Health Informatics

8338 36 weeks

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Course Description

Suggested Grade Level: 10 or 11 or 12

Prerequisite: 6302

Students will have the opportunity to explore the importance of safeguarding electronic healthcare information. Students will be introduced to the various technologies and trends that affect the healthcare industry. Health informatics is a rapidly growing field with a projected 21 percent increase in demand for workers throughout the state of Virginia from 2014-2024.* Students will explore aspects of health informatics to include the history of health information technology (IT) in the United States, the Electronic Health Record (EHR), ethical and privacy issues, and cybersecurity and data breaches.

* Source: http://ctetrailblazers.org/labor-market-data/

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (◯) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

8338	Tasks/Competencies
Describing the History of Health Information Technology (IT) in the United States
⊕	Describe the background of today's health IT landscape.
⊕	Discuss legal issues in medicine.
⊕	Describe the progression of health IT in the United States.
Introducing the Electronic Health Record (EHR)
⊕	Define electronic health record (EHR).
⊕	Explain the core functions of an EHR.
⊕	Identify different formats and components of an EHR.
⊕	Explain how billing codes are used in an EHR system.
⊕	Compare health information systems.
⊕	Identify the benefits of EHR.
⊕	Propose strategies to minimize major barriers to the adoption of EHR.
⊕	Explain the principles of healthcare data exchange and healthcare data standards.
Understanding Ethical and Privacy Issues in Health Care
⊕	Identify the Principles of Medical Ethics (e.g., case studies, role playing, research papers).
⊕	Discuss the role of medical ethics and professional values in care delivery.
⊕	Differentiate between security, confidentiality, and privacy.
⊕	Identify concepts related to copyright, public domain, copy protection, intellectual property, and licensing agreements.
⊕	Define ethical implications in health care.
⊕	Investigate Internet privacy issues and computer crimes, including identity theft.
⊕	Comply with copyright and patent laws.
⊕	Comply with policies regarding acceptable use of technology.

8338	Tasks/Competencies
Exploring Medical Terminology	
○	Explain how medical terms are developed.
○	Define common medical word roots.
○	Define common medical word prefixes.
○	Define common medical word suffixes.
○	Demonstrate pronunciation of medical terms.
○	Apply the components of medical terminology (i.e., prefixes, word roots, suffixes).
⊕	Explain medical terms and acronyms related to each of the major body systems.
⊕	Define commonly used terms in health care.
⊕	Identify the purpose and uses of pertinent healthcare terminologies in the EHR.
⊕	Apply healthcare terminology to the various health information technology roles.
○	Identify medical abbreviations related to pathological conditions.
○	Identify medical abbreviations related to diagnostic procedures.
○	Explain medical abbreviations related to documentation.
○	Identify medical abbreviations related to pharmacology.
○	Identify abbreviations related to healthcare regulations and regulatory systems.
⊕	Describe key healthcare terms.
⊕	Describe paradigm shifts in health care.
⊕	Describe the medical model of health care in the United States.
⊕	Describe the organization and structures of health insurance.
⊕	Compare the function of federal agencies.
⊕	Describe the organization of public health in the United States at the federal, state, and local levels.
⊕	Describe the implementation of the Health Information Technology for Economic and Clinical Health (HITECH) Act.
⊕	Describe the major processes of information gathering, analysis, and documentation used by clinicians to detect, understand, and prevent or treat diseases.
Examining Information Technology in Health Care	
⊕	Describe general functions, purposes, and benefits of health information systems in various healthcare settings.
⊕	Identify correct terminology for computing and technology.
⊕	Identify commonly used hardware components.
⊕	Identify commonly used software applications and operating systems (OS).
○	Identify programming languages applicable to the healthcare industry.
⊕	Explain databases.
⊕	Describe network computing.
⊕	Identify security risks and protection measures for computing systems.
⊕	Explain a software information system (such as an EHR).
Working with Health IT Systems	
⊕	Identify components of health IT systems' ancillary services.
⊕	Identify root causes of health IT-induced error and potential solutions.
⊕	Evaluate the strengths and weaknesses of identified solutions to health IT problems.
⊕	Outline usability in relation to health IT.
⊕	Differentiate between security, confidentiality, and privacy.

8338	Tasks/Competencies
◯	Simulate beginning-level competency in general health IT system use.
Configuring Electronic Health Records (EHRs)	
⊕	Describe the process of migration to an EHR.
⊕	Describe the migration path from a paper health record to an EHR.
⊕	Identify tools used for decision support systems.
⊕	Identify an EHR system to achieve features required for meaningful use.
⊕	Identify clinical workflows.
⊕	Describe concepts of privacy and security as applied to the EHR.
⊕	Describe security issues with mobile and medical devices.
⊕	Describe planning for disaster preparedness and recovery related to the EHR.
Investigating Cybersecurity in Health Care	
⊕	Define cybersecurity as it relates to health care.
⊕	Identify the cybersecurity practices in health care.
⊕	Identify security issues related to computer hardware, software, and data.
⊕	Identify concepts of cybersecurity, honesty, courtesy, and confidentiality related to information and email systems and social networking (e.g., spam, viruses, and email etiquette).
⊕	Identify guidelines for disposal of data.
⊕	Identify the rationale for data encryption.
Exploring Laws and Requirements Regarding Data Breaches	
⊕	Identify different types of data breaches.
⊕	Describe penalties related to data breaches.
⊕	Identify client notification protocols related to data breaches.
⊕	Describe the risk assessment process for breaches.
⊕	Identify protocols related to the reporting of breaches.
Understanding Usability and Human Factors	
⊕	Explain a systems approach to usability and human factors as it applies to health IT.
⊕	Explain the cognitive consequences of health IT on clinical performance.
⊕	Identify the consequences of suboptimal design in the delivery of health care.
⊕	Use ergonomic principles in the design of the workplace/workstation.
⊕	Evaluate various types of error.
⊕	Identify technology input methods, given different technology uses, user populations, and contexts.
Exploring Public Health IT	
⊕	Develop a health IT action plan.
⊕	Describe how EHRs can be used to improve public health services and practices.
⊕	Identify credentialing options for health IT professionals.
⊕	Prepare a career portfolio with résumé.

Legend: ⊕Essential ◯Non-essential ⊖Omitted

Curriculum Framework

Describing the History of Health Information Technology (IT) in the United States

Task Number 39

Describe the background of today's health IT landscape.

Definition

Description should include the following:

- Health informatics vs. health information management
- Health informatics
- Health information exchange (HIE)
- Clinical decision support (CDS)
- Electronic health records (EHRs)
- Personal health records (PHRs)
- E-prescribing

The following infographic from HealthIT.gov illustrates the evolution of the Electronic Health Record: [Electronic Health Records: How they connect you and your doctors](#).

Process/Skill Questions

- What is health IT?
- What is the health information exchange (HIE)?
- What were early HIE systems and why did they fail?
- How does our healthcare system currently exchange health information?
- How are health informatics and health information management different? How do they overlap?

Task Number 40

Discuss legal issues in medicine.

Definition

Discussion should include, but not be limited to,

- The Health Insurance Portability and Accountability Act of 1996 (HIPAA)
- confidentiality
- medical malpractice
- tort reform.

The following document from the U.S. Department of Health and Human Services' Office of Civil Rights provides guidance regarding methods for de-identification of protected health information in accordance with the HIPAA privacy rule: Guidance on De-Identification of Protected Health Information.

