Part 1: AMIA 2014 Booklet of Q&A for Clinical Informatics Diplomates Seeking MOC-II Credit (ABPM MOC-LLSA)

Instructions: Independently answer the questions in this booklet for the sessions you attend. On Wednesday, November 19, at 2:00 PM, revisit http://www.amia.org/amia2014/cme-ce to click on the link to the booklet with answers and explanations.

The ABPM Course ID number is 1137.

The American Board of Pathology (ABP) MOC-II credit is not available this year.

To claim MOC-II credit, after reviewing Part 2 with correct answers and explanations, a diplomate should:

a. Log into your account at www.amia.org
b. Go to “My Profile” tab
c. Click “Invoices & Transactions” tab
d. Scroll down to Events list; click on “AMIA 2014 Annual Symposium”; then click “Credits”
e. Select Credit Type: “Physician”
f. Select Physician Credit Type (drop-down): “MOC-II”
g. Click on the sessions you attended that offered MOC-II credit
h. Click Save and Add Additional Credit Type at bottom of screen
i. Return to Select Physician Credit Type & select “Physician” from the drop-down menu
j. Click on other CME sessions you attended, then click Submit
k. In My AMIA Activities you will be able to download your CME certificate, which will indicate the number of MOC-II credits you earned
l. AMIA will track attendee MOC-II credits claimed through our system and report them to the ABPM.

For comments or additional assistance, contact pesha@amia.org
T05-1: Usability refers to how useful, usable and satisfying a system is for the intended users to accomplish goals in the work domain by performing certain sequences of tasks.

a. True
b. False

T05-2: Following the TURF Framework, the usableness of representations and tasks are part of:

a. Intrinsic complexity
b. Extrinsic difficulty
c. Intrinsic difficulty
d. Functionality

T05-3: All of the following are formative methods of usability evaluation EXCEPT:

a. Cognitive Walkthrough
b. Heuristic Evaluation
c. Interface Inspection
d. Think-aloud testing
e. Records evaluation
f. Pluralistic Usability Walkthrough

T05-4: Summative evaluation can be used to determine if design meets specific measurable performance goals.

a. True
b. False
T05-5: When selecting participants for user testing, which type of users is it best to select?

a. Critical
b. Typical

t05-6: What are the two ways of prioritizing usability problems?

a. Problem severity and most confusing problem
b. Problem frequency and problem severity
c. Recency and duration
d. Function and location

t05-7: User-Centered Design Process includes all of the following basic steps except:

a. Understand User Needs, Workflows and Work Environments
b. Engage Users Early and Often
c. Set User Performance Objectives
d. Develop and Define Jobs
e. Design from knowledge of Human Behavior Principles
f. Conduct Usability Test
g. Adapt and Design Iteratively

t05-8: How usable a product is refers to all of the follow EXCEPT:

a. Ease of use
b. Ease of learning
c. Subjective satisfaction
d. Flexibility and customizability
e. Adaptation by users
T05-9: Heuristic Evaluation is a _____________ method in which an interface is compared with ______________ by a/an ____________.

a. formative inspection, design principle, expert
b. summative testing, expectation, representative user
c. formative testing, benchmarks, group of users
d. summative walk through, group performance, expert

T05-10: The Safety Enhanced Design EHR Certification requirements for summative user testing include (select all that apply):

a. Heuristic Violations
b. User success rate
c. Task Completion Times
d. Path Deviations
e. User Satisfaction Scores
f. Number of Errors
g. Function Assessment

WG01: Aligning Consumer Health Informatics Tools with Patient Work: Key Frameworks for Design
Laurie L. Novak; Rupa Valdez; Richard J. Holden; Tiffany Veinot

WG01-1. What is patient work?

a. Effort that patients and caregivers allocate toward their treatment and care
b. Work that nurses do to care for patients
c. Unpaid self-care activities of patients, e.g. monitoring blood pressure, taking medicines, documenting symptoms and tracking dietary intake
d. (a) and (c) above
WG01-2. Research on patient work can result in improved consumer health informatics design through the development of self-management tools that are more sensitive to context, e.g. “home” vs. “work” vs. “traveling.”

a. True
b. False

WG01-3. Which of the following are frameworks for studying patient work presented in the session?

a. Systems Engineering Initiative for Patient Safety (SEIPS) 2.0
b. Human Factors of Health Care in the Home
c. Chronic Illness Trajectory
d. All of the above

WG01-4. How is a patient work approach to consumer health informatics design different from biomedical and behavioral change approaches?

