



## NR 599 Week 8 Final Exam Study Guide

Nursing Informatics For Advanced Practice (Chamberlain University)

# Final Exam Study Guide

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NR 599 Nursing Informatics for Advanced Practice

### Midterm

- General principles of Nursing Informatics
- Scientific synthesis of information in nursing
- Concepts: computer, cognitive, information
- Knowledge
- Wisdom
- Scientific Underpinning
- The Foundation of Knowledge Model
- Computer science
- Cognitive science
- Information science
- Standard Terminology
- Informatics Competencies
- Information literacy
- Health literacy
- Meaningful Use
- Patient-centered Information Systems
- Clinical Decision Support Systems
- Electronic Medical Records
- Human-Technology Interface
- Health Information Technology
- Alarm fatigue
- Digital natives
- Information Literacy Competency Standards for Nursing
- HITECH Act
- TIGER-based Nursing Informatics Competencies Model

### Midterm Feedback

- **Workarounds** are ways invented by users to bypass the system to accomplish a task; usually indicate a poor fit of the system or technology to the workflow or user; devised methods to beat a system that does not function appropriately or is not suited to the task it was developed to assist with (McGonigle & Mastrian,

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2018, p. 584). Workarounds negate expected practice protocols and are rarely necessary or appropriate means to ensure patient safety.

- **Longevity** is defined as usability beyond the immediate clinical encounter (McGonigle & Mastrian, 2018, p. 570).
  - **HITCH ACT- become meaningful users of EHR.**
  - **American Recovery and Reinvestment Act of 2009**
- **Communication systems** improve productivity to promote interaction among healthcare providers and between providers and patients. Healthcare professionals overwhelmingly recognize the value of these systems to promote data and information processing. Examples of communication systems include call light systems, wireless telephones, pagers, email, and instant messaging, which have traditionally been forms of communication targeted at clinicians (McGonigle & Mastrian, 2018, p. 190).
- A major barrier to widespread adoption of educational opportunities for patients among American healthcare providers is the fact that reimbursement mechanisms for electronic health care interventions are inadequate or nonexistent. The goal of the interactive behavior change technology is to improve communication between patients and healthcare providers and to provide educational interventions that promote better disease management between office visits (McGonigle & Mastrian, 2018, p. 335).
- Once the technology is integrated into the organization, biomedical engineers can become valuable partners in promoting patient safety through appropriate use of these technologies. For example, in one organization, the biomedical engineers helped to revamp processes associated with the new technology alarm systems after they discovered several key issues: slow response times to legitimate alarms and multiple false alarms (promoting alarm fatigue) created by alarm parameters that were too sensitive. Strategies for addressing these issues included improving the nurse call system by adding Voice over Internet Protocol telephones that wirelessly receive alarms directly from technology equipment carried by all nurses, thus reducing response times to **alarms**; feeding alarm data into a reporting database for further analysis; and encouraging nurses to round with physicians to provide input into alarm parameters that were too sensitive and were generating multiple false alarms (McGonigle & Mastrian, 2018, p. 297).
- This deluge of information available via computers must be mastered and organized by the user if knowledge is to emerge. Discernment and the ability to critique and filter this information must also be present to facilitate the further development of **wisdom** (McGonigle & Mastrian, 2018, p.53).
- Nurses have historically gathered and recorded data, albeit in a paper record. There is no doubt that nursing experiences build **knowledge** and skill in nursing practice, but paper-based documentation has hindered the ability to share knowledge and to aggregate experiences to build new knowledge (McGonigle & Mastrian, 2018, p. 106).
- Healthcare providers need to embrace the Internet as a source of health information for patient education and health literacy. Patients are increasingly turning there for instant information about their health maladies. Health-related blogs (short for weblog, an online journal) and electronic patient and parent support groups are also proliferating at an astounding rate. Clinicians need to be prepared to arm patients with the skills required to identify credible websites. They also need to participate in the development of well-designed, easy-to-use health education tools. (McGonigle & Mastrian, 2018, p. 330).
- Patients are occasionally interested in interacting with others who have the same or similar conditions, and some healthcare organizations are providing the information necessary to help them connect. This so-called peer-to-peer support is especially popular with patients who have cancer diagnoses, diabetes, and other chronic and debilitating conditions (McGonigle & Mastrian, 2018, p. 328).

