

Unit ID quiz

1. Electronic Health Record (EHR)
 - a. Functionality

President’s Council of Advisors on Science and Technology (PCAST), “Report To The President Realizing The Full Potential Of Health Information Technology To Improve Healthcare For Americans: The Path Forward”, pp. 1 - 38 (Dec. 2010) (Executive Summary, pp. 1 - 7; I. Introduction and Overview , pp. 9 - 14; II. The Potential of Health IT, pp. 15 - 24; III. Health IT Today, pp. 25 - 38)

1. The President’s Council of Advisors on Science and Technology (PCAST) had in December 2010 as members executives from which of the following corporations providing Internet search services:

- a. Google
- b. Microsoft
- c. both Google and Microsoft
- d. none of the above

2. The PCAST HIT Report (2010) concluded that it is crucial for the Federal Government to facilitate:

- a. the nationwide adoption of universal exchange language for healthcare information
- b. the nationwide adoption of digital infrastructure for locating patient records
- c. a transition from traditional electronic health records to the use of healthcare data tagged with privacy and security specifications
- d. all of the above

3. The PCAST HIT Report (2010) concluded that the US lags far behind other industrialized nations in the use of electronic health records, with approximately how many physicians lacking even rudimentary digital records (as of 2009):

- a. 20%
- b. 40%
- c. 60%
- d. 80%

4. The PCAST HIT Report (2010) notes that the requirements for the receipt by providers of EHR purchase incentive payments under Stage 1 of the Meaningful Use program has only modest requirements for the purchased EHR system to communicate with each other. The Report concludes that such an approach:

- a. creates a danger that adoption of EHRs certified for Stage 1 may exacerbate the problem of incompatible legacy EHR systems and the difficulty of exchanging health data among providers
- b. fails to create a “network effect” which would spur further EHR adoption and unleash the power of the competitive market to produce increasingly better and less expensive systems
- c. fails to advance the infrastructure for locating patient records, including interoperability standards and network infrastructure to enable indexing and access to data
- d. all of the above

5. The PCAST HIT Report (2010) suggests that the investment necessary to develop and implement EHR standards that enable interoperability of EHR systems:

- a. will be initiated by the EHR system vendors who would commercially directly benefit from the creation of an EHR “network effect” and increased competition
- b. will be initiated by healthcare providers who would commercially directly benefit from improved patient medical records and reduction of duplicative patient testing
- c. will be initiated by healthcare insurance payers who would commercially directly benefit from improved patient outcomes and resulting reduced claims with the one-year term of patients’ plan coverage
- d. should be initiated by the Federal Government as the economic benefits of these data exchange capabilities do not accrue directly to specific providers or to providers’ incumbent EHR system vendors

6. The PCAST HIT Report (2010) proposes that each patient’s health data be broken down into meta-data tagged elements that describe:

- a. attributes, provenance, and the patient’s universal personal identifier
- b. attributes, provenance, and required security protections of the data
- c. attributes, provenance, and contact information of the patient’s primary care provider to obtain any necessary consents or authorizations for use or disclosure of the data
- d. attributes, provenance, and a link to an on-line centralized patient consent clearinghouse where patients can at any time revoke or alter their preferences for use or disclosure of their data

7. The PCAST HIT Report (2010), drawing upon the IT concepts underlying web search engines, proposes the creation of a “common infrastructure for locating and assembling individual elements of a patient’s records, via secure “data element access services” (DEAS)”. To implement such an approach, the following functions or elements would be necessary, except:

- a. a single government-owned DEAS
- b. a single national database of patient healthcare records
- c. the issuance to each patient of a unique national patient identifier
- d. all of the above (meaning that none of the above is necessary for this proposal)

8. The PCAST HIT Report (2010), drawing upon the IT concepts underlying web search engines, proposes the creation of a “common infrastructure for locating and assembling individual elements of a patient’s records, via secure “data element access services” (DEAS)”. To implement such an approach, the following functions or elements would be necessary:

- a. the breakdown of patient medical records into metadata-tagged elements, based on a universal extensible language for the exchange of health information
- b. the addition to each patient record of metadata that specifically enforce privacy safeguards on each individual piece of data