a. A patient work approach is primarily concerned with exposure to environmental pollution
b. A patient work approach examines patient activity within a context that comprises interacting structural components such as task, technology, environment and community factors
c. A patient work approach is uniquely concerned with knowledge, attitude and cognitive functioning
d. All of the above

WG01-5. Which is a unique challenge for researchers studying the work of patients and their informal caregivers?

a. Exposure to toxic materials in the laboratory setting
b. Systematically identifying and characterizing patient activities
c. Linking patient health behavior to patient genotypes
d. The cost of equipment for analyzing data
WG01-6. Which elements below are included in a work system from the human factors engineering perspective?

a. Persons
b. Tasks
c. Tools/Technologies
d. All of the above

WG01-7. Genome-wide association studies (GWAS) are an example of applying an insight or finding from a human factors engineering analysis to the design of a consumer health informatics tool.

a. True
b. False

WG01-8. Which are examples of temporal relationships in patient work?

a. Medications that need to be administered separately, spaced by several hours
b. Asthma medication can be taken preventively to minimize symptoms triggered by seasonal allergies
c. Medication administrations linked to morning routines can be disrupted by vacations or illness
d. All of the above

WG01-9. Which of the following is a “line of work” according to Corbin and Strauss?

a. Illness work
b. Occupational work
c. Mathematical work
d. Psychological work
WG01-10. You are developing a smartphone app to help teens with asthma manage their medications. What skills do you need on your team?

a. An ability to engage teens in conversations that elicit real-world challenges
b. Understanding of a native mobile platform (e.g. iOS, Android)
c. Collaborative skills to translate insights gained from the teens into innovative software features
d. All of the above

T07: Introduction to Biomedical Informatics
Joseph W. Hales; Christopher Cimino

Definition
T07-1: Biomedical informatics refers to the field of study of
a. the use of biomedical information in the assessment and delivery of medical care.
b. the use of computers and related technologies to manipulate biomedical information.
c. the optimal use of biomedical information for problem solving and decision making.
d. all aspects of electronic health record systems.

Terminology
T07-2. Controlled vocabularies have advantages and disadvantages as compared to uncontrolled text, including that
a. the management and updating of the vocabulary is handled by experts but licensing fees can contribute to the high cost of medical care.
b. they can allow expansion of the caregivers’ vocabulary to upward of 150,000 words but they require the use of tedious menus to select terms.
c. they allow for later automatic analysis of the health information but may limit the caregivers’ expressiveness and lead to inaccurate information.
d. they allow for a single terminology to be used across multiple purposes without loss of accuracy but that competition between different vocabulary vendors makes it hard to choose the best terminology.
T07-3. The ideal controlled vocabulary
   a. provides coverage of the topic area with minimal overlap between terms.
   b. provides an “other” or “not otherwise specified” category or modifier in all hierarchies.
   c. places each term exactly once within the terminology hierarchy.
   d. minimizes the depth of the terminology hierarchy.

T07-4. The National Library of Medicine’s Unified Medical Language System (UMLS) semantic network is used
   a. to “compute” the definition of medical terms for the purpose of decision support in the information sources map.
   b. to drive a natural language processing algorithm in the lexical matcher.
   c. for research purposes but connects only minimally to the other UMLS components.
   d. to assist in matching new terms to existing concepts within the Metathesaurus.

Medical Records

T07-5. The primary driving force behind the development of electronic medical records has historically been
   a. providing medico-legal documentation to address malpractice suits.
   b. allowing better communication between multiple care givers.
   c. providing faster submission of coded bills to insurance companies.
   d. tracking and improving the quality of medical care.

T07-6. Health Level 7 (HL7) provides a standard that is supposed to increase the ease with which different health information systems (ie, pharmacy, lab, radiology) integrate into a single medical record. Its primary approach to doing this is by defining standardized
   a. table structures.
   b. messages.
   c. vocabularies.
   d. field types.
Decision Support

T07-7. Over time, well-structured rule-based reminder systems will

a. meet initial resistance to change physician behavior but eventually they will adopt the new practices.

b. quickly produce a change in physician behavior that is sustained even after the reminders are discontinued.

c. quickly produce a change in physician behavior but their behavior returns to baseline shortly after the reminders are discontinued.

d. meet initial resistance to change physician behavior and ultimately fail to create any lasting change unless hospital policies are put in place and enforced to require the change.

