source of health information and health management through an Internet based patient portal to the healthcare facility. Through a secure connection, patients may schedule appointments, request medication refills, access lab or radiology results, and ask questions about their health. Some PHRs enable patients to complete or update family and social histories and even read their health records and notify providers of incorrect or missing information.

5. Health Level Seven (HL7) is a computer messaging and vocabulary standard for demographic information, units of measure, immunizations, clinical encounters, and Clinical Document Architecture for text-based reports. Practically, it is the communication standard for the coordinated care of patients for scheduling, orders, tests, admissions, discharges, and transfers. HL7 enables clinical systems to communicate with each other (a.k.a. “interface”) when they receive new information. HL7 is currently the standard for the interfacing of clinical data in most institutions.

6. Encrypted is to change data from the original format so that it is secure and unintelligible to unauthorized parties and then “decrypted” back into its original form for use.

7. Interoperability is the ability of a software program to accept, send, or communicate data from its database to other software programs from multiple vendors. Allows programs to exchange and use the information exchanged.

8. The Institute of Medicine developed guidelines for key capabilities and functions that should exist in a quality electronic health record program.

9. Medicare Improvements for Patients and Providers Act of 2008. The act establishes Medicare reimbursement for providers, reduces racial and ethnic disparities among Medicare recipients, and places limits on certain rapidly growing Medicare supplemental insurance policies.

10. Telehealth is the use of electronic and communication technology to deliver health information and services over large and small distances through a standard telephone line. Telehealth also incorporates such terms as: e-medicine and e-health.

Checking Your Understanding

- 11. F
- 12. T
- 13. T
- 14. F
- 15. T
- 16. T

Rationales:

11. Traditionally, a keyboard was the only source for data entry. However, the need for convenience, efficiency, and speed has mandated other methods of input. Voice recognition systems adapt to a person’s voice and speech patterns so that the computer inputs data as the operator speaks.

12. A LAN (local area network) enables computers to communicate and usually uses a main server for the database. The LAN system can be customized to the healthcare facility’s needs. The LAN system may consist of wired connections and/or use a wireless network. Wireless LAN

networks enable healthcare providers to have full or open access to their EHR program from anywhere within the healthcare facility.

13. ASP is an application server provider, which enables a provider's office to access an EHR via the Internet using high-speed (broadband) Internet connections; the EHR software and database are housed and maintained by a separate company in a remote location.

14. Use of EHRs results in significant time saving for clinicians through streamlined job processes.

15. The EHR contributes to patient safety in several ways. For example, illegible handwriting is the source of many medical errors. The challenge of reading handwritten notes, orders, and prescriptions has been eliminated with the EHR.

16. As healthcare becomes more complex, healthcare providers rely increasingly on evidence-based practice guidelines to support their practice. Through incorporation into the EHR as decision support systems, these guidelines are readily available to healthcare professionals, and promote adherence, ensuring quality care for patients.

17/18.

A) Enhanced accessibility of clinical information for the healthcare provider. The healthcare provider can quickly and easily retrieve items such as past health history, family medical health history, social history, etc.

B) Patient safety. An example is that the problem of illegible hand writing on forms and prescriptions is eliminated with the EHR.

C) Quality of patient care. Evidence- based practice guidelines are readily accessible to help ensure adherence, therefore increasing the quality of care.

Rationales:

A) EHRs provide enhanced accessibility of clinical information for the healthcare provider. Access to the patient's healthcare information is not limited to the location of the paper chart, but is available at the point of care. The healthcare provider can easily retrieve information such as past health history, family health history, and immunization records. Up-to-date data, including test results, current, routine medications, and allergy information are crucial for informed decision making.

B) The EHR contributes to patient safety in several ways. For example, illegible handwriting is the source of many medical errors. The challenge of reading handwritten notes, orders, and prescriptions has been eliminated with the EHR. Patient information is clear and legible. Reports and letters to other specialists and patients are comprehensive, professional, and easy to create, promoting safe patient handoffs and continuity of care. As discussed earlier, information is readily accessible in the EHR. In paper charts, on the other hand, information may be easily misplaced.