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- c. the indexing of the patient medical record metadata tags and the establishment of a network infrastructure that allows for the national querying of such indexes and the retrieval and aggregation of desired data elements from the custodians of patient data
- d. all of the above

9. The Food and Drug Administration (FDA) collects voluntary reports of death or injury associated with EHR malfunctions. The PCAST HIT Report (2010) notes that the FDA officials have suggested an increased role of the FDA in EHR system oversight by means of:

- a. regulations making EHR adverse event reporting to the FDA mandatory
- b. classifying EHR systems as medical devices, making them subject to FDA pre-market regulation
- c. one or both of a and b
- d. none of the above

10. Which of the following would not be a benefit to a patient whose health data has been completely de-identified/anonymized in an electronic data set:

- a. lowers risk of identity theft if the data set is hacked by a malicious electronic intruder
- b. lowers risk of employer being able to learn from that data set personal health data which gives rise to prejudicial treatment
- c. lowers prospect of that data set being used to contact the patient in the future with information regarding discoveries affecting the patient's treatment
- d. increases patient's trust in having that data set accessible to the government

11. An EHR system enables the aggregation and integration of a specific patient's care history (multiple episodes involving multiple providers) into a longitudinal record. Such aggregated patient-specific data is of primary utility to:

- a. healthcare providers directly involved in the patient's current treatment
- b. the vendor of the EHR system
- c. public health authorities
- d. none of the above

12. An EHR system enables the aggregation of health data of all of the patients in a particular physician's practice. Such aggregated practice-specific patient data is of utility for:

- a. calculation and reporting of clinical quality measures to payers for payment purposes
- b. calculation and reporting of clinical quality measures for maintaining board certifications and hospital privileges
- c. for identifying areas where patients are receiving less than optimal care, to inform the implementation of changes in the practice
- d. all of the above

13. EHR system adoption among multiple providers enables the aggregation of data of multiple patients across organizations, revealing patterns of illness and treatment outcomes in a community. Such aggregated population-wide patient data is of utility:

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- a. to public health authorities in identifying potential epidemics
 - b. to enable medical researchers to compare different treatments or medical devices in large and diverse populations
 - c. to provide comparative outcomes data about hospitals, physicians and other providers
 - d. all of the above
14. For which of the following EHR system benefits will de-identified health data sets be sufficient:
- a. creation of an aggregated longitudinal patient record
 - b. participation of patients in their own healthcare decision-making
 - c. clinical studies of medical interventions and their efficacy
 - d. none of the above
15. Patient engagement in their own health care would be furthered through HIT which offers which of the following functionalities:
- a. Internet portal at which patient can access information regarding all own medical evaluations
 - b. on-line scheduling tool that allows patient to schedule healthcare appointments
 - c. communication tool that allows patient to send emails to own providers, and providers to send to patient treatment-related reminders and surveys
 - d. all of the above
16. The PCAST HIT Report (2010) notes that EHR system adoption is greater in larger provider organizations than in smaller organizations for the following reason(s):
- a. large organizations have greater resources to shoulder the burden of installing and maintaining customized IT systems
 - b. large organizations can internalize more of the benefits associated with EHR systems, such as aggregation and integration of a patient's data from several sources
 - c. large organizations receiving fixed amount capitated per-patient payments have an incentive to coordinate care and reduce duplication
 - d. all of the above
17. The PCAST HIT Report (2010) concludes that the HIPAA Privacy Rule, along with multiple state laws:
- a. imposes significant costs on healthcare providers
 - b. has become obsolete in many ways given advances in technology
 - c. both a and b
 - d. none of the above
18. The PCAST HIT Report (2010) notes that Personal Health Records (PHRs):
- a. represent a route to interoperability between different providers as they "travel with" the patient, though they generally are not standards-based to allow true interoperability between EHR systems
 - b. can be either Internet-based or maintained on personal computers and mobile devices

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- c. may have limited adoption among the general patient population other than for patients with chronic conditions
- d. all of the above

19. The HITECH Act attempt to create a financial incentive for providers with Medicare patients to acquire and use EHR systems by:

- a. providing Medicare bonus payments to those who acquire and use certified eligible EHR systems
- b. imposing reduced Medicare reimbursements beginning in 2016 upon those who fail to acquire and use certified eligible EHR systems
- c. both (the carrot and the stick)
- d. none of the above