T07-8. The Health Information Technology for Economic and Clinical Health Act (HITECH) has become a major driver of clinical decision support implementation because it

a. provides incentives for providers who can demonstrate they have used electronic records in a meaningful way that measures quantity and quality of health care delivered.

b. requires all certified electronic health record systems to implement quality improvement applications that can demonstrate a meaningful improvement in health care quality over time.

c. provides funding for clinical decision support research.

d. requires Medicare and Medicare patients in programs receiving government funding to allow their de-identified patient information to be used for research purposes.

T07-9. Human Computer Interaction refers to the field of study of the

a. development and use of computers to control human activity or behavior through implantable interfaces

b. design, evaluation and implementation of computing systems for human use and phenomena that surround them

c. design and implementation of Internet-based software measuring human activity, either of individuals or of groups

d. history of mechanical and electrical computing devices and their influence on society
T07-10. Diffusion of innovation is a theory that is used intended to describe the
a. rate and manner in which ideas spread through society
b. impact of innovation on human learning and understanding
c. decision making theory that governs the timing of the marketing and release of new
   versions of software or devices (such as mobile phones)
d. the manner in which technical innovations or advances find their way into new products

T09: Practical Modeling Issues: Representing Coded and Structured Patient Data in EHR Systems
Stan Huff

T09-1. Which of the following statements are true?
   a. The complexity of modern medicine exceeds the limits of the unaided human mind.
   b. Medical education leads to error-free practice.
   c. Physicians can reliably manage up to 10 parameters when making medical decisions.
   d. All of the above

T09-2. Which of the following things are needed to enable true interoperability?
   a. Detailed clinical information models.
   b. The detailed clinical information models need to be coupled (bound) to standard
terminologies.
   d. Open sharing of models, terminology, and APIs.
   e. All of the above

T09- 3. If we all adopted SNOMED CT as our common terminology there would be no need for
detailed clinical models in order to create interoperability.
   a. True
   b. False
T09-4. Which of the following statements are true?
   a. Many countries and organizations worldwide are creating detailed clinical information models.
   b. Clinical information models need to be created for all aspects and domains of clinical medicine.
   c. Information models can be abstract and general, or very detailed and specific.
   d. All of the above

T09-5. Which of the following is a goal of the Clinical Information Modeling Initiative (CIMI)?
   a. Create a shared repository of detailed clinical models.
   b. Use any standard formal modeling language to represent the models.
   c. Define standard application programmer interfaces (APIs) for using the models for information sharing.
   d. Use data types from standard programming languages as the elemental building blocks of the models.

T09-6. Clinical information modeling depends on the availability of terminology tables or terminology services.
   a. True
   b. False

T09-7. Which of the following statements is true concerning evaluation style models and assertion style models?
   a. Evaluation style models are commonly used when there is a particular attribute of the patient that is being assessed.
   b. Assertion style models are often used for measurements.
   c. Assertion style models are more difficult to use in statistical analysis.
   d. Evaluation style models work well for whole body and systemic syndromes and diseases.
T09-8. Which of the following statements is true about representing “subject” in detailed clinical information models?

a. Subject is always an independent attribute in models.
b. Some modeling styles for subject could lead to “combinatorial explosion.”
c. Representation of subject is unrelated to the representation of family history information.
d. Subject is managed in one consistent style within the LOINC terminology.

T09-9. There is typically a best way to model a given type of clinical data.

a. True
b. False

t09-10. Which of the following statements are requirements for “good” models?

a. Models are unambiguous.
b. Models are consistent across medical domains.
c. Models evolve gracefully with the addition of new knowledge.
d. All of the above
T10. From Sentences to Sense-Making, From Utterances to Clinical Understanding, From Narratives to Structured Data: A tutorial on Qualitative Data Coding Concepts, Methods and Tools
Martha B. Adams; Bonnie Kaplan; Ross Koppel; Craig Kuziemsky; Kourosh Ravvaz

T10-1. Which response best reflects qualitative data?
   a. Text, pictures, maps, open ended interviews
   b. Test scores on certification exams
   c. Survey data

T10-2. How are qualitative data collected? Which answer gives the best example?
   a. By anyone who wants to keep a record
   b. From conversations and from transcripts of doctor-patient visits
   c. From photos archived on Instagram

T10-3. How could quantitative methods and analysis partner with qualitative analysis?
   a. Can't: the two methods are so distinct they can't be combined -- although each is valuable
   b. With great care: The two methods show different aspects of reality and are often contradictory
   c. Easily: qualitative methods can raise hypotheses which can later be tested via quantitative methods. But one needs quantitative data to really understand what is going on.
   d. Whenever possible: qualitative methods raise questions and explain complex and nuanced reality, whereas quantitative measures can reflect statistically ascertainable frequency distributions in larger populations
   e. Sequentially: One first conducts a qualitative study, followed by a quantitative study. Qualitative research is useful primarily for forming survey questions.
T10-4. Many tools support qualitative study designs. Sometimes these seem rather ad hoc, for example, tools to capture participant observations and tools for interviews. The next steps of organizing and analyzing data could include computer software. Which statement is FALSE?