Process/Skill Questions

- What is HIPAA?
- When was HIPAA enacted?
- Who must comply with HIPAA?
- What is protected health information (PHI)?
- What is de-identification of PHI?
- What are possible ramifications of confidentiality breaches?

Task Number 41

Describe the progression of health IT in the United States.

Definition

Description should include the rationale

- behind moving from paper to electronic records
- for elements of the Health Information Technology for Economic and Clinical Health (HITECH) Act in terms of the history of health IT.

Process/Skill Questions

- When did health IT begin to standardize as a field of study?
- What are some of the benefits of moving from paper to electronic records?
- What are some of the complications of electronic records? (privacy; communication between dissimilar systems)
- How is HITECH an extension of HIPAA? How does it affect HIPAA?

Introducing the Electronic Health Record (EHR)

Task Number 42

Define electronic health record (EHR).

Definition

Definition should include

- ownership (i.e., the record is owned by the organization that creates it; the information contained within the record is owned by the patient)
- data retrieval
- storage and processing
- quality assurance methodologies
- statistical reporting.

Process/Skill Questions

- What is an electronic health record?
- Who owns the health record?
- How is data retrieved from the EHR?
- How is patient information stored and processed?
- What is quality assurance, and why is it essential?
- What types of reports can be produced from an EHR?

Task Number 43

Explain the core functions of an EHR.

Definition

Explanation should include

- differentiating between EHR and EMR (electronic medical record)
- health information and data
- results management
- orders management
- decision support
- electronic communication and connectivity
- patient support
- administrative processes
- reporting and populating health management.

Process/Skill Questions

- What are some early forms of electronic medical records?
- What are the differences between the EHR and the personal health record (PHR)?
- What are major features of the EHR?

Task Number 44

Identify different formats and components of an EHR.

Definition

Identification of formats should include

- age-specific formats (e.g., pediatrics vs. geriatrics)
- specialty-specific formats (e.g., cardiology vs. endocrinology).

Identification of components should include

- vital signs
- past medical history
- clinical summary
- labs
- medication
- reconciliation
- patient alerts
- appointment reminders
- links to medically recommended websites (i.e., patient educational resources).

Process/Skill Questions

- What are the types of EHR formats?
- What are the main components of each EHR format?
- Why are each of these components important for EHR use?
- What would happen if one or more of these components were incomplete or inaccurate?
- How does making patient educational resources available benefit patients?

Task Number 45

Explain how billing codes are used in an EHR system.

Definition

Explanation should include the following:

- Adaptive software emphasizing practice specifications
- Conversion of "superbills" to claims
- Electronic submission and verification of claims
- Comprehensive accounting/billing reports
- Electronic tracking of payments and a transparent payment process
- Claims rejection analysis in real time displaying clear error codes
- Integration of co-payments into scheduling features
- Billing codes pulled directly from EHR documentation
- Multi-user, secure, and user-friendly interface capabilities
- Server monitoring, backups, and data recovery
- codes from [International Classification of Diseases, version 10 (ICD10)](#)

Process/Skill Questions

- What types of billing codes are used in in EHR?
- How does the conversion of superbills to claims work?
- How does the documentation in the EHR directly affect reimbursement?
- How does the billing process work?
- What steps should be taken to ensure the provider has 24-hour-a-day, seven-days-a-week access to the EHR?
- What are the implications of not having an emergency backup plan?

Task Number 46

Compare health information systems.

Definition

Comparison should include

- different types of health information systems (i.e., hospital vs. outpatient vs. clinic)
- systems' ability to meet the needs of various types of healthcare enterprises
- compatibility and interoperability between systems
- data flows across health IT systems, including standards and current efforts to facilitate health information exchange between entities commonly involved with health IT system data exchange and
    - providers
    - communities
    - regions
    - the nation.

Process/Skill Questions

- What are the various types of health information systems?
- Why is it important to be able to facilitate health information exchange between entities?

- What benefits can the patients receive if a health information exchange is in place?
- How are health care costs affected if health information exchanges are in place?

Task Number 47

Identify the benefits of EHR.

Definition

Identification should include how EHR affects

- patient safety
- quality care
- efficiency
- productivity reporting/documentation mechanisms.

Process/Skill Questions

- What are the benefits of using an EHR?
- Why should patients want their providers to use EHRs?
- How would you explain the benefits of an EHR to your loved ones?

Task Number 48

Propose strategies to minimize major barriers to the adoption of EHR.

Definition

Proposal should address perspectives of healthcare providers and the public regarding acceptance of or issues with EHR, including cost, training, and implementation.

Process/Skill Questions

- What are two strategies to minimize barriers of EHR adoption?
- What do you think should be the selling features of using an EHR?
- What problems could occur if an EHR is not used?

Task Number 49

Explain the principles of healthcare data exchange and healthcare data standards.

Definition

Explanation should include how these principles relate to

- patient care
- productivity
- data analysis.

Process/Skill Questions

- What are health data care exchange and health data standards?
- How do these components affect patient care?

Understanding Ethical and Privacy Issues in Health Care

Task Number 50

Identify the Principles of Medical Ethics (e.g., case studies, role playing, research papers).

Definition

Identification, according to the AMA's Principles of Medical Ethics, should include a discussion of

- integrity
- individual responsibility to society and community
- respect for human dignity
- lifelong study
- professional autonomy or self-rule.

Process/Skill Questions

- What are ethics?
- How does a healthcare provider separate personal and professional ethics?
- How can one differentiate the different types of legal responsibilities (e.g., malpractice, invasion of privacy, etc.)?
- Who can legally obtain/look at a patient's medical record?
- Who has ownership of health care records?

Task Number 51

Discuss the role of medical ethics and professional values in care delivery.

Definition

Discussion should include

- ethical conflicts
- professionalism
- legal duties
- ethical issues in health informatics.

Teacher Resource:

[Health Information Technology for Economic and Clinical Health (HITECH) Act](#)

Process/Skill Questions

- What is the proper way to handle ethical conflicts?
- How can healthcare professionals discuss patient care without breaching privacy?
- When using EMR/EHR, what are the guidelines for confidentiality?

Task Number 52

Differentiate between security, confidentiality, and privacy.

Definition

Differentiation should include

- definition of
    - security
    - confidentiality
    - privacy
- identification of common threats.

Process/Skill Questions

- What are the five common threats to patient security, confidentiality and privacy? Give examples of each.
- Based on the five common threats, when would one be used over the other?

Task Number 53

Identify concepts related to copyright, public domain, copy protection, intellectual property, and licensing agreements.

Definition

Identification should include, but not be limited to, software, media (e.g., music, pictures), and logo requirements. Identification should also include

- a list of terms
- examples of each concept
- laws covering the protection of published information
- legal and ethical issues arising from the infringement of copyright laws and licensing agreements.

Process/Skill Questions

- Is it true that it isn't considered stealing if the person didn't know it was pirated software? Explain.
- Is it true that all pictures on the Internet are free to use? Explain.
- What are some examples of intellectual property?
- What are consequences one might expect from a violation of copyright law?
- What are two examples of the importance of copyright laws? Licensing agreements? Intellectual property?
- What is pirated software?

Task Number 54

Define ethical implications in health care.

