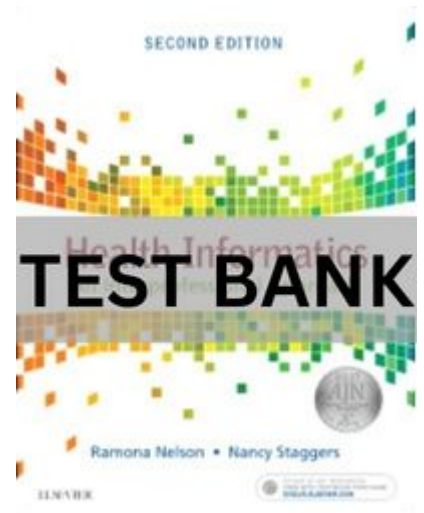


Health Informatics 2nd Edition Test Bank

Chapter 01: An Introduction to Health Informatics

Nelson and Staggers: Health Informatics: An Interprofessional Approach, 2nd Edition



MULTIPLE CHOICE

1. Dr. James, in studying patient safety in U.S. hospitals, found that the number of preventable adverse events leading to serious harm fell in the approximate range of _____ to _____ cases per year.
 - a. 4.4 million; 8.8 million
 - b. 440,000; 880,000
 - c. 1 million; 5 million
 - d. 40,000; 100,000

ANS: A

Dr. James found some 440,000 cases of lethal harm each year and estimated that the incidence of serious (but not lethal) harm was 10 to 20 times that figure.

DIF: Cognitive Level: Analyze REF: p. 1

2. Health informatics is both a _____ as well as a(n) _____.
 - a. discipline; field of study
 - b. profession; practice
 - c. field of study; art
 - d. profession; discipline

ANS: D

Health informatics is a discipline, or field of study, in the same sense that “medicine,” “sociology,” and “pharmacy” are fields of study. It is also a profession, practiced by thousands of informaticians in a number of varied roles within the healthcare industry.

DIF: Cognitive Level: Remember REF: p. 2

3. The top three uses of the U.S. Army’s telehealth network include all of the following EXCEPT _____.
 - a. behavioral telehealth
 - b. cardiology
 - c. otolaryngology
 - d. dermatology

ANS: C

Health Informatics 2nd Edition Test Bank

The biggest use of the U.S. Army’s telehealth network is for behavioral telehealth, followed by cardiology and dermatology. While telemedicine is making inroads in otolaryngology, it is not among the top three uses for the U.S. Army.

DIF: Cognitive Level: Remember REF: p. 3

4. What is the main idea of the subsection titled “Why Informatics Is Needed in Healthcare: An Example”?
- An interoperable healthcare system that provides clear, concise patient data and information among institutions is lacking in many facilities, and its presence would greatly facilitate things such as patient transfers.
 - The quality of discharge communication during transfers of geriatric patients from hospital to nursing home is generally high.
 - Skilled nursing facilities aren’t trained enough to identify the information they need to facilitate a high-quality transition of a patient into their facility.
 - Healthcare informaticians alone are responsible for building interoperable systems that will facilitate communication between and among healthcare facilities.

ANS: A

This subsection takes the specific case of the transfer of geriatric patients from a hospital setting to a long-term skilled nursing facility (SNF) and uses it to illustrate the great need for an interoperable healthcare system that allows patient data to be transferred quickly, clearly, and concisely among facilities.

DIF: Cognitive Level: Analyze REF: p. 3

5. The chapter makes the argument for increased automation for such things as managing supplies, because studies have shown that _____.
- only 70% of a nurse’s day is actually spent at patients’ bedsides
 - nurses waste “an hour a shift” finding equipment
 - over \$14 million in nurses’ wages nationwide were spent in 2011 on tasks like hunting for equipment
 - patients report being comforted by the presence of robotic technology in their rooms

ANS: B

The chapter focused on using health informatics and technology solutions to free up nurses’ days so they can spend more time at patients’ bedsides and less on extraneous duties. A 2011 study by the Robert Wood Johnson Foundation found that nurses do use an hour per shift of their time simply hunting down equipment.