## Final

- **Ethical decision making**
- **Bioethical standards**

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- Telehealth
- Medical Applications
- Medical Devices
- FDA Oversight for Medical Devices
- Privacy
- Confidentiality
- Cybersecurity
- Computer-aided translators
- HIPPA
- ICD-10 Coding
- Evaluation and Management Coding
- Reimbursement Coding
- Clinical Support Tools
- Workflow analysis

### Ethical decision making

This refers to the process of making informed choices about ethical dilemmas based on a set of standards differentiating right from wrong. The decision making reflects an understanding of the principles and standards of ethical decision making, as well as philosophical approaches to ethical decision making. Requires a systematic framework for addressing the complex and often controversial moral questions.

#### Guiding principles:

- respect for autonomy
- nonmaleficence- duty not to inflict harm as well as to prevent and remove harm
- beneficence - the duty to do good, as well as the active promotion of benevolent acts.
- justice- Fairness, treatment of everyone in the same way. involves actions in which like cases should be treated alike.

### Bioethical standards

- 1) autonomy-the right to choose for himself or herself. ability to make a choice free from external constraints.
- 2) freedom-
- 3) veracity-right to truth. the obligation to tell the truth and not to lie or deceive others.
- 4) privacy-the right of privacy avoids conflict and promotes harmony
- 5) beneficence-actions performed that contribute to the welfare of others
- 6) fidelity-right to what has been promised. duty to be faithful to one's commitments.

- Benchmark: the process of comparing data to other reliable sources, internally and externally
- Criterion
- Rule
- Norm

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- Principle

Cardinal virtues: wisdom, courage, self-control and justice

**Telehealth-** Telecommunication technologies used to deliver health-related services or to connect patients and healthcare providers to maximize patients' health status. A relatively new term in our medical/nursing vocabulary, referring to a wide range of health services that are delivered by telecommunications-ready tools such as the telephone, videophone, and computer

3 broad methods of digital care delivery that are "away" from the patient-means "**healing at a distance**"

- **telemedicine** (stationary scheduled remote diagnostics of health status)
- **remote management/monitory/coaching** (stationary home or facility-based, with scheduled and as-needed remote transmission of health status)
- **Mobile health (mHealth)** "community" groups/social media (wearable mobile patient-generated health data with scheduled and as needed remote transmission of health status)

### Clinical uses

- a) transmitting clinical data for assessment, diagnoses, or disease
- b) promoting disease prevention and good health
- c) using telephone and videographic technologies to provide health advice in emergent cases
- d) using real time video i.e: exchanging health services or video conferencing

### Medical Applications

Apps Providing Access to Electronic Copies  
Apps for General Patient Education  
Generic Aids or General Purpose Apps  
Apps as Educational Tools  
Apps Automating Office Operations

### Medical Devices

Some mobile apps may meet the definition of a medical device but because they pose a lower risk to the public, the FDA intends to exercise enforcement discretion over these devices (meaning it will not enforce requirements under the FD&C Act). One example is a mobile app that makes a light emitting diode (LED) operate. If the manufacturer intends the system to illuminate objects generally (i.e., without a specific medical device intended use), the mobile app would not be considered a medical device. If, however, through marketing, labeling, and the circumstances surrounding the distribution, the mobile app is promoted by the manufacturer for use as a light source for providers to examine patients, then the intended use of the light source would be similar to a conventional device such as an ophthalmoscope.

### FDA Oversight for Medical Devices

The Food and Drug Administration (FDA) (2013) recognizes the extensive variety of actual and potential functions of mobile apps, the rapid pace of innovation in mobile apps, and the potential benefits and risks to public health represented by these apps. The FDA intends to apply its regulatory authorities to select software applications intended for use on mobile platforms. Given the rapid expansion and broad applicability of mobile apps, the FDA is issuing this guidance document to clarify the subset of mobile apps to which the FDA intends to apply its authority.