Definition

Definition should include

- HIPAA
- Patient Bill of Rights
- Confidentiality vs. privacy
- Family Educational Rights and Privacy Act (FERPA)
- Americans with Disabilities Act (ADA)
- Federal and state privacy laws
- Translation (private Internet access [PIA])

Process/Skill Questions

- What individuals have legal disabilities? Give five examples and explain each.
- What legal complications exist if not all information is disclosed in a FERPA?
- What is the act that guarantees certain rights and privacy to residents in a long-term care facility?
- What is the act that guarantees certain rights and privacy to patients who are hospitalized?
- What are the federal and state privacy laws for Virginia?

Task Number 55

Investigate Internet privacy issues and computer crimes, including identity theft.

Definition

Investigation should include research to identify computer crimes and privacy issues related to Internet use, such as

- infection of a computer by a virus
- computer hacking
- cyberstalking
- theft of computer equipment
- software piracy
- identity theft

and methods to prevent or protect against each.

Process/Skill Questions

- What physical security issues can be implemented to protect computer systems?
- What are the dangers and ethical considerations involved in software piracy?
- What is the difference between white hat and black hat hacking? Give two examples of each.
- How do facilities protect their computer equipment from theft?
- What policies are in place to prevent computer crimes?
- What are the consequences if/when there is Internet privacy breach?

Task Number 56

Comply with copyright and patent laws.

Definition

Compliance should pertain to scanned images and documents, electronic clip art, recorded sounds, recorded and scanned photography, trademarks, and other elements adapted for use in desktop publishing, multimedia, and web documents.

Compliance should include

- identifying applicable copyright and patent laws
- discussing the consequences of illegal use of any images, documents, audio, video, recordings, trademarks, and any other elements adapted for use in desktop publishing, multimedia, and web documents
- discussing the different methods (direct contact with company, copyright clearing houses) for obtaining permission to use copyrighted materials
- documenting all copyrighted materials used in class assignments.

Process/Skill Questions

- When a school's acceptable use policy has a guideline not included in state or federal statutes, do you have to comply with the school policy?
- Does it matter whether you have signed the school's acceptable use policy in terms of your accountability for violating the policy?
- How should an employer go about informing workers of changes to the acceptable use policy?

Task Number 57

Comply with policies regarding acceptable use of technology.

Definition

Compliance should include evaluating the components of various acceptable use policies (AUPs) (e.g., school policies, company policies) and adhering to those policies.

Process/Skill Questions

- What are the general guidelines for acceptable use policies (AUPs)?
- How do schools and companies adhere to the states guidelines of AUPs?
- How do schools and companies inform their employees of any changes made in the components of AUPs?

Exploring Medical Terminology

Task Number 58

Explain how medical terms are developed.

Definition

Explanation should include

- the division of medical terms into components (i.e., roots or combining forms, prefixes, and suffixes)
- the use of connectors or combining vowels
- the process of pluralizing.

Process/Skill Questions

- What role does medical terminology play in health informatics?
- What is a word root or combining form?
- What is a prefix?
- What is a suffix?
- What role does the combining vowel play in creating medical terms?
- How does knowledge of medical roots, prefixes, and suffixes help determine the meanings of unfamiliar words?
- Why is it always prudent to check the meaning of an unfamiliar word in a medical dictionary?
- What are the rules for pluralizing?

Task Number 59

Define common medical word roots.

Definition

Definitions should include the meaning of each root.

Process/Skill Questions

- Why is understanding the meaning of a word root important?
- How does a word root differ from a prefix or a suffix?
- How can you determine the word root in a medical term?
- What is the role of the word root as a medical term? (e.g., it identifies the organ or body system involved)

Task Number 60

Define common medical word prefixes.

Definition

Definitions should include the meaning of each prefix.

Process/Skill Questions

- Why is understanding the meaning of a prefix important?
- How does a prefix differ from a word root or a suffix?
- How can you determine the prefix in a medical term?
- What is the role of the prefix in a medical term? (e.g., it identifies location, time, number, or status)

Task Number 61

Define common medical word suffixes.

Definition

Definitions should include the meaning of each suffix.

Process/Skill Questions

- Why is understanding the meaning of a suffix important?
- How does a suffix differ from a word root or a prefix?
- How can you determine the suffix in a medical term?
- What is the role of the suffix in a medical term? (e.g., it identifies the procedure, condition, disorder, or disease)

Task Number 62

Demonstrate pronunciation of medical terms.

Definition

Demonstration should include

- use of a medical dictionary to interpret pronunciation marks
- speaking the terms clearly and with proper inflection.

Process/Skill Questions

- What resources are used to learn the correct pronunciations of medical terms?
- Why is it especially important to pronounce medical terms correctly?
- How can you access medical terminology pronunciation resources?

Task Number 63

Apply the components of medical terminology (i.e., prefixes, word roots, suffixes).

Definition

Application should include

- spelling components correctly
- using medical terms in sentences, both oral and written
- distinguishing among potentially confusing terms that look or sound alike.

Process/Skill Questions

- Why is correct spelling of medical terms essential?
- What are effective methods for improving your spelling abilities, particularly with regard to medical terminology?
- How would you describe the different ways of locating a term in a medical dictionary or in other sources?
- What is the significance of all-capital letters in the pronunciation of medical terms?
- What aids can be used to distinguish confusing terms that look or sound alike?

Task Number 64

Explain medical terms and acronyms related to each of the major body systems.

Definition

Explanation should include defining, understanding, and pronouncing medical terms related to the

- integumentary system
- musculoskeletal system
- blood, lymphatic, and immune systems
- cardiovascular system
- digestive system
- endocrine system

- ears, nose, throat, eyes, and vision
- nervous system
- reproductive systems
- respiratory system
- urinary system.

Explanation should also include

- identification and safe use of common abbreviations related to body systems
- reasons abbreviations related to body systems are used
- common errors made when using abbreviations related to body systems.

Process/Skill Questions

- What is the process for breaking apart a medical term?
- How is the meaning of a medical term determined?
- What are the rules for pronouncing medical terms?
- What is the role of acronyms in understanding major body systems?
- Why are medical terms for body systems used?
- How can the same abbreviation be used for different terms?
- What common errors are made when using abbreviations related to body systems?
- How can you safely use abbreviations for body systems?

Task Number 65

Define commonly used terms in health care.

Definition

Definition should include terms related to

- health information technology
- clinical vocabularies and terminologies related to the implementation of electronic health records.

Process/Skill Questions

- What healthcare terms, abbreviations and acronyms are common to health information technology?
- What terms, abbreviations and acronyms are common to electronic health records (EHR)?
- What are the most pertinent EHR terms?
- What are the definitions for the most pertinent EHR terms?
- What are the most relevant EHR abbreviations and acronyms?
- What are the definitions for the most common abbreviations and acronyms?

- How is healthcare terminology applied in EHR?
- Why is it important to understand the meaning and significance of commonly used healthcare terms, abbreviations or acronyms?
- How do these terms, abbreviations and acronyms relate to the implementation of EHR?

Task Number 66

Identify the purpose and uses of pertinent healthcare terminologies in the EHR.

Process/Skill Questions

- What terms are fundamental to EHR?
- How are these terms used in EHR?
- Why are acronyms and terms used in EHR?

Task Number 67

Apply healthcare terminology to the various health information technology roles.

Process/Skill Questions

- What role does healthcare terminology play in health information technology?
- Why is it important to know healthcare terminology as it relates to health information technology?

Task Number 68

Identify medical abbreviations related to pathological conditions.

Definition

Identification should include

- common abbreviations related to pathological conditions
- reasons abbreviations related to pathological conditions are used
- use of an approved list of abbreviations related to pathological conditions
- common errors made when using abbreviations related to pathological conditions.