a. NVivo and ATLAS.ti are examples of software to help manage and analyze qualitative data.

b. A colleague/friend to talk through the analysis may be just as good.

c. Computer software eases the task of cut & paste, allows insertion of codes, indexing, addition of hyperlinks, and selective retrieval of text segments.

d. Ultimately, the computer can, beyond the researcher, make the best sense of the data.

T10-5. Which of the following are key considerations in choosing computer software for qualitative analysis? Choose the correct response.

a. Data volume, regardless of amount

b. Desired quantification of the results

c. Solo investigative work

T10-6. Qualitative data analysis is always undirected (i.e., emerges from the data)

a. True

b. False

T10-7. Qualitative research approaches are useful because...

a. The data can’t be analyzed statistically so is easy to understand

b. They enhance understanding of how and why the people involved make sense of what they’re involved with

c. They provide interesting anecdotes to liven up presentations

d. Most researchers can use them as they mainly involve talking to people and watching what they do

e. It’s easy to write up results; you select a list of quotes to put into a table and summarize
T10-8. Qualitative methods should be used when...
   a. A randomized control trial is impossible to do
   b. You want to generate hypotheses for more rigorous research
   c. It’s important to figure out the viewpoints and activities, and reasons for them, of the
      people being studied
   d. You can’t afford a rigorous research project; anyone can interview people or watch what
      they do
   e. You don’t have hypotheses

T10-9. Qualitative methods are useful in informatics to ...
   a. Document workflow, understand people who are or will be using the system or application,
      and to test designs
   b. Present results to people in a way they appreciate other situations not their own
   c. Survey the level of awareness and commitment of a community to a new campaign

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WG08: Drug Terminology Standards: Meaningful Use and Better Knowledge
Tomasz Adamusiak; Kin Wah Fung; Joseph Kannry; John Poikonen; George Robinson; Li Zhou

WG08-1. Which RxNorm concept type and description would be used for the required HL7 “coded
Product Name” entry within a C-CDA (Release 2) document?
   a. atorvastatin 20 MG Oral Tablet - SCD
   b. atorvastatin Oral Product - SCDG
   c. atorvastatin Oral Tablet - SCDF
   d. Lipitor 20 MG Oral Tablet - SBD

WG08-2. Clinical Quality Measures medication value sets use the NDC as the standardized
vocabulary.
   a. True
   b. False
WG08-3. Which of the following medications are likely to be “active” on a return visit to the primary care physician on 1 July 2013?

a. Amoxicillin 500 mg Caps, 1 po TID x 10 days; no refills; recorded on 1 Feb 2013  
b. Atorvastatin 20 mg Tabs, 1 po QDAY; recorded on 15 May 2013  
c. Lipitor 20 mg Tabs, 1 po QHS; no refills; recorded on 1 Feb 2013  
d. Vicodin Tabs, 1 tab po q6h prn pain; 1 refill recorded on 15 December 2012

WG08-4. Which of the following correctly matches electronic health information type with its designated vocabulary standard according to Meaningful Use Stage 2 – Certification Criteria for Electronic Health Record Technology, 2014 Edition?

a. Family health history – CPT  
b. Immunizations – RxNorm  
c. Laboratory tests – SNOMED CT  
d. Medications - RxNorm

WG08-5. Which of the following pharmaceuticals is within the scope of RxNorm?

a. Branded drug packs  
b. Dietary supplements  
c. Medical devices  
d. Radiopharmaceuticals

WG08-6. National Drug Codes (NDCs) provided by the Food and Drug Administration are:

a. Applicable to Clinical Decision Support  
b. Formulated at the drug package level  
c. Uniquely identify a particular drug product  
d. Vetted by the FDA and industry
WG08-7. The primary reason for the widespread use of National Drug Codes (NDCs) in pharmacy settings is:

a. Billing at the drug package size is important for reimbursement
b. NDCs are well suited for Clinical Decision Support rules
c. NDCs represent the richest source of drug information on the market
d. Pharmacy organizations are responsible for maintaining NDCs