DIF: Cognitive Level: Understand REF: p. 3 | p. 4

6. The _____ is one of the oldest—and still widely used—methods for building and implementing software applications in IT arena.
- TUG
 - clinical decision support system
 - HIPAA
 - SDLC

ANS: D

Health Informatics 2nd Edition Test Bank

Though it's been through a number of iterations and adjustments, the software development life cycle remains the tested and tried-and-true method for studying, building, implementing, and maintaining a health information system.

DIF: Cognitive Level: Remember REF: p. 4 | p. 5

7. Which of the following statements about EHRs is false?
- The percentage of hospitals using an EHR jumped from 59% to 75% from 2013 to 2014.
 - Stage 2 is the minimum level of EHR required in order to be counted as using EHR.
 - By 2014 50% of physicians in the United States had implemented an EHR, with another 13% in the process of implementing one.
 - There were no EHR systems in U.S. hospitals in 2009.

ANS: C

The text gives data for physicians using EHR in 2013, stating that by that year 63% had implemented some form of EHR, with another 20% in the process of implementing one.

DIF: Cognitive Level: Apply REF: p. 6

MULTIPLE RESPONSE

1. Internationally, healthcare delivery systems face a number of common challenges, including: (*Select all that apply.*)
- cost and the need to cut costs and demonstrate value.
 - a lack of new HIT advances.
 - dynamic forces like workforce shortages and increased consumerism.
 - an international population that is growing increasingly younger and healthier.
 - increasing government regulation to protect patient health, safety, and privacy.

ANS: A, C, E

The need to contain costs, forces like workforce shortages and increased consumerism, and increasing government regulation are all challenges faced in common globally by healthcare delivery systems. There is no lack in new HIT advances; in fact adoption of such new technologies is a challenge in itself, as is an aging population that will require more healthcare than before.

DIF: Cognitive Level: Understand REF: p. 6 | p. 7

Chapter 02: Theoretical Foundations of Health Informatics

Nelson and Stagger: Health Informatics: An Interprofessional Approach, 2nd Edition

MULTIPLE CHOICE

1. What is the primary difference between an open and closed system?
- An open system has no boundary, and therefore there are no limits to the inputs and outputs between an open system and the environment.
 - An open system has a semipermeable boundary and therefore will filter both inputs and outputs when interacting with the environment.
 - A closed system has a semipermeable boundary and therefore will filter both inputs and outputs when interacting with the environment.

Health Informatics 2nd Edition Test Bank

- d. A closed system does not have a boundary and therefore will not interact with the environment.

ANS: B

With an open system the boundary is semipermeable, thereby controlling what will be accepted as input and what will be permitted to leave the system.

DIF: Cognitive Level: Understand REF: p. 15

2. The primary characteristics used to analyze an open system include:
- structure, purpose, and functions.
 - subsystem, target system, and supersystem.
 - boundary, attributes, and environment.
 - hierarchical, web, and hybrid.

ANS: A

Using these three characteristics, one can determine why the system exists, what functions it performs to achieve its purpose, and how it is structured to achieve its purpose.

DIF: Cognitive Level: Remember REF: p. 16

3. You have altered the menu of food items served to your patients. However, the change has greatly expanded the number of refrigerated items needed on hand. You need to buy a new refrigerator, but the electric circuit in the kitchen cannot handle the extra load and needs to be upgraded at significant expense. This set of unintended consequences down the line, produced by an initial change, is called:
- dynamic homeostasis.
 - semi-planned change.
 - negentropy.
 - reverberation.

ANS: D

Change within any part of a system will be reflected across the total system through a process termed *reverberation*. Reverberation can be intended or unintended consequences of change.