Process/Skill Questions

- Where can you find abbreviations related to pathologic conditions?
- Why is caution important when using abbreviations related to pathologic conditions?
- What are common errors made when using abbreviations related pathologic conditions?
- Are all medical abbreviations spelled with all-capital letters?
- How can the same abbreviation be used for different terms?

Task Number 69

Identify medical abbreviations related to diagnostic procedures.

Definition

Identification should include

- common abbreviations related to diagnostic procedures
- reasons abbreviations related to diagnostic procedures are used
- use of an approved list of abbreviations related to diagnostic procedures
- common errors made when using abbreviations related to diagnostic procedures.

Process/Skill Questions

- What are the common diagnostic abbreviations?
- Why are abbreviations used for diagnostic procedures?
- What are the most common errors made when using diagnostic abbreviations?
- Why is it important to use only approved diagnostic abbreviations?

Task Number 70

Explain medical abbreviations related to documentation.

Definition

Explanation should include

- identification of common abbreviations related to documentation
- reasons abbreviations related to documentation are used
- use of an approved list of abbreviations related to documentation
- common errors made when using abbreviations related to documentation.

Process/Skill Questions

- What are the acceptable abbreviations used in healthcare documentation?
- Why are abbreviations used in healthcare documentation?
- What are the common errors made when using abbreviations for documentation?
- Why is it important to use only abbreviations approved for documentations?

Task Number 71

Identify medical abbreviations related to pharmacology.

Definition

Identification should include

- common abbreviations related to pharmacology
- reasons abbreviations related to pharmacology are used
- use of an approved list of abbreviations related to pharmacology
- common errors made when using abbreviations related to pharmacology.

Process/Skill Questions

- What are the acceptable abbreviations used in pharmacology?
- Why are abbreviations used in pharmacology?
- What are the common errors made when using abbreviations for pharmacology?
- Why is it important to use only abbreviations approved for pharmacology?

Task Number 72

Identify abbreviations related to healthcare regulations and regulatory systems.

Definition

Identification should include

- common abbreviations
- reasons abbreviations are used
- use of an approved list of abbreviations.

Process/Skill Questions

- What are the abbreviations for healthcare regulations and systems?
- Why are abbreviations used for healthcare regulations and systems?

- Where can an approved list of healthcare regulations and systems abbreviations be found?

Task Number 73

Describe key healthcare terms.

Definition

Description should include

- health
- health care
- healthcare delivery
- healthcare industry
- healthcare systems
- public health.

Description should also include

- physician
- nurse
- advanced practice nurses
- physician assistants
- pharmacists
- therapists
- allied health professionals
- paramedics

Process/Skill Questions

- How would you define health?
- What is the difference between healthcare industry and healthcare systems?
- What role does public health play in your overall health?
- How are physicians, nurses, and pharmacists a part of the healthcare system?

Task Number 74

Describe paradigm shifts in health care.

Definition

Description should include discussion of

- physician-centric to patient-centric care
- individual to team-based care
- physician-kept records to PHR
    - the critical role of advocacy in adoption/use of EHRs
    - consumer functions for PHRs to improve public health
- dominance of technology in healthcare delivery.

Description should also include examples such as

- episodic one-on-one care
- multidisciplinary care
- interdisciplinary care
- care of chronic conditions
- population-based care
- disease management
- long-term care
- end-of-life care.

Process/Skill Questions

- How has the paradigm of health care shifted from physician-centered to patient-centered care?
- What is the consumer's responsibility in the use of EHRs?
- How has technology contributed to paradigm shifts in healthcare delivery? Give an example.
- What is the difference between multidisciplinary care and interdisciplinary care?
- How has the paradigm shift in health care influenced long-term care?
- What does population-based care mean to you?

Task Number 75

Describe the medical model of health care in the United States.

Definition

Description should include settings such as outpatient/ambulatory clinics, hospitals, and

- individual and group practices
- managed care
- urgent/acute/emergency care
- community and public health centers
- hospital-based and critical care
    - types of hospitals
        - community

- teaching/research critical access.

Process/Skill Questions

- What are the similarities and differences of community hospitals and teaching hospitals?
- What are the advantages of a group practice compared to an individual practice?
- What is the role of urgent-care facilities in the delivery of health care?

Task Number 76

Describe the organization and structures of health insurance.

Definition

Description should include

- Health maintenance organizations (HMOs)
- Preferred provider organizations (PPOs)
- Independent practice associations (IPAs)
- Medicare
- Medicaid
- Government healthcare systems (i.e., the Patient Protection and Affordable Care Act [ACA])

Process/Skill Questions

- What are the similarities and differences of HMOs and PPOs?
- How does Medicare influence the delivery of health care?
- How does Medicaid influence the delivery of health care?
- How has the Affordable Care Act affected health care in the United States?

Task Number 77

Compare the function of federal agencies.

Definition

Comparison should include the following, with an emphasis on EHRs:

- The Joint Commission
- Food and Drug Administration (FDA)
- Centers for Disease Control and Prevention (CDC)

- National Institutes of Health (NIH)
- Department of Health and Human Services (HHS)

Process/Skill Questions

- What is the role of the Joint Commission in the regulation of health care? FDA? CDC? NIH? HHS?
- How are the functions of the CDC and NIH similar? How are they different?

Task Number 78

Describe the organization of public health in the United States at the federal, state, and local levels.

Definition

Description should include an emphasis on the role of public health in averting epidemics and bioterrorism.

Process/Skill Questions

- What is an example of a bioterrorism threat?
- How does the United States protect its citizens against epidemics? Give three examples.
- What is the role of the local government in protecting citizens against bioterrorism?

Task Number 79

Describe the implementation of the Health Information Technology for Economic and Clinical Health (HITECH) Act.

Definition

Description should include

- the four categories of violations that reflect increasing levels of culpability
- the four corresponding tiers of financial penalties that significantly increase the minimum penalty amount for each violation
- a maximum penalty amount of $1.5 million for all violations of an identical provision.

Process/Skill Questions

- What would be an example of violation of the HITECH Act?
- What would be the minimum penalty for the violation?
- What is meant by tiers of penalty?

Task Number 80

Describe the major processes of information gathering, analysis, and documentation used by clinicians to detect, understand, and prevent or treat diseases.

Definition

Description should include

- gathering information from the patient
- gathering information from other objective and subjective sources
- managing and organizing the information
- comparing the information to known states of disease
- developing a care plan for the patient.

Process/Skill Questions

- What is an example of a subjective source of patient information?
- What is an example of an objective source of patient information?
- Why is development of a plan of care important to a patient?

Examining Information Technology in Health Care

Task Number 81

Describe general functions, purposes, and benefits of health information systems in various healthcare settings.

Definition

Description should include

- functions
- role
- benefits
- disadvantages.

Process/Skill Questions

- What are the disadvantages of HIT in health care?
- How is HIT integrated into health care?
- What role does HIT serve in health care?
- What is the purpose of HIT in health care?
- What are the benefits of HIT in health care?

Task Number 82

Identify correct terminology for computing and technology.

Definition

Identification should include

- hardware
- software (e.g., databases)
- networks (e.g., the Internet, intranet, local area network [LAN], wide area network [WAN], etc.).

Process/Skill Questions

- What's the difference between hardware and software?
- What are the characteristics of software used for health information technology applications?
- What is the Internet?
- What is an intranet?
- How are the Internet and intranet alike and different?
- How are the Internet and intranet used in a healthcare setting?
- What are the differences between LAN and WAN?