WG08-8. The following represents a typical workflow from medication ordering by physician to medication administration as part of the medication loop:

a. CPOE → pharmacy information system → point of care verification/eMAR
b. pharmacy information system → CPOE → point of care verification/eMAR
c. point of care verification/eMAR → CPOE → pharmacy information system
d. point of care verification/eMAR → pharmacy information system → CPOE

WG08-9. Basic medication-related Clinical Decision Support in Computerized Provider Order Entry Systems includes:

a. drug–disease contraindication checking
b. drug–drug interaction checking
c. guidance for medication-related laboratory testing
d. support for geriatric patients
WG09. Moving From Fragmentation and Duplication to Coordination, Continuity, and Sustainability: Global Health Informatics Working Group Pre-symposium
Janise Richards; Olivia Velez; Heather Cole-Lewis; Onyinyechi U. Enyia Daniel; Patricia Mechael

WG09-1. What is “pilotitis”?

a. the unfettered proliferation of pilot [projects] and a lack of a rigorous evidence base to support these strategies
b. the careful implementation of pilot project with a copious evidence base to guide the implementation
c. the fragmentation of eHealth and mHealth systems
d. inflammation of a pilot

WG09-2: Africa was the first continent to have more mobile phone subscribers than fixed landlines. There is better infrastructure for implementing health information systems via mobile cellular communication than via traditional data services used in developed countries. In Sub-Saharan Africa in 2010, what percent of the population had mobile phone coverage?

a. 31%
b. 48%
c. 61%
d. 80%
e. 95%

WG09-3: What are common problems faced when implementing mHealth and eHealth projects in Low and Middle Income Countries (LMICs)?

a. Lack of local IT capacity
b. Lack of local IT governance
c. Lack of power infrastructure
d. Lack of network coverage
e. All of the above
WG09-4: What are key barriers to scaling mHealth and eHealth projects in LMICs?

a. Sustained funding
b. Interoperability
c. Lack of guiding policies
d. Risk aversion
e. All of the above

WG09-5: What basic principles can be applied to designing mHealth and eHealth projects for scale? (Select all that apply)

a. Design with and for the end of user
b. Integrate with existing platforms and systems for additive impact
c. Reuse existing technologies when possible and appropriate
d. All of the above

WG09-6: When working in a LMIC, which partner is most important to ensure long-term sustainability of mHealth and eHealth projects?

a. World Health Organization (WHO)
b. Global Fund (GF)
c. US Agency for International Development (USAID)
d. Ministry of Health (MOH)
e. Non-Government Organizations (NGOs)

WG09-7: What key attribute distinguishes global health from public health?

a. Populations
b. Geography
c. Technology
d. Approach to care
e. Funding
WG09-8: What leads to a coordinated implementation of mHealth and eHealth projects?

a. Good communication among partners
b. Clearly defined roles and responsibilities
c. A common vision of health and information needs
d. An active, committed advisory committee

WG09-9: What does sustainability of eHealth and mHealth projects in LMICs mean?

a. It describes the point when the country has reached a level of maturity to be a participant in the mHealth and eHealth project
b. It implies maintaining something that already exists over time and is often equated with being ‘self-sustaining’ or ‘self-sufficient’, implying that no outside support is needed to continue its existence
c. It denotes the absence of the user’s participation, capability and motivation and is coupled with an inflexible information system design which needs additional donor support for maintenance
d. It suggests non-transferable skills and knowledge for a multidisciplinary approach to activating information technology projects that fit within the donor supported mechanisms
S15: Panel - Innovative Approaches to Medication Reconciliation within the Veterans Health Administration: Designing the ‘Magic Pill’
Blake J. Lesselroth; Kathleen G. Adams; Steven R. Simon; Kenneth Boockvar; Peter Kaboli

S15-1. What is the first step when planning implementation of a health information technology to support medication reconciliation?

a. Submit an RFI to the commercial development community for the purposes of identifying and categorizing technology functionality.

b. Assemble and pilot a set of performance measures for the organization.

c. Assemble a core team of sponsors comprised of executive leadership, clinical champions, subject matter experts, and systems specialists.

d. Complete an internal environmental scan – also referred to as an activity system analysis or needs assessment – to identify tool/technology requirements.

S15-2. What are the most common barriers to institution of durable medication reconciliation strategies identified by research?

a. Clinician knowledge and understanding of the task.

b. Staff time, system-based data sources, and competing clinical responsibilities.

c. Patient engagement and ability to participate.

d. Lack of available templates, reminders, and checklists.