DIF: Cognitive Level: Analyze REF: p. 18

4. The “butterfly effect” describes a situation in which a minor change in input (eg, a butterfly flapping its wings in one part of the world) can have a major effect on output (eg, a windstorm developing in another part of the world). This aspect of chaotic systems illustrates their property of:
- the reiterative feedback loop.
 - linearity.
 - preordained periodic behavior.
 - the fractionation of outputs.

ANS: A

Chaotic systems are dynamic systems with reiterative feedback loops. A minor change in input can create a major change in output. This is often described as the butterfly effect. A butterfly’s flapping wings in California can over time become a hurricane in New York.

DIF: Cognitive Level: Analyze REF: p. 18

Health Informatics 2nd Edition Test Bank

5. Which statement describes the measurement of information as defined by the Shannon and Weaver model?
- The amount of information is measured by the amount of data in the message.
 - The amount of information is measured by the number of meanings that can be assigned to a message.
 - The amount of information is measured by the extent the message decreases entropy.
 - The amount of information is measured by the number of characters used to create the message.

ANS: C

By decreasing entropy one decreases uncertainty. Shannon, a telephone engineer, sought to overcome the technical problems of moving information across communication channels by determining how to minimize entropy.

DIF: Cognitive Level: Remember REF: p. 21 | p. 22

6. On its own, the number 190 is an example of:
- data.
 - information.
 - knowledge.
 - wisdom.

ANS: A

The number 190 could refer to anything such as a person's weight, blood glucose level, or systolic blood pressure reading and therefore has no meaning by itself.

DIF: Cognitive Level: Apply REF: p. 22

7. Knowing when and how to use knowledge is referred to as:
- procedural knowledge.
 - cognitive knowledge.
 - decision support system.
 - wisdom.

ANS: D

Wisdom is defined as the appropriate use of knowledge in managing or solving human problems. It is knowing when and how to use knowledge in managing patient need(s) or problem(s).

DIF: Cognitive Level: Remember REF: p. 23

8. Which are the three general types of learned behaviors?
- Input, throughput, and output
 - Adult learning theories, constructionist theories, and learning styles
 - Cognitive, affective, and psychomotor
 - Short, intermediate, and long-term memory

ANS: C

Learning is defined as an increase in knowledge, a change in attitude or values, or the development of new skills. Learned behaviors can be cognitive (intellectual skills), affective (values and attitudes), or psychomotor (the integration of cognitive and motor skills).

Health Informatics 2nd Edition Test Bank

DIF: Cognitive Level: Apply

REF: p. 27

9. Which group will test out new technology but are not usually seen as leaders within an organization?
- Innovators
 - Early adopters
 - Early majority
 - Late majority

ANS: A

Innovators will test out a new technology; however, they are too far ahead of the social group to be seen as leaders by other members of the social system. Early adopters are seen as much more discreet in their selection of new technology and are therefore better at selling a new technology to a group of potential users.

DIF: Cognitive Level: Understand

REF: p. 30

MULTIPLE RESPONSE

1. The Stagers and Nelson systems life cycle (SLC) is a guide for informatics projects. Its phases include: (*Select all that apply.*)
- implementation.
 - planning.
 - evaluation.
 - security.
 - diagnosis.

ANS: A, B, C

The seven phases of the Stagers and Nelson SLC are analyze; plan; develop or purchase; test; implement or go-live; maintain and evolve; and evaluate.

DIF: Cognitive Level: Remember

REF: p. 32 | p. 33

Chapter 03: Evidence-Based Practice, Practice-Based Evidence, and Informatics Nelson and Stagers: Health Informatics: An Interprofessional Approach, 2nd Edition

MULTIPLE CHOICE

1. Knowledge is the point of convergence across the areas of:
- evidence-based practice, quality assurance, and informatics.
 - evidence-based practice, improvement, and informatics.
 - evidence-based practice, quality assurance, and improvement.
 - improvement, quality assurance, and informatics.