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Many mobile apps are not medical devices, meaning such mobile apps do not meet the definition of a device by the Federal Food, Drug, and Cosmetic Act (FD&C Act); therefore, the FDA does not regulate them.

### Privacy

According to Healthit.gov (2014) Protecting Your Health Information, the privacy and security of patient health information is a top priority for patients and their families, health care providers and professionals, and the government. This was also previously discussed under HIPAA. It also requires that "key persons and organizations that handle health information to have policies and security safeguards in place to protect your health information whether it is stored on paper or electronically."

### Confidentiality

Hard to maintain due to social media and use of mobile devices such as smartphones, they are being utilized in treatment rooms around the globe, Providers need to be aware of institutional policies regarding audio/video recordings by patient and families, requires two-party consent, sometimes enthusiasm for patient care and learning can lead to ethics violations.

### Cybersecurity

Another federal regulatory agency with a role in the privacy and security of health care data is the Food and Drug Administration (FDA). The FDA oversees the safety of medical devices, which includes addressing the management of cybersecurity risks and hospital network security. Recent guidelines issued (FDA, 2013) recommend that medical device manufacturers and health care facilities take steps to ensure that appropriate safeguards are in place to reduce the risk of failure caused by cyberattack. This could be initiated by the introduction of malware into the medical equipment or unauthorized access to configuration settings in medical devices and hospital networks. The consequences of not adequately addressing these risks could be dire. As medical devices are increasingly integrated within health care environments, there will be a need for vigilance toward cybersecurity practices to ensure all systems are adequately protected and patients remain safe from harm. Nurse Informaticists are frequently called on to evaluate safety and effectiveness of new devices and software. Considerations of cybersecurity must be included in any evaluation process.

### Computer-aided Translators

### Health Information Portability and Accountability Act (HIPAA)

*HIPAA was enacted in 1996. While it is best known among consumers and healthcare professionals for its protection of personal health information (PHI) and the additional forms that each of us are asked to sign when we go to provider offices, HIPAA also ensures portability of insurance for individuals moving from one job to another, legal protection for PHI, and mandates standards for the electronic data interchange of healthcare data for encounter and claims information, and was intended to simplify the claims submission process by eliminating paper claims. HIPAA established legal sanctions for institutions and individuals who fail to protect PHI. As healthcare professionals, we are cognizant of HIPAA requirements before we share PHI via writing, electronic means, faxes, telephone, or in person. Specific measures to protect PHI include limiting record access to individuals with a right to know, signed disclosures to release information, encryption of e-mail and files, fax cover sheets, designated persons who may receive PHI, and the use of passwords to guarantee that PHI is only disclosed with persons designated by the consumer as having a right to know. HIPAA has also changed sign-in procedures for patients, disposal of forms containing PHI, and how we use whiteboards to show patient information.*

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### • ICD-10 Coding (International Classification of Diseases)

Currently, we are in the tenth revision of the system, and , therefore, the classification system is known as ICD-10 . ICD-10 codes are shorthand for the patient's diagnoses, which are used to provide the payer information on the necessity of the visit or procedure performed. This means that every CPT code must have a diagnosis code that corresponds.

### Evaluation and Management Coding

Before you can determine your E&M, code you must first identify the place of service, type of service , and the patient status. The place of service refers to where the service was rendered There are several categories to choose from, but the two most common are the inpatient and outpatient settings. This is pretty straightforward. The type of service refers to the type of service provided . Some examples of types of services include consultation, hospital admission, office visit, and so forth. Again, pretty straightforward. As a student in your practicum rotations, nearly all of your places and types of service will be outpatient office visits. Finally, you need to identify the patient's status. Patient status refers to whether or not the patient is a new patient or an established patient of your practice.

By definition, a new patient is one who has not received professional service from a provider from the same group practice within the past 3 years. Conversely, an established patient has received professional service from a provider of your office within the last 3 years.