Task Number 83

Identify commonly used hardware components.

Definition

Identification should address

- the central processing unit (CPU)
- input and output devices
- how technology is used in healthcare systems.

Process/Skill Questions

- What is memory?
- What are the two types of memory?
- What are RAM and ROM?
- How do computers store information?
- What are the common input and output devices used in the healthcare setting?
- How is technology used in health care?
- How does the use of technology influence health care?
- What is the disadvantage of technology use in health care?

Task Number 84

Identify commonly used software applications and operating systems (OS).

Definition

Identification should include

- computer applications (word processing, spreadsheet, practice management, EHR, Epic, McKesson)
- system software (e.g., maintenance software, backup software)
- operating system functionality
- types of operating systems (e.g., Windows, Linux, Mac [iOS])
- the purpose and use of file systems.

Process/Skill Questions

- What is an operating system?
- What does an operating system do?
- What basic functions does an operating system perform?
- How does an OS affect the performance of installed applications?
- What computer applications are used in health informatics?
- What are the characteristics of computer application software?
- What are the characteristics of system software?
- What is the purpose and use of file systems?

Task Number 85

Identify programming languages applicable to the healthcare industry.

Definition

Identification should include the identification of commonly used languages such as

- Statistical Analysis System (SAS)
- R
- MatLab.

Process/Skill Questions

- What are the common programming languages used in the healthcare industry?
- What are the advantages for each of the programming languages?
- What are the disadvantages for each of the programming languages?

Task Number 86

Explain databases.

Definition

Explanation should include

- definition of the term *database*
- purpose of database systems
- explanation of querying languages (i.e., SQL)
- identification of commonly used database systems (e.g., Microsoft Access, SQL Server, Oracle).

Process/Skill Questions

- What is a database?
- How is a database used in a healthcare environment?
- What are querying languages?
- What role do they play in a healthcare setting?
- What are the commonly used database systems?
- What are the advantages and disadvantages for each of the database systems?
- How is a database system used in health care?

Task Number 87

Describe network computing.

Definition

Description should include

- history and evolution of computer networks
- benefits and risks
- identification of commonly used communications
    - hardware components
    - software components.

Process/Skill Questions

- What is the history of network computing?
- How did computer networks evolve?
- What is a computer network?
- What is a network?
- What does network computing mean?
- What are the types of network connections?
- What are protocols (networks within computing)?
- What are the benefits and risks of network computing?
- What is network hardware?
- What specific network equipment is used in network computing?
- What is networking software?
- What are the types of network software?

Task Number 88

Identify security risks and protection measures for computing systems.

Definition

Identification should address healthcare applications and include a discussion of

- security concerns
    - malware
    - Trojan horse
    - phishing
    - social engineering
    - spyware
    - ransomware
- safeguards such as

- o firewalls
  - o encryption
  - o intrusion detection
  - o virus protection software and patterns
  - o programming for security
  - o biometrics
- security of wireless networks.

Process/Skill Questions

- What is network security?
- What are the types of network security?
- What are the types of hardware threat?
- What are the types of software threats and their solutions?
- What are the categories of network security attacks?
- How are network security attacks prevented?
- What are the common network security threats?
- What methods are employed to secure the network from an online security attack?
- What methods are used to secure a wireless network from an online security attack?

Task Number 89

Explain a software information system (such as an EHR).

Definition

Explanation should include how the system is

- designed
- developed
- tested
- supported
- maintained.

Process/Skill Questions

- What is a computer information system?
- What is an information system as defined by its major components?
- What is a software information system?
- What are examples of information system software?
- How is the software designed and developed?
- How is the software tested?
- How is the software supported?
- How is the software maintained?

Working with Health IT Systems

Task Number 90

Identify components of health IT systems' ancillary services.

Definition

Identification should include types of health IT applications

- electronic medication administration record (e-Mar)
- physician order entry (POE)
- picture archiving and communications system (PACS)
- admission, discharge, and transfer (ADT), or death protocols
- lab (orders and results)
- registries (e.g., organ transplant, tumor)
- research (e.g., clinical trials, medication, or protocols)
- billing/coding

within healthcare settings such as

- acute care
- community health
- public health
- small-provider practices.

Process/Skill Questions

- What is an e-Mar, and how is it used?
- What is a POE, and how is it used?
- What is PACS, and how is it used?
- What are the ADT protocols?
- How are orders and results processed in an EMR?
- Where are health registries maintained?
- Who is responsible for clinical research?
- How is billing and coding used in different healthcare settings?

Task Number 91

Identify root causes of health IT-induced error and potential solutions.

Definition

Identification should address

- user error
- workflow interference
- system errors.

Process/Skill Questions

- How do user errors manifest in the workplace?
- What are different types of workflow interference?
- What are typical system errors?

Task Number 92

Evaluate the strengths and weaknesses of identified solutions to health IT problems.

Definition

Evaluation should emphasize the reality of solutions and illustrate the frequent domino effect (i.e., unintended consequences) of a change to a health IT system.

Task Number 93

Outline usability in relation to health IT.

Definition

Outline should include

- definition of usability
- description of general usability principles
- the relationship between usability and adoption.

Process/Skill Questions

- What is usability?
- What makes usability important to system design and adaptability?
- Why is usability important with respect to system adoption?

Task Number 94

Differentiate between security, confidentiality, and privacy.

Definition

Differentiation should include

- defining of the terms
    - *security*
    - *confidentiality*
    - *privacy*
- identifying of common threats.

Process/Skill Questions

- What is the difference between security, confidentiality, and privacy?
- What are some common threats to healthcare data?

Task Number 95

Simulate beginning-level competency in general health IT system use.

Definition

Simulation should include available simulation software.

Configuring Electronic Health Records (EHRs)

Task Number 96

Describe the process of migration to an EHR.

Definition

Description of the process should include perspectives of

- organizational strategy
- planning
- analysis of EHR options
- decision-making techniques
- training implementation strategy.

Process/Skill Questions

- What are the key components of the EHR?
- What elements are needed to implement a system?
- Who in the organization would be involved in the process?

Task Number 97

Describe the migration path from a paper health record to an EHR.

Definition

Description should emphasize

- organizational strategy to implementation, including the use of Medicare and Medicaid Electronic Heath Record (EHR) Incentive Programs (also called "meaningful use" programs)
- investigation of vendors
- scanning of materials
- conversion of materials to electronic format.

Process/Skill Questions

- What was the main reason for switching to electronic processing of health information?
- How are the federal and state governments involved in the process?
- What is a certified EHR?
- How are vendors involved in the process?
- What are the processes involved in moving from a paper storage system to an EHR?

Task Number 98

Identify tools used for decision support systems.

Definition

Identification should include the importance and use of clinical decision support systems for clinical and administrative use, such as

- mobile devices
- tablet computers
- mobile Physicians' Desk Reference (mobile PDR)
- medical robots
- labs
- radiology
- staffing
- telemedicine.

Process/Skill Questions

- What are some of the electronic medical devices used in health care?
- How would these devices support the physician in delivering healthcare treatment to patients?
- What devices could be used to assist administration in planning and delivery of healthcare services?

Task Number 99

Identify an EHR system to achieve features required for meaningful use.

Definition

Identification should include consideration of

- patient care clinical workflow
- implementation of clinical decision support
- building of order sets
- use of data-entry templates
- health summary and clinical reminder reports.