ANS: B

Knowledge is the point of convergence across the areas of evidence-based practice, informatics, and improvement. None of the other answers include all of these aspects.

DIF: Cognitive Level: Remember

REF: p. 38

2. Which two hurdles does the STAR Model address in employing evidence-based practice?
- The volume and form of knowledge

Health Informatics 2nd Edition Test Bank

- b. The quality and form of knowledge
- c. The volume and outcomes of knowledge
- d. The adequacy and form of knowledge

ANS: A

The STAR Model addresses two major hurdles in employing evidence-based practice (EBP). These two hurdles are the volume of current professional knowledge and the form of knowledge that healthcare professionals attempt to apply in practice.

DIF: Cognitive Level: Remember REF: p. 42

3. What is the form of knowledge gained in discovery research?
- a. Results from single research studies
 - b. Results from meta-synthesis
 - c. Results from systematic review
 - d. Results from meta-analysis

ANS: A

Discovery research represents knowledge produced in the form of single research studies. The other three choices represent synthesis of multiple studies.

DIF: Cognitive Level: Remember REF: p. 42

4. Which type of review is considered the most rigorous?
- a. Literature reviews
 - b. Systematic reviews
 - c. Integrative reviews
 - d. Single study reviews

ANS: B

Evidence summaries include evidence synthesis, systematic reviews, integrative reviews, and reviews of the literature, with systematic reviews being the most rigorous approach to evidence summary.

DIF: Cognitive Level: Remember REF: p. 43

5. A facility calls in experts to review evidence developed in research and develop guidelines for clinical practice. Which stage of EBP is represented?
- a. Evidence summary
 - b. Evaluation of process and outcomes
 - c. Practice integration
 - d. Translation to guidelines

ANS: D

In the third stage of EBP, translation, experts are called on to consider the evidence summary, fill in gaps with consensus expert opinion, and merge research knowledge with expertise to produce clinical practice guidelines (CPGs).

DIF: Cognitive Level: Understand REF: p. 44

6. A(n) _____ is considered the gold standard research design for answering questions about the efficacy of treatments.
- a. RCT

Health Informatics 2nd Edition Test Bank

- b. PBE
- c. TeamSTEPP
- d. NQMC

ANS: A

An experimental design, often called a “randomized controlled trial (RCT),” has emerged as the gold standard research design for answering questions about the efficacy of treatments.

DIF: Cognitive Level: Remember REF: p. 51

MULTIPLE RESPONSE

1. The goal of the intersection of informatics and evidence-based practice is to transform healthcare to be: (*Select all that apply.*)
- a. reliable.
 - b. safe.
 - c. effective.
 - d. efficient.

ANS: A, B, C

The field of informatics and the concept of evidence-based practice (EBP) intersect at the crucial junction of knowledge for clinical decisions with the goal of transforming healthcare to be reliable, safe, and effective. While efficiency is always a goal in healthcare, it is not a primary goal of EBP.

DIF: Cognitive Level: Remember REF: p. 38

2. Which of the following are evidence summaries? (*Select all that apply.*)
- a. literature reviews.
 - b. systematic reviews.
 - c. single-study reviews.
 - d. integrative reviews.
 - e. focus-group reports.

ANS: A, B, D

Evidence summaries include evidence synthesis, systematic reviews, integrative reviews, and reviews of the literature.

DIF: Cognitive Level: Remember REF: p. 43

3. Using the STAR Model, which of the following points indicate knowledge transformation has occurred? (*Select all that apply.*)
- a. Discovery research
 - b. Evidence summary
 - c. Translation to guidelines
 - d. Practice integration
 - e. Testing the hypothesis
 - f. Evaluation of process and outcomes

ANS: A, B, C, D, F

Health Informatics 2nd Edition Test Bank

The knowledge transformation process in the STAR Model occurs at five points, which can be conceptualized as a five-point star. These five points include discovery research, evidence summary, translation to guidelines, practice integration, and evaluation of process and outcomes. Testing the hypothesis is not a specific point in the STAR Model.