S15-3. Which intervention is most likely to make medication reconciliation a value-added process to a medical system?

a. Inclusion of a clinical reminder, force-function, or hard-stop to the legacy electronic health record.

b. Integrating medication reconciliation into existing workflow, developing risk stratification strategies, and gathering information from clinical partners outside the current care facility.

c. Associating reconciliation with organizational policies, external accreditation mandates, or clinician financial incentives (e.g., performance pay).

d. Instituting standardized processes for all care delivery areas, patient populations, and clinical domains.
S15-4. Which of the following statements is not a medication reconciliation feasibility and scalability concern?

   a. Controlled medication terminologies that clearly identify discrete pharmacologic agents and that impart semantic meaning are not widely deployed.

   b. The fragmentation of prescription information across multiple systems and dispensaries.

   c. Staff ability to take the best-possible patient medication history.

   d. The absence of shared definitions, policies, or public health consensus with regard to the key information required for data exchange or review.

S15-5. Which informatics techniques appear to improve the ability to detect “ground truth” during medication reconciliation?

   a. The use of a structured interview script to query patients and the triangulation of multiple strategies.

   b. The recruitment of experienced staff hospitalists equipped with tablets to gather a point-of-care medication history.

   c. The deployment of mobile health technologies to patients in the home or community setting.

   d. The implementation of electronic health record affordances such as automated patient data retrieval and chart entry.

S15-6. Which statement is true about VA piloting of secure patient portals and messaging to support MR activities?

   a. The implementation of technology does not require clinical staff resources.

   b. Secure messaging and patient portals represent suitable strategies for all veteran patients.

   c. Efforts indicate secure messaging and patient portals can identify clinically important discrepancies, and many may help identify PADEs.

   d. Most veteran patients lack the HIT literacy to effectively use this form of communication.
S18: Papers/Podium Presentations - Chronic Diseases
Adding flexible temporal constraints to identify chronic comorbid conditions in ambulatory claims data
Walton Sumner; Dustin L. Stwalley; Phillip Asaro; Michael D. Hagen; Margaret A. Olsen

S18-1. What is the best evidence that private outpatient insurance claims data under-document smoking and obesity prevalence?

a. Financial and social disincentives discourage documentation of smoking and obesity in outpatient care
b. Long time intervals identify many more smokers and obese patients than seen in conventional intervals
c. Most identified smokers and obese patients had many claims, but only one with the diagnosis
d. The numbers of smokers and obese patients are much less than expected given population prevalence

S18: Papers/Podium Presentations - Chronic Diseases
Evaluate the Effectiveness of Mobile Health Intervention Program for the Senior Population Suffering from Hypertension and Hypercholesterolemia in Taiwan
Meng-Ping Wu; Polun Chang; Chien-Hsien Lee

S18-2. What methods did the researchers use to give feedback to subjects after the subjects received their updated personal healthcare records?

a. Follow-up phone call
b. Text message reminder
c. Transfer to the doctor
d. All of above
S18: Papers/Podium Presentations - Chronic Diseases Congestive Heart Failure Information Extraction Framework (CHIEF) Evaluation

Stephane Meystre; Youngjun Kim; Andrew M. Redd; Jennifer H. Garvin

S18-3: Select method(s) that can be used to automatically extract various types of information from narrative text in the EHR (Select all that apply):

a. Database querying  
b. Manual chart review  
c. Natural language processing (NLP)  
d. Information extraction (IE)

S18-4: Select the types of clinical information the CHIEF system extracted from VHA clinical notes [Select all that apply]:

a. LVEF (left ventricular ejection fraction) mentions and values  
b. Coronary artery disease (CAD) mentions  
c. Medications (Angiotensin receptor blockers (ARB), Angiotensin-converting enzyme inhibitors (ACEI))  
d. Reasons not to take ARB or ACEI medications  
e. Adverse effects of ARB or ACEI medications

S18: Papers/Podium Presentations - Chronic Diseases Effectiveness of Evidence-Based Congestive Heart Failure (CHF) CPOE Order Sets Measured by Health Outcomes

Jacob Krive; Joel S. Shoolin; Steven D. Zink

S18-5. Select one valid outcome of the CHF order set effectiveness study conducted at Advocate Health Care:

a. Mortality among “order set” group patients increased.  
b. Ordering via sets helped decrease the rate of complications.  
c. The length of stay among “order set” patients increased.  
d. Patients in the “order set” group had lower mortality, compared to patients in the “free text” group.  
e. CHF patients in the “free text” group had higher chance of being readmitted to the hospital with the same condition within 30 days
S18-6: Identify one of the barriers to health outcomes research with CPOE, focusing on order set as a core element of CPOE functionality:

a. Nursing professionals refuse to follow orders entered in CPOE via sets.

b. Order set adoption among physicians tends to be low, preventing sufficient data collection for analysis, causing outcomes to be not statistically significant, and making comparison groups of patients disproportionally different.

c. Most order sets are not evidence-based and introduce unnecessary patient safety concerns to clinical workflows.

d. Patients prefer custom orders.

e. CPOE applications are technologically immature to offer viable ordering practice choices via sets.