Process/Skill Questions

- What are the key features of meaningful use in an EHR?
- What are the necessary elements in an EHR system to achieve meaningful use?
- How does meaningful use affect patient care?

Task Number 100

Identify clinical workflows.

Definition

Identification should include an understanding of clinical workflows from multiple clinician perspectives and in different clinical settings, such as

- lab exercises
- simulations.

Process/Skill Questions

- How could a patient's lab work affect the treatment and outcome?
- What are the different structures in use in healthcare settings?
- What are the different structures for individuals involved in patient care?

Task Number 101

Describe concepts of privacy and security as applied to the EHR.

Definition

Description should include discussion of

- user passwords
- physical security of systems (e.g., encryption)
- risk management
- authentication and authorization
- regulatory frameworks
    - Office of the General Counsel (OGC)
    - Office for Civil Rights (OCR)
    - Office of the National Coordinator for Health Information Technology (ONC)
- biometrics.

Resource: [Security Risk Assessment Videos](#)

Process/Skill Questions

- What are some of the privacy concerns for the EHR?
- What are some of the mechanisms used to determine identification of individuals?
- Which regulatory bodies (federal and/or state) are responsible for the privacy and security of the EHR?
- What is biometrics, and how is it used?

Task Number 102

Describe security issues with mobile and medical devices.

Definition

Description should include

- theft
- damage
- unauthorized access.

Resource: [Take Steps to Protect and Secure Information When Using a Mobile Device](#)

Process/Skill Questions

- What are three issues that affect the use of mobile and/or medical devices?
- How can a medical device be protected if it is misplaced or stolen?
- What are some ways to prevent tampering with a mobile medical device?

Task Number 103

Describe planning for disaster preparedness and recovery related to the EHR.

Definition

Description should include

- training
- backup
- using a paper system
- redundant servers
- policies and procedures
- protocols
- *Contingency Planning SAFER Guides*

Process/Skill Questions

- What is disaster planning, and how does it relate to an EHR?
- What guidelines should be in place to help prepare for retrieving information in an EHR?
- What are the necessary elements in an EHR system to assist in document recovery in the event of a disaster?

Investigating Cybersecurity in Health Care

Task Number 104

Define cybersecurity as it relates to health care.

Definition

Definition should include

- prevention
- detection
- responding to attacks against or unauthorized access to a computer system and its information
- protecting any information or digital asset stored in any digital memory device
- emailing and texting.

Resources:

- [The Security Rule](#) (US Department of Health and Human Services)
- [Office of the National Coordinator for Health Information Technology](#)

Process/Skill Questions

- How should you respond to an email asking for your electronic password?
- What is the process for sending patient information via email?
- How should patient information be archived electronically?

Task Number 105

Identify the cybersecurity practices in health care.

Definition

Identification should include

- establishing a security culture
- protecting mobile devices
- maintaining good computer habits
- using a firewall
- installing anti-virus software

- planning for the unexpected
- controlling access to protected health information (PHI)
- using strong passwords and changing them regularly
- limiting network access
- controlling physical access.

Process/Skill Questions

- What type of training is available for healthcare professionals with regard to the electronic storage of patient information?
- Should training be mandatory? If so, how often should it be given?

Task Number 106

Identify security issues related to computer hardware, software, and data.

Definition

Identification should include a list of methods for preventing and consequences of dealing with

- theft of equipment or intellectual property
- loss or corruption of data through viruses
- unauthorized entry into the computer system
- accidental loss or corruption of data by a user or company
- loss or theft of private company or customer information.

Process/Skill Questions

- What is shoulder surfing?
- What is an acceptable use policy (AUP)?
- What is considered a strong password?
- What is ransomware?
- What are other potential threats to EHR?

Task Number 107

Identify concepts of cybersecurity, honesty, courtesy, and confidentiality related to information and email systems and social networking (e.g., spam, viruses, and email etiquette).

Definition

Identification should include a list of items related to

- system security (i.e., ensuring information is transmitted according to approved protocol)
- electronic courtesy (i.e., ensuring the rules of network etiquette are followed)
- confidentiality (i.e., ensuring through technology that information remains private and secure)
- technological integrity (i.e., verifying the source of information and ensuring information on a user's screen is the same as what was sent)
- availability (i.e., ensuring that data/information remains available and intact).

Resource: "What is PHI?" (US Department of Health and Human Services)

Process/Skill Questions

- With regard to cybersecurity, what does CIA stand for?
- What does availability mean with regard to cybersecurity?
- Why is data integrity important?
- What is protected health information (PHI)?
- What law governs privacy of all patient information?

Task Number 108

Identify guidelines for disposal of data.

Definition

Identification should include

- defining the term *media sanitization*
- trends in data storage media
    - magnetic media
    - flash memory-based storage devices, or solid-state drives (SSDs)
    - self-encrypting drives (SEDs)
- trends in sanitization
    - overwrite techniques
    - destructive techniques
    - cryptographic erase (CE)
- categories of sanitization
    - clear
    - purge
    - destroy.

Resource: "Guidelines for Media Sanitization" (National Institute of Standards and Technology)

Process/Skill Questions

- How secure are flash drives that contain patient information?
- Is it possible to secure a flash drive that contains patient information?

Task Number 109

Identify the rationale for data encryption.

Definition

Identification should include

- affordability of wireless routers
- ease of access to signals outside buildings
- laws requiring protection of health information.

Process/Skill Questions

- What is the data encryption standard?

Exploring Laws and Requirements Regarding Data Breaches

Task Number 110

Identify different types of data breaches.

Definition

Identification should include

- definition of the term *breach*, which should include
    - the nature and extent of the protected health information (PHI) involved, including the kinds of identifiers and the likelihood of re-identification
    - the unauthorized person who used the PHI or to whom the disclosure was made
    - whether the PHI was actually acquired or viewed
    - the extent to which the risk to the PHI has been mitigated
- exceptions to the definition of breach, such as
    - unintentional acquisition, access, or use of PHI by a workforce member acting in good faith under authority of a covered entity
    - the inadvertent disclosure of PHI by a person authorized by a covered entity

- the good-faith belief that the unauthorized person to whom the disclosure was made would not have been able to retain the information.

Resource: [US Department of Health and Human Services' (HHS) Office for Civil Rights (OCR)](#)

Process/Skill Questions

- What is the economic impact to the healthcare industry related to data breaches?
- What is the leading cause of healthcare-related data breaches?
- How do we educate employees to the economic and legal ramifications of data breaches?
- Which law covers the reporting of breaches related to healthcare information?

Task Number 111

Describe penalties related to data breaches.

Definition

Description should include

- civil penalties for
    - violations that the entity did not know about and would not have known about by exercising reasonable diligence
    - violations due to "reasonable cause"
    - violations due to "willful neglect" corrected within 30 days
    - violations due to "willful neglect" not corrected within 30 days
- criminal penalties pursuant to HIPAA, resulting from
    - knowing misuse of unique health identifiers
    - knowing and unpermitted acquisition or disclosure of PHI.

Resource: "[Chapter 7: Breach Notification, HIPAA Enforcement, and Other Laws and Requirements](#)," The Office of the National Coordinator for Health Information Technology

Process/Skill Questions

- What are the penalties for violating HIPAA?
- What is the difference between civil and criminal law?
- What is the difference between intentional and inadvertent disclosure of healthcare information?

Task Number 112

Identify client notification protocols related to data breaches.