**There are three key components that determine risk-based E&M codes.**

1. History
2. Physical
3. Medical Decision Making (MDM) ivo
  - a) risk
  - b) data
  - c) diagnosis

### Reimbursement Coding

Reimbursement codes are assigned and contingent upon data input from clinical team members based on a summative review of the clinical record by trained coders. This is critically important intersection between the clinical and administrative teams. If the patient encounter, procedure, or diagnosis are incorrectly entered into a clinical management system, the billing and coding process will also be incorrect. Providers play an important role in ensuring the success of the business by clearly identifying the diagnosis and service codes are appropriate for each patient visit. It is imperative for APNs to have knowledge of the link between billing, coding, and the EHR.

Diagnosis related groups (DRGs) or Major diagnostic categories (MDCs) systematically group these more specific codes into meaningful broader categories. **DRG** group is to facilitate payment through the prospective payment system, MDCs organize diagnoses that affect similar physiological systems. Primary purpose is for billing.

### Clinical Support Tool

Clinical decision support (CDS) as a process designed to aid directly in clinical decision making, in which characteristics of individual patients are used to generate patient specific interventions, assessments, recommendations, or other forms of guidance that are then presented to a decision-making recipient or recipients that can include clinicians, patients, and others involved in care delivery. CDS tools existed prior to

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development of EHRs. Historical examples include practice guidelines carried in clinicians' pockets, patient cards used by providers to track a patient's treatments, and tables of important medical knowledge. The primary goal of implementing a CDS tool is to leverage data and the scientific evidence to help guide appropriate decision making. CDS tools include but are not limited to:

### Workflow analysis

Workflow is a term used to describe the action or execution of a series of tasks in a prescribed sequence. Another definition of workflow is a progression of steps (tasks, events, interactions) that constitute a work process, involve two or more persons, and create or add value to the organization's activities. In a sequential workflow, each step depends on the occurrence of the previous step; in a parallel workflow, two or more steps can occur concurrently. The term workflow is sometimes used interchangeably with process or process flows, particularly in the context of implementations. Observation and documentation of workflow to better understand what is happening in the current environment and how it can be altered is referred to as process or workflow analysis. A critical aspect of the informatics role is workflow design. Nursing informatics is uniquely positioned to engage in the analysis and redesign of processes and tasks surrounding the use of technology.

1. Informatics nursing is distinguished from other nursing specialties by its focus on:  
computerized medical records.

data and information content and representation.

data coding and the use of abbreviations.

training and education.

2. Applications that are designed to run on a common platform, operate in a common environment, and communicate through direct data transfer are known as:

integrated.

interfaced.

normalized.

optimized.

3. Adult learners most effectively learn about a new clinical information system when the instructor:

assumes that the learner knows nothing about the system.

begins the formal training as early as possible in the implementation process.

emphasizes the technical specifications of the structure of the system.

encourages the learner to use previous experience to interpret new learning.

4. Knowledge that is patterned for use in reasoning is known as:

artificial intelligence.

knowledge query.

knowledge representation.

neural computing.

5. What process produces a blueprint that details how hardware and software meet the needs of the organization?

Benchmarking

Feasibility study



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System analysis

System design

6. Ease of navigation, appropriate language, efficiency of use, ease of learning, and intuitiveness are all examples of:  
affective skills.

behavioral needs.

system usability.

user ergonomics.

7. The problems of an existing system have been identified, along with possible solutions. What is the next step in the systems analysis stage?

A feasibility study

Requirements gathering

Systems design

Systems testing

8. What type of testing is performed on functionally grouped components to ensure that the subset works with the entire system?

Integration

System

Unit

User acceptance

9. In project management, the critical path is best described as a series of activities that:

includes the path with the most slack or float.

indicates the earliest possible time a project can be completed.

is scheduled for the next current phase of the process.

shows the shortest path through the network diagram.

10. What is the initial layer of protection to prevent unauthorized, external access to a facility's information network?

Digital certificates

Encryption

Firewall

Password authentication

11. What is the most common risk to patient privacy and confidentiality?

An organization's employees

Inadequate firewall protection

Inadequate system design

Viruses, worms, and Trojan horses

12. Which document articulates the primary factors that guide professional nursing judgment, regarding confidential patient information?