C) As healthcare becomes more complex, healthcare providers rely increasingly on

evidence-based practice guidelines to support their practice. Through incorporation into the EHR as decision support systems, these guidelines are readily available to healthcare professionals and promote adherence, ensuring quality care for patients. Decision support systems allow healthcare professionals to easily access these guidelines and correlate them with past health history, family history, gender, age, and allergies, in order to make good clinical decisions.

19/20.

1. Develop certification criteria
2. Evaluate standards
3. Create the inspection process for HIT

Rationale:

The Certification Commission states its mission is “to accelerate the adoption of health information technology by creating an efficient, credible and sustainable product certification program.” In September 2005, the U.S. Department of Health & Human Services (HSS) awarded the Commission a contract to develop certification criteria, evaluate these standards, and create the inspection process for health information technology (HIT).

21. B

Rationale:

The Consolidated Health Informatics (CHI) standards were initiated to enable federal agencies involved in healthcare and health-related missions to effectively share information. Some of these federal agencies included the Veterans Administration (VA), the Department of Health and Human Services, the Department of Defense, and the Social Security Administration. The CHI standards required common clinical vocabularies and standard methods for transmitting health information. By May of 2004, a set of 20 standards were announced and became the point of reference to standardize how information is coded or termed for use in exchanging data with an EHR.

22. C

Rationale:

The Certification Commission provided an official recognition and approval that had been requested from both the private sector and from government agencies. Such industry standards-based criteria for EHRs promoted confidence in their use. In the past, the lack of uniform requirements and standards was a considerable hurdle to the extensive adoption of EHRs. When HHS awarded the contract to the Certification Commission, this barrier was specifically addressed to promote the use of an EHR by primary care providers, hospitals, home-health, and other organizations.

23. A

Rationale:

As healthcare becomes more complex, healthcare providers rely increasingly on evidence-based practice guidelines to support their practice. Through incorporation into the EHR as decision

support systems, these guidelines are readily available to healthcare professionals, and promote adherence, ensuring quality care for patients. Decision support systems allow healthcare professionals to easily access these guidelines and correlate them with past health history, family history, gender, age, and allergies, in order to make good clinical decisions.

24. C

Rationale:

CCHIT- Certification Commission for Health Information Technology is an independent initiative that seeks to accelerate the adoption of EHRs with a credible certification program.

25. C

Rationale:

MIPPA- Medicare Improvements for Patients and Providers Act of 2008. The act establishes Medicare reimbursement for providers, reduces racial and ethnic disparities among Medicare recipients, and places limits on certain rapidly growing Medicare supplemental insurance.

26. B

Rationale:

On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act (**ARRA**) into law. The ARRA provided \$787 billion to accelerate the nation's economic recovery through investments in infrastructure, unemployment benefits, transportation, education, and healthcare.

27. A, B, C, D

Rationale:

Major motivations for the increased use of an EHR are both efficiency and financial savings. Repetition of diagnostic testing is reduced. Another obvious financial saving is in the elimination of the paper-based chart, storage costs, and retrieval costs.

28. A

Rationale:

Internet and intranet technologies have increased the availability of healthcare databases that can be shared and accessed across large distances giving healthcare providers accessibility to the EHR from remote locations such as nursing homes, a patient's home, a home office, or hospitals. Access to these networks is limited and data flowing on the network is encrypted for security.

29. C

Rationale:

By 1994, nursing informatics was formally recognized as a nursing specialty when the scope and standards of nursing informatics practice were developed by the American Nurses Association.

30. A, B, C

Rationale:

Electronic prescribing is intended to bring greater safety to patients by providing for automatic drug and allergy interaction checking and the elimination of medication errors due to poor handwriting. E-prescribing is also designed to bring greater efficiency to the prescribing process for providers and pharmacists alike by dramatically decreasing communication from pharmacists requesting clarification of prescriptions. As a result, patients will receive their medications faster.