Definition

Identification should include notification methods such as

- first-class mail
- email, if appropriate
- posting notice on entity's website for 90 days
- toll-free number
- time requirements.

Resource: "[Breach Notification Rule](#)" (US Department of Health and Human Services)

Process/Skill Questions

- What is the life cycle of a data breach? When and how does client notification take place?
- How can one develop a matrix to determine whether outsourcing the client notification process is more cost effective than performing client notifications in-house?

Task Number 113

Describe the risk assessment process for breaches.

Definition

Description should include

- the nature and extent of the protected/PHI involved in the use or disclosure, including the types of identifiers and the likelihood that the PHI could be re-identified
- the unauthorized person who used the PHI or to whom the disclosure was made (e.g., a sibling or a journalist)
- the likelihood that any PHI was actually acquired or viewed (e.g., an audit trail would provide insights)
- the extent to which the risk to the PHI has been mitigated (e.g., promptly changed encryption key).

Resource: "[Security Risk Assessment (SRA) Tool](#)" (Office of the National Coordinator for Health Information Technology)

Process/Skill Questions

- What are three ways to ensure PHI is kept safe?

- What are the various types of data protection? How do they work?
- What agencies have developed a risk assessment tool?
- How can HealthIT.gov's SRA Tool assist with a case scenario? Is the tool user-friendly?
- Does HealthIT.gov's SRA Tool provide assessment at all levels of the organization? Did it assess potential solutions for now and in the future to decrease threats?

Task Number 114

Identify protocols related to the reporting of breaches.

Definition

Identification should include risk assessment and agency reporting, such as

- individual notice
- media notice
- submission of the breach notification form to the Secretary of HHS
  - Submit a Notice for a Breach Affecting 500 or More Individuals
  - Submit a Notice for a Breach Affecting Fewer than 500 Individuals
- notification by a business associate
- administrative requirements and burden of proof.

Resource: "Breach Notification Rule" (US Department of Health and Human Services)

Process/Skill Questions

- How would an organization access and complete the forms necessary for notification of a data breach related to 500 or fewer individuals?
- How would an organization access and complete the forms necessary for notification of a data breach related to 500 or more individuals?

Understanding Usability and Human Factors

Task Number 115

Explain a systems approach to usability and human factors as it applies to health IT.

Definition

Explanation should include

- usability
    - ease of use
    - variety of devices (e.g., cellphones, tablets)
    - common interface across applications
    - issues related to access
- human factors
    - age
    - ability (enhanced abilities with technology)
    - intuition.

Process/Skill Questions

- What are the factors of usability in health IT?
- How can human error be a factor?
- What devices can affect usability?

Task Number 116

Explain the cognitive consequences of health IT on clinical performance.

Definition

Explanation should include

- over-reliance on technology
- complacency
- misdiagnosis
- missed diagnosis.

Process/Skill Questions

- Why are cognitive consequences important in the performance of health IT?
- How might they be related to misdiagnosis?
- What are the consequences for clients?

Task Number 117

Identify the consequences of suboptimal design in the delivery of health care.

Definition

Identification should include suboptimal design of

- workflows
    - protocols
    - staffing
- equipment
    - poor calibration
    - maintenance
    - training.

Process/Skill Questions

- Why are protocols important in the delivery of health care?
- Why does equipment need to be calibrated on a regular basis?
- What training might be needed by staff?

Task Number 118

Use ergonomic principles in the design of the workplace/workstation.

Definition

Use should include

- definition of the term *ergonomics*
- demonstration of proper ergonomics
- consequences/costs associated with poor ergonomics.

Process/Skill Questions

- Why has ergonomics become important in the workplace?
- What are some medical complaints of poorly design workstations?
- What are some types of equipment that help with ergonomics?

Task Number 119

Evaluate various types of error.

Definition

Evaluation should include

- user error
    - improper input
    - lack of due diligence
    - distraction
    - multitasking
- equipment error
    - maintenance
    - quality checks
    - electrical outages/surges.

Process/Skill Questions

- What types of errors are related to distractions?
- What impact does multitasking have on performance?
- What equipment errors might impact quality checks?

Task Number 120

Identify technology input methods, given different technology uses, user populations, and contexts.

Definition

Identification should include

- voice command
- touch
- tablet input
- demographics
- age
- location.

Process/Skill Questions

- What are the technology input methods that impact users in the health IT field?
- What demographics can affect technology and the users?
- What age barriers might hinder or assist users of technology?

Exploring Public Health IT

Task Number 121

Develop a health IT action plan.

Definition

Development should include a plan that can be easily adapted to changing

- situations
- environments
- goals
- healthcare settings.

Process/Skill Questions

- What is a health IT action plan?

Task Number 122

Describe how EHRs can be used to improve public health services and practices.

Definition

Description should include resources such as the following:

- smoking cessation classes online
- weight loss
- social media support groups
- blogs
- chat rooms.

Process/Skill Questions

- What is public health IT? How did it evolve?
- What are some emerging uses of PHI?

Task Number 123

Identify credentialing options for health IT professionals.

Definition

Identification should include

- Certified Professional in Health Information Technology (CPHIT)
- American Health Information Management Association (AHIMA)
- Healthcare Information Security and Privacy Practitioner (HCISPP).

Process/Skill Questions

- What are the credentialing options for health IT professionals?
- What is the difference between certifying and credentialing a health IT professional?

Task Number 124

Prepare a career portfolio with résumé.

Definition

Preparation of a career portfolio should include

- developing a résumé containing information such as medical assistant (MA) certification, cardiopulmonary resuscitation (CPR)/automated external defibrillator (AED) certification, and electrocardiogram (ECG) certification
- awards and recognitions
- volunteer community service
- membership in a healthcare professional organization
- other healthcare-related experience and coursework
- Health Occupations Students of America (HOSA), and National Technical Honors Society (NTHS) and other related school activities.

Preparation should also include samples of the student's work, as appropriate, as well as cover and thank-you letters related to the job application process.

Process/Skill Questions

- What is a career portfolio?
- What are the components of a résumé?
- What sections are included in a career portfolio?
- Why is the résumé, cover letter, and thank-you letter important to the job application process?

SOL Correlation by Task

Describe the background of today's health IT landscape.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1
Discuss legal issues in medicine.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.14
Describe the progression of health IT in the United States.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1
Define electronic health record (EHR).	English: 10.3, 11.3, 12.3 History and Social Science: VUS.14 Mathematics: COM.1, COM.10, COM.11
Explain the core functions of an EHR.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1, COM.2, COM.3, COM.4
Identify different formats and components of an EHR.	History and Social Science: VUS.14 Mathematics: COM.1, COM.2
Explain how billing codes are used in an EHR system.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1, COM.2, COM.3, COM.4

Compare health information systems.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1, COM.10, COM.11
Identify the benefits of EHR.	History and Social Science: VUS.14
Propose strategies to minimize major barriers to the adoption of EHR.	History and Social Science: VUS.14
Explain the principles of healthcare data exchange and healthcare data standards.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Identify the Principles of Medical Ethics (e.g., case studies, role playing, research papers).	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.14, GOVT.16
Discuss the role of medical ethics and professional values in care delivery.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.16
Differentiate between security, confidentiality, and privacy.	English: 10.3, 11.3, 12.3 History and Social Science: GOVT.16
Identify concepts related to copyright, public domain, copy protection, intellectual property, and licensing agreements.	English: 10.6, 11.6, 12.6 History and Social Science: VUS.14
Define ethical implications in health care.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 History and Social Science: GOVT.14, GOVT.16
Investigate Internet privacy issues and computer crimes, including identity theft.	English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8 History and Social Science: VUS.14
Comply with copyright and patent laws.	English: 10.5, 10.6, 11.5, 11.6, 12.5, 12.6