S25: Panel - Enhancing Patient Engagement in the Inpatient Care Setting

Enhancing Patient Engagement in the Inpatient Care Setting
David Vawdrey; Patricia C. Dykes; Ryan Greysen; Ann O'Brien; Jaap Suermontd

S25-1: Which legislation in the United States established, with limited exceptions, an enforceable means by which individuals have a right to review or obtain copies of their medical records?

a. HIPAA Privacy Rule [1996]

b. Health Information Technology for Economic and Clinical Health (HITECH) Act within the American Recovery and Reinvestment Act [2009]

c. Food and Drug Administration Safety and Innovation Act (FDASIA) [2012]

d. Affordable Care Act [2012]
S25-2: Which of the following is true concerning electronic sharing of clinical information with patients in the hospital setting (choose one):

a. Stage 3 of the federal “Meaningful Use” EHR financial incentive program in the U.S. requires eligible hospitals to offer electronic information sharing with patients during a hospital stay greater than 48 hours.

b. Some clinicians believe that information sharing may result in increased anxiety for patients and more work for nurses and physicians.

c. Modern tablet computers have largely solved challenges associated with health literacy and usability.

d. Regulations in some states in the U.S. prohibit physicians and nurses from electronically entering data that will be visible to patients.

S25-3: The purpose of the HCAHPS Initiative is:

a. To link consumer groups, including private insurance providers, in an effort to advocate for better patient experience in the hospital setting

b. To prevent unauthorized disclosure of patients’ Protected Health Information (PHI))

c. To provide a standardized survey instrument and data collection methodology for measuring patients’ perspectives on hospital care

d. To encourage clinicians' voluntary reporting of medical errors and near misses to improve the safety of hospital care

S25-4: Most patients report the following (choose one):

a. having little desire to electronically view their healthcare information during an inpatient encounter

b. desiring the ability to share their patient portal access with someone outside their health care team

c. wanting to review only limited information about their inpatient care, such as medication lists and care team photos, but not diagnostic test results or provider notes

d. being satisfied with the current amount of information they receive in the inpatient care setting
S25-5: Which of the following is true concerning patient engagement in the inpatient setting (choose one):

a. Well-defined standards exist for caregiver access to patient portals.

b. Most hospitals have clearly defined processes to ensure strong authentication to enable patient permission to share access and confirm care partner identities.

c. Stage 3 of the federal “Meaningful Use” EHR financial incentive program in the U.S. defines mandatory and optional data fields that are electronically accessible to hospital patients.

d. Patient satisfaction scores, which can potentially be affected by patient engagement technologies, have a direct impact on hospitals’ Medicare reimbursement rates in the U.S.

S28: Papers/Podium Presentations - Workflow
Clinical Workflow Observations to Identify Opportunities for Nurse, Physicians and Patients to Share a Patient-centered Plan of Care
Sarah Collins; Priscilla Gazarian; Dianna L. Stade; Kelly McNally; Constance Morrison; Kumiko Ohashi; Lisa Lehmann; Anuj K. Dalal; David W. Bates; Patricia C. Dykes

S28-1: What is a method that can be used to validate observational findings?

a. Conduct Interviews with participants and present results of observational findings

b. Develop Visio diagrams based on observational findings

c. Develop user interface prototypes based on observational findings

Which of the following may serve as barriers to patient-centered care within an EHR system? (Select all that apply.)

a. Siloed documentation processes between clinicians from different professions or specialties

b. Data capture from the care team during rounds to push to patient

c. Patient’s lack of electronic access to their EHR data

d. Identification of problems, preferences, and goals by patient/family

S28: Papers/Podium Presentations - Workflow
Effect of Obesity and Clinical Factors on Pre-Incision Time: Study of Operating Room Workflow
Narges Hosseini; M. Susan Hallbeck; Christopher Jankowski; Jeanne Huddleston; Amrit Kanwar; Kalyan Pasupathy

S28-3: Obesity accounts for much higher differences in time to incision for spine surgery than do clinical factors

a. True

b. False

S28-4: Surgeries in the sample with an anterior approach have increased time to incision which can be attributed to patient-related factors.