DIF: Cognitive Level: Remember REF: p. 42

4. Standardized terminology is requisite for: (*Select all that apply.*)
- naming evidence.
 - classifying evidence.
 - tagging evidence.
 - locating evidence.
 - simplifying evidence.

ANS: A, B, C, D

Standardized terminology is requisite for naming, classifying, tagging, and locating evidence in order to use it in practice.

DIF: Cognitive Level: Remember REF: p. 39

Chapter 04: Models, Theories, and Research for Program Evaluation Nelson and Stagers: Health Informatics: An Interprofessional Approach, 2nd Edition

MULTIPLE CHOICE

1. Your organization hires you to conduct a formative evaluation of a new informatics intervention. Which areas would you focus on in a formative evaluation?
- Cost, patient safety, and patient outcomes
 - Intervention fidelity, implementation quality, and types of personnel
 - Errors, change in provider decision making, and cost
 - Unintended outcomes, delays in implementation, and cost

ANS: B

A formative evaluation is an assessment of how well a program is being implemented. Intervention fidelity, implementation quality, and types of personnel are areas that would be focused on in formative evaluation. Results of the formative evaluation are used as feedback to the program for continuous improvement.

DIF: Cognitive Level: Apply REF: p. 61

2. Of the following, which of these steps in the CDC's six-step program evaluation framework comes first?
- Gather credible evidence
 - Focus the evaluation design
 - Justify conclusions
 - Engage stakeholders

ANS: D

The CDC's six-step program evaluation framework is (1) engage stakeholders; (2) describe the program; (3) focus the evaluation design; (4) gather credible evidence; (5) justify conclusions; and (6) ensure use and share lessons learned.

DIF: Cognitive Level: Understand REF: p. 67

Health Informatics 2nd Edition Test Bank

3. Which list includes the three levels of theory relevant to evaluation?
- Program theory, summative model, and interpersonal theory
 - Scientific theory, formative model, and descriptive theory
 - Scientific theory, implementation models, and program theory
 - Scientific model, statistical theory, and holistic models

ANS: C

The three levels of theory relevant to evaluation are scientific theories, implementation models, and program theories. The other choices are either not theories or are specific theories, not levels of theory.

DIF: Cognitive Level: Remember REF: p. 60

4. You decide to base the evaluation plan of your informatics project on the theory of planned behavior. Which constructs will you use to develop your measurements?
- Values, normative expectations, others' beliefs, and overall prior knowledge
 - Values, beliefs about self-efficacy, normative beliefs, and intrinsic motivation
 - Values, expectations of others, behaviors, and perceived self-efficacy
 - Habit, normative expectations, beliefs about resources, and overall prior knowledge

ANS: C

The theory of planned behavior focuses on the ability to predict intentions and behavior as a function of beliefs about the value of an outcome, the likelihood that the outcome will occur given the behavior, beliefs about the expectations of others, and self-efficacy beliefs about the personal ability to engage in the activity.

DIF: Cognitive Level: Understand REF: p. 63

5. The stages of change identified in diffusion of innovation theory are:
- contemplation, persuasion, action, and knowledge.
 - knowledge, persuasion, decision, implementation, and confirmation.
 - awareness, understanding, action, implementation, and engagement.
 - contemplation, decision, action, and knowledge.

ANS: B

The stages of change identified in the diffusion of innovation theory are knowledge, persuasion, decision, implementation, and confirmation. The stages of change are one way to understand and evaluate how the change has occurred.

DIF: Cognitive Level: Remember REF: p. 63

6. If you choose to evaluate an informatics intervention by examining the impact on a clinician's ability to think ahead about future events, which level of situation awareness would you be measuring?
- Social
 - Perception
 - Comprehension
 - Projection

ANS: D