	History and Social Science: GOVT.14, GOVT.16, VUS.14
Comply with policies regarding acceptable use of technology.	History and Social Science: VUS.14
Explain how medical terms are developed.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5
Define common medical word roots.	English: 10.3, 11.3, 12.3
Define common medical word prefixes.	English: 10.3, 11.3, 12.3
Define common medical word suffixes.	English: 10.3, 11.3, 12.3
Demonstrate pronunciation of medical terms.	English: 10.3, 11.3, 12.3
Apply the components of medical terminology (i.e., prefixes, word roots, suffixes).	English: 10.3, 11.3, 12.3
Explain medical terms and acronyms related to each of the major body systems.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 History and Social Science: WHII.2, WHII.8
Define commonly used terms in health care.	History and Social Science: VUS.14 Mathematics: COM.1
Identify the purpose and uses of pertinent healthcare terminologies in the EHR.	History and Social Science: VUS.14
Apply healthcare terminology to the various health information technology roles.	English: 10.3, 11.3, 12.3 History and Social Science: VUS.14
Identify medical abbreviations related to pathological conditions.	English: 10.3, 11.3, 12.3
Identify medical abbreviations related to diagnostic procedures.	English: 10.3, 11.3, 12.3
Explain medical abbreviations related to documentation.	English: 10.3, 11.3, 12.3
Identify medical abbreviations related to pharmacology.	English: 10.3, 11.3, 12.3
Identify abbreviations related to healthcare regulations and regulatory systems.	English: 10.3, 11.3, 12.3
Describe key healthcare terms.	English: 10.3, 10.5, 11.3, 11.5, 12.3
Describe paradigm shifts in health care.	English: 10.5, 11.5, 12.5 Mathematics: COM.1
Describe the medical model of health care in the United States.	English: 10.5, 11.5, 12.5
Describe the organization and structures of health insurance.	English: 10.5, 11.5, 12.5
Compare the function of federal agencies.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.14

Describe the organization of public health in the United States at the federal, state, and local levels.	English: 10.5, 11.5, 12.5
Describe the implementation of the Health Information Technology for Economic and Clinical Health (HITECH) Act.	English: 10.5, 11.5, 12.5
Describe the major processes of information gathering, analysis, and documentation used by clinicians to detect, understand, and prevent or treat diseases.	English: 10.5, 11.5, 12.5
Describe general functions, purposes, and benefits of health information systems in various healthcare settings.	English: 10.5, 11.5, 12.5
Identify correct terminology for computing and technology.	English: 10.3, 11.3, 12.3 History and Social Science: VUS.14 Mathematics: COM.1
Identify commonly used hardware components.	History and Social Science: VUS.14
Identify commonly used software applications and operating systems (OS).	History and Social Science: VUS.14 Mathematics: COM.1
Identify programming languages applicable to the healthcare industry.	Mathematics: COM.1, COM.7
Explain databases.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1, COM.7
Describe network computing.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Identify security risks and protection measures for computing systems.	History and Social Science: VUS.14 Mathematics: COM.1
Explain a software information system (such as an EHR).	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1, COM.2, COM.7

Identify components of health IT systems' ancillary services.	History and Social Science: VUS.14 Mathematics: COM.1
Identify root causes of health IT-induced error and potential solutions.	History and Social Science: VUS.14 Mathematics: COM.1
Evaluate the strengths and weaknesses of identified solutions to health IT problems.	History and Social Science: VUS.14
Outline usability in relation to health IT.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 History and Social Science: VUS.14
Differentiate between security, confidentiality, and privacy.	
Simulate beginning-level competency in general health IT system use.	History and Social Science: VUS.14
Describe the process of migration to an EHR.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.10, COM.11
Describe the migration path from a paper health record to an EHR.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.10, COM.11
Identify tools used for decision support systems.	History and Social Science: VUS.14
Identify an EHR system to achieve features required for meaningful use.	History and Social Science: VUS.14
Identify clinical workflows.	History and Social Science: VUS.14
Describe concepts of privacy and security as applied to the EHR.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.16, VUS.14
Describe security issues with mobile and medical devices.	English: 10.5, 11.5, 12.5

	History and Social Science: VUS.14
Describe planning for disaster preparedness and recovery related to the EHR.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Define cybersecurity as it relates to health care.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Identify the cybersecurity practices in health care.	History and Social Science: VUS.14
Identify security issues related to computer hardware, software, and data.	History and Social Science: VUS.14
Identify concepts of cybersecurity, honesty, courtesy, and confidentiality related to information and email systems and social networking (e.g., spam, viruses, and email etiquette).	History and Social Science: GOVT.16, VUS.14
Identify guidelines for disposal of data.	History and Social Science: VUS.14 Mathematics: COM.10, COM.11
Identify the rationale for data encryption.	History and Social Science: VUS.14
Identify different types of data breaches.	History and Social Science: GOVT.16, VUS.14
Describe penalties related to data breaches.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.14, GOVT.16
Identify client notification protocols related to data breaches.	History and Social Science: GOVT.14, GOVT.16
Describe the risk assessment process for breaches.	English: 10.5
Identify protocols related to the reporting of breaches.	History and Social Science: GOVT.16, VUS.14
Explain a systems approach to usability and human factors as it applies to health IT.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14 Mathematics: COM.1

Explain the cognitive consequences of health IT on clinical performance.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Identify the consequences of suboptimal design in the delivery of health care.	
Use ergonomic principles in the design of the workplace/workstation.	English: 10.5, 11.5, 12.5
Evaluate various types of error.	History and Social Science: GOVT.16, VUS.14 Mathematics: COM.1, COM.10
Identify technology input methods, given different technology uses, user populations, and contexts.	History and Social Science: VUS.14 Mathematics: COM.1, COM.10
Develop a health IT action plan.	History and Social Science: VUS.14
Describe how EHRs can be used to improve public health services and practices.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.14
Identify credentialing options for health IT professionals.	
Prepare a career portfolio with résumé.	English: 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 History and Social Science: GOVT.16, VUS.14

Teacher Resource

AFA CyberPatriot is the National Youth Cyber Education Program created by the Air Force Association to inspire K-12 students toward careers in cybersecurity or other science, technology, engineering, and mathematics (STEM) disciplines critical to our nation's future. At the core of the program is the National Youth Cyber Defense Competition, the nation's largest cyber defense competition that puts high school and middle school students in charge of securing virtual networks.

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Electronic Health Record Certification (EHRC) Examination
- Health Informatics Assessment

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Cybersecurity Fundamentals (6302/36 weeks)
- Healthcare Information Security (8339/36 weeks)
- Introduction to Health and Medical Sciences (8302/36 weeks)
- Introduction to Health and Medical Sciences (8301/18 weeks)
- Medical Administration (6730/36 weeks)
- Medical Coding and Billing I (8388/36 weeks)

Career Cluster: Health Science	
Pathway	**Occupations**
Health Informatics	Bioinformatics Technician Health Information Specialist Health Information Technician Medical Information Technologist Medical, Health Services Manager
Support Services	Data Entry Specialist Records Processing Assistant

Career Cluster: Information Technology	
Pathway	**Occupations**
Information Support and Services	Records Processing Assistant