a. True

b. False
S28: Papers/Podium Presentations - Workflow
Using TURF to Understand the Functions of Interruptions
Vickie Nguyen; Nnaemeka Okafor; Jiajie Zhang; Amy Franklin

S28-5: What does TURF consist of?

a. Task, User, Work, and Functional Analyses
b. Task, User, Representational, and Functional Analyses
c. Task, User Scenario, Work, and Functional Analyses
d. Task, User, Work, and Fatality Analyses

S28-6: What does TURF add to our understanding of interruptions and healthcare workflow?

a. It eradicates interruptions found in the healthcare workflow.
b. It tells us things that we already know about interruptions and healthcare workflow.
c. It simplifies categorizations of interruptions found in the healthcare workflow.
d. It uses a work-centered approach to help us better understand healthcare workflow.

S28: Papers/Podium Presentations - Workflow
Enhancing the TURF Framework with a Workflow Ontology
Craig Harrington; Cui Tao; Keith A. Butler; Jiajie Zhang

S28-7. Which of the following is a true statement about ontologies?

a. Ontologies are best created using common scripting languages, like SQL and Python.
b. Ontologies enable automatic reasoning and knowledge inference.
c. Ontologies are excellent at representing procedural knowledge.
d. There is a single central ontology repository where all ontologies are cataloged.

S28-8. In work-centered design a conceptual work product (CWP) simplifies clinical workflow analysis by enabling the analyst to identify activities and resources that are not important to achieving the final goal state.

a. True
b. False
S36: Interactive Panel - How Safe are Users of Consumer Health Informatics?
Thomas Wetter; Mary Czerwinski; George Demiris; Robert Hsiung; Holly B. Jimison

S36-1. Active Consumer Health Informatics...
   a. is always safe because it happens under IRB supervision
   b. faces new risks when moving from research into practice
   c. is an industry where a subscriber of a service should assess his/her risks and a provider cannot be made liable
   d. is well covered through present legislation

S36-2. Big data generated by passive monitoring technologies embedded in people’s homes...
   a. belong to the manufacturers of such technologies
   b. require effective data analytics approaches to add value to such monitoring systems
   c. can only capture existing clinical variables already available in a medical record
   d. do not require informed consent by any of the stakeholders

S36-3. Other community members would need to know the user’s real name to contact the user’s primary care physician.
   a. True
   b. False

S36-4. Machine learning methods to train affective state sensors...(select all that apply)
   a. are normally precise because large amounts of data have been analyzed through mathematical algorithms
   b. can be made precise by reviewing and revising the automatically learned rules
   c. can cause harm because signals of stress can be a stressor in their own right
   d. require human supervision to correct and continually learn from false judgment
S36-5. Data from automatic affective state sensors ... (select all that apply)
   a. are to the discretion of the owner of the sensor only
   b. can legally be shared among peers
   c. are sufficient to establish psychiatric diagnoses
   d. need privacy/confidentiality protection

S36-6. Elderly citizens wishing to stay independent... (select all that apply)
   a. in a majority are weary of privacy exposure through data that are collected in their homes
   b. in a majority are willing to trade off the benefits of coaching against the loss of privacy
   c. can be safeguarded by unintrusively monitoring their cognitive capabilities
   d. are inadvertently at risk due to alert fatigue

S36-7. For clients of active Consumer Health Informatics services ...
   a. it is sufficient to check their cooperation when the service starts
   b. it is compulsory to check their cooperation at short intervals
   c. low-key methods should be in place that detect decreasing cooperation
   d. it is compulsory to have the family practitioner check their cooperation at short intervals
S41: Papers/Podium Presentations - Disease Prediction
Development, Implementation and Use of Electronic Surveillance for Ventilator-Associated Events (VAE) in Adults
Ervina Resetar; Kathleen M. McMullen; Anthony J. Russo; Joshua A. Doherty; Kathleen Gase; Keith F. Woeltje

S41-1. Because the ventilator-associated event (VAE) definition is very objective, and data were available from the EMR, the electronic surveillance system developed was able to identify all cases of VAE correctly (i.e. sensitivity and specificity for VAE were 100%). Because quantitative microbiology data were not available, probable ventilator associated pneumonia (probable VAP, a strict subset of VAE) could not be reliably identified electronically. If quantitative microbiology results did become available, which of the following statements is true?

a. The sensitivity and specificity for probable VAP would increase
b. The specificity for probable VAP would increase; the sensitivity would decrease
c. The specificity for probable VAP would increase