20. "Meaningful Use" incentive payments require the reporting to CMS of certain quality care measures. The particular "measures of quality" initially chosen by CMS for Stage 1 are mostly related to individual specific treatment conditions (episodes of care), with little flexibility to describe complex care coordination and functional outcomes of care. Which of the following are the reason(s) for such restrictive "measures of quality" chosen by CMS:

- a. currently validated measures of quality reflect the medical profession's traditional focus on treating particular illness rather than on care coordination and health maintenance
- b. most EHRs were designed around billing codes, which do not focus on describing care coordination and health maintenance
- c. the legacy IT infrastructure of CMS is outdated and limits the ability of CMS to receive and process any complex forms of clinical data
- d. all of the above

James J. Cimino, "Improving the electronic health record--are clinicians getting what they wished for?", JAMA, Vol. 309, No. 10. (13 March 2013), pp. 991 – 992

21. Dr. Cimino (2013) suggests that current EHR systems add the following complication(s) to clinical workflow:

- a. present too much information, obscuring clinically important aspects of a patient's condition, and foster "note bloat"
- b. generate prompts that relate more to documenting the level of service for purposes of billing rather than what is most clinically relevant
- c. requires more data entry and information retrieval time and effort, reducing flexibility
- d. all of the above

22. Dr. Cimino (2013) suggests that improvements in clinician documentation within EHR systems to capture physician impressions and plans as explicit data elements could, in addition to reducing data entry efforts and improving the readability of notes, facilitate which of the following computer-based functionalities:

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- a. more readily accessing Clinical Decision Support, allowing the EHR system to suggest appropriate tests and treatments
- b. automatic issuance of orders
- c. institution of monitoring to suggest follow-up test and alternative strategies
- d. all of the above

a. "Meaningful Use" incentive program

David Blumenthal and Marilyn Tavenner, "The "Meaningful Use" Regulation for Electronic Health Records", N Engl J Med, Vol. 363, No. 6. (13 July 2010), pp. 501 – 504 (including Summary Overview of Meaningful Use Objectives)

23. In response to industry comments regarding the initial HHS/ONC Proposed Rule setting forth the criteria for Stage 1 "Meaningful Use":

- a. The Proposed Rule was adopted as the Final Rule without change
- b. The Proposed Rule was modified to promote the creation of a "universal exchange language"
- c. The Proposed Rule was modified to require each EHR system owner to enter into a data exchange agreement with a Health Information Exchange (HIE) organization
- d. The Proposed Rule was modified to two provide a "two-track" approach, with a set of required "core objectives" and a "menu set" of additional criteria from which providers were given the freedom to select five for implementation

24. The HHS/ONC Stage 1 "Meaningful Use" regulation also specified for most of the core and menu set criteria the rate at which providers will have to use particular EHR system functions to be considered "meaningful users". The applicable rate during Stage 1:

- a. is set nationally for all program participants, deemed by CMS as achievable by average practices and providers in the early years
- b. is variable, determined with reference to the CMS Medicare region in which the provider is located
- c. is variable, determined with reference to the installation date of the EHR system and resulting length of use
- d. is variable, determined with reference to the annual revenue of the provider

25. Which of the following Stage 1 "Meaningful Use" objectives would require that the EHR system be connected to some form of external data transmission functionality:

- a. submit immunization data to immunization data registries
- b. submit syndromic surveillance data and reportable lab results to public health agencies
- c. perform at least one test to electronically exchange key clinical information among providers
- d. all of the above

Marla Durben Hirsch, "Meaningful Use perfection requirement a very high bar", FierceEMR, September 24, 2014

26. A provider's failure to fully satisfy one of the Stage 1 "Meaningful Use" objectives can result in:
- mandatory reimbursement to CMS of the full amount of the incentive payment received
 - mandatory reimbursement to CMS of the full amount of the incentive payment received if the provider failed to fully satisfy 75% of all of the applicable Stage 1 "Meaningful Use" objectives
 - mandatory reimbursement to CMS of a percentage of the incentive payment received determined pro-rata by the number of applicable Stage 1 "Meaningful Use" objectives the provider failed to fully satisfy
 - none of the above