Administrative Simplification Provisions

Code of Ethics for Nurses with Interpretive Statements

Health Insurance Portability and Accountability Act

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### *Nursing Informatics: Scope and Standards of Practice*

13. Integrating clinical practice guidelines with an electronic health record facilitates quality improvement measurement by:

comparing guideline parameters to clinical outcomes.

presenting results at the point of treatment decisions.

providing reference information to measurement staff.

representing patient acuity data.

14. An online course discussion board is a form of:

asynchronous learning.

didactic learning.

synchronous learning.

traditional learning.

15. Using an office computer system to identify a patient whom the linked hospital information system identifies as having positive cultures for pneumonia, a primary care provider orders the patient's antibiotic. This scenario exemplifies:

a health information exchange.

a system to update patient records.

a violation of privacy regulations.

an electronic health record.

16. In Table A, the primary key field is PatientNumber. When the informatics nurse sees PatientNumber in Table B, the nurse recognizes that the field is functioning as what type of key?

Foreign

Home

Patient

Secondary

17. Because several disciplines support the foundation of informatics nursing, it is important for the informatics nurse to understand that:

informatics nursing differs from other disciplines, as it focuses on supporting the process of obtaining data.

informatics nursing uses the concepts, tools, and methods of various disciplines to facilitate nursing process.

information technology and nursing technology are synonymous, as they have the same goal.

the boundaries between the various disciplines are clearly defined.

18. A downtime of the electronic health record (EHR) system is planned for three months from today. The informatics nurse is formulating a communication plan for the clinical staff about the downtime. The nurse plans to:

announce the upcoming downtime at system-wide meetings, and at department meetings of specific system hospitals affected by the downtime.

bring copies of the communication plan to IT meetings, and discuss it with the IT directors and managers.

present the information at the "super user" meetings, department and unit meetings, and at other specialty clinician meetings, in addition to having a message posted on the message-of-the-day screen in the EHR.

print fliers with the downtime plan and post them in bathrooms and breakrooms, as well as on bulletin boards in various locations in the hospitals.

19. When writing and reviewing the downtime policy and procedure for the new electronic health record, it is imperative to clearly define for the end-user the:

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policy for how or when to "back-enter" data.

policy for system change control.

procedure for recovering data after a downtime.

procedure for testing software fixes and upgrades.

20. Adherence to a standardized nursing language will lead to:

a barrier in national interoperability.

a larger database of interventions.

improved evaluation of nursing outcomes.

increased nursing competencies.

21. The informatics nurse violates a patient's legal right to privacy and confidentiality, by:

discussing a patient's diagnosis with an authorized family member.

discussing care-related information with the patient's physical therapist.

looking up a colleague's diagnosis and laboratory results while he or she is hospitalized.

providing a handoff report containing patient information to another department.

22. Although social media sites like Facebook and WebMD may provide healthcare consumers with many benefits, using these sites presents risks to patient privacy and misuse of personal health information, because:

information downloaded from social media sites may contain malware and infect a patient's home computer.

patients openly share information about their health with friends and family on Facebook.

personal health information is shared by the patient and not protected under the Health Insurance Portability and Protection Act.

personal information that is shared about gender and religion can lead to cyber bullying and social threats.

23. The informatics nurse is working on a chart to demonstrate the increasing incidence of obesity in the patient population at a health clinic. The data will represent patients who are of normal weight, overweight, obese, and morbidly obese, and it will include the percentage of the total population for each group. This type of data is most effectively represented by a:

bar chart.

column chart.

line chart.

pie chart.

24. The informatics nurse is collaborating with the pharmacy in installing automated dispensing cabinets on the nursing units. These dispensing cabinets will:

establish an accurate record of medications given to patients.

make medications immediately available to nurses.

notify the nurse when supplies are low.

require the nurse to scan a patient's ID before dispensing.

25. Which stage of meaningful use introduces the electronic capture and sharing of health information in a coded format?

Stage 1

Stage 2

Stage 3

Stage 4

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Common Procedural Terminology (CPT) system

International Classification of Diseases method of coding and that's known as the ICD system.