Marla Durben Hirsch, "Providers shouldn't bear brunt of slow patient engagement", FierceEMR, August 28, 2014

b. Adoption of EHRs

Marla Durben Hirsch, "ONC: Interoperability up, but barriers remain", FierceEMR, October 10, 2014

Marla Durben Hirsch, "Meaningful Use payments top \$24.8 billion", FierceEMR, September 3, 2014

27. Under the Stage 1 "Meaningful Use" program, as of mid-2014:
- providers have received \$24.8 billion in incentive payments
 - 92% of eligible hospitals and 75% of eligible professionals have received incentive payments
 - more than 60% of eligible hospitals and 14% of eligible professionals have electronically exchanged patient health information with a provider outside of its organization
 - all of the above

c. Reasons for low EHR penetration

Asaf Bitton, Lydia A. Flier and Ashish K. Jha, "Health information technology in the era of care delivery reform: to what end?", JAMA, Vol. 307, No. 24. (27 June 2012), pp. 2593 – 2594

28. Providers and professionals that are not eligible to receive incentive payments under the "Meaningful Use" program, and therefore have a lower rate of EHR system adoption, include which of the following:

- rural hospitals
- rehabilitation hospitals, nursing homes and mental health facilities
- primary care providers
- none of the above; all healthcare providers and professionals are eligible to participate

29. Accountable Care Organizations (ACOs), which are integrated or virtual umbrella organizations that link care teams for the health care needs of a defined population, have an interest to reduce fragmentation and manage costs because:

- the ACO participating providers share payment risk
- the ACO participating providers received "Meaningful Use" EHR purchase incentive payments
- the ACO participating providers received conditional protection from anti-trust law liability
- none of the above

30. Accountable Care Organizations (ACOs) are likely to find current EHR systems wanting with respect to which of the following functionalities:

- a. interoperability and data exchange, to enable aggregation of a patient's health data
- b. quality and cost metrics, to enable real-time measurement of results and identification of clinical gaps
- c. data analytics, to enable stratification of the ACO's assigned pool of patients and prioritization of its managed care target patients
- d. all of the above

31. In addition to the EHR functionalities desired by ACOs, Patient Centered Medical Homes (PCHMs) are likely to find current EHR systems wanting with respect to which of the following functionalities:

- a. functionalities that promote teamwork
- b. engagement of patients in a meaningful and sustainable manner
- c. both a and b
- d. none of the above

Arthur L. Kellermann and Spencer S. Jones, "What it will take to achieve the as-yet-unfulfilled promises of health information technology", Health Affairs (Project Hope), Vol. 32, No. 1. (January 2013), pp. 63-68

32. In 2005 a team of Rand Corporation researchers projected that rapid adoption of health information technology (HIT) could save the US more than \$81 billion annually. When such savings from HIT adoption failed to materialize, in 2013 a second team of researchers lead by a Rand executive reexamined the prior Rand report and concluded that the prior predictions have not yet come to pass not because of shortcomings in the prior analysis, but because

- a. of shortcomings in the design, implementation and use of HIT in the US
- b. the fact that productivity gains from the adoption of HIT in dynamic provider organizations simultaneously undergoing clinical process redesign, corporate entity transformation, billing modernization, and payment reimbursement reform can't be attributed to HIT adoption alone
- c. the fact that the outcomes of HIT adoption realized in pilot programs at a select few large integrated health systems that had been engaged for years in the development of their clinical information systems are not applicable to the remainder of the healthcare industry
- d. HIT is inherently neither good nor bad; it is but a tool whose outcomes depend on the motivations of its users

33. The HHS/ONC Direct Project, launched in 2010 and offering a secure standards-based way for healthcare providers to send clinical information point-to-point, addresses which of the following dimensions of HIT system interoperability:

- a. how messages are sent and received
- b. the structure and format of information
- c. terms used within these messages

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- d. all of the above

34. The Rand researchers (2013) concluded that if EHR system vendors in coordination with the government were able to successfully redesign EHR systems to ensure their full interoperability, patient-centeredness, and ease of use:

- a. the US would achieve savings of \$81 billion annually in productivity gains
- b. such EHR system changes would fail to unlock the potential of HIT, absent the contemporaneous establishment of a robust health information exchange (HIE) network infrastructure to effect data exchange among EHR systems
- c. such EHR system changes would fail to unlock the potential of HIT, unless they embraced a “data element access service” health record design and a network infrastructure that accommodates the query of data element indexes and retrieval of distributed patient records
- d. such changes would be necessary but insufficient to unlock the potential of HIT, as providers must reengineer existing processes of care

Marla Durben Hirsch, “AMA framework looks to improve EHR usability”, FierceEMR, September 16, 2014

- d. Calculating the value of HER

Julia Adler-Milstein, Carol E. Green and David W. Bates, “A survey analysis suggests that electronic health records will yield revenue gains for some practices and losses for many”, Health Affairs, March 2013, vol. 32, no. 3, pp. 562 – 570 (Abstract)

Julie Bird, “Study: Primary-care clinics realize positive ROI from EHRs”, FierceEMR, October 2, 2014

35. Research studies of the return on investment (ROI) realized from the adoption of EHR systems by physician practices suggest that positive ROI, when attained, results from:

- a. increased revenue from seeing more patients per day or by improved billing that resulted in fewer rejected claims and more accurate coding
- b. reduced practice administrative costs from elimination of paper records
- c. reduced practice clinical costs from reduction of unnecessary lab tests
- d. none of the above

- 2. Health Information Exchange (HIE)
 - a. Functionality

Gilad J. Kuperman, “Health-information exchange: why are we doing it, and what are we doing?”, Journal of the American Medical Informatics Association : JAMIA, Vol. 18, No. 5. (1 September 2011), pp. 678-682

36. The HHS/ONC Direct protocol allows an authorized provider to send a patient’s health information securely to another authorized provider. The best analogy for Direct would be:

- a. email between any two persons with Internet access

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- b. encrypted email between any two persons with Internet access
- c. encrypted email between two persons who are authorized members of closed user group
- d. none of the above

37. An electronic network in which data is distributed among multiple custodians that enables a user to query for a particular patient's record and to retrieve ("pull") data from multiple sources, requires which of the following functionalities to operate:

- a. a master patient index (MPI) to allow for the consistent tracking of a particular patient across multiple providers
- b. a record locator service (RLS) to register which data custodian has a record for a particular patient
- c. both a and b
- d. none of the above

38. The HHS/ONC Connect protocol allows for the "pull" of a patient's data from multiple sources. The best analogy for the multi-location query-response aspect of Connect, utilizing an MPI and an RLS, would be:

- a. a Google search, with the patient's name serving as the search keyword
- b. a Google search, with the patient's primary care provider serving as the search keyword
- c. a Google search, with the patient's diagnosis serving as the search keyword
- d. none of the above

b. Federal grant program

c. Adoption of HIE

[also in Unit IC] **William A. Yasnoff, Latanya Sweeney and Edward H. Shortliffe, "Putting health IT on the path to success", JAMA, Vol. 309, No. 10. (13 March 2013), pp. 989-990**

eHealth Initiative, 2014 eHI Data Exchange Survey Key Findings, Oct.9, 2014

39. Kuperman (2011) notes that health data exchange use cases that rely predominantly on one party sending data to another party could be satisfied solely by the Direct ("push") approach; those that required the aggregation of the patient's data from a broad set of locations cannot. Examples of use cases that can be satisfied by Direct include:

1. delivering laboratory results to an EHR
2. supporting the transmission of quality reports to a central authority
3. bio surveillance/ public health reporting
4. sending a visit summary to a patient

The eHealth Initiative's 2014 survey of HIEs found that the data exchange use case for which Direct is most often utilized (over 60% of survey respondents) is:

- a. supporting transitions of care, such as event-based clinical notifications/alerts (e.g. admission/discharge/transfer)

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- b. emergency department retrieval of all data known about a patient from multiple sources for treatment purposes
- c. Social Security Administration retrieval of all data known about a patient from multiple sources to make a disability determination
- d. none of the above

40. The eHealth Initiative's 2014 survey of HIEs found that interoperability between EHR systems is one of the biggest barriers to widespread data exchange for which of the following reasons:

- a. financial cost of interface development
- b. technical difficulty of building interfaces
- c. getting a consistent and timely response from EHR vendor interface developers
- d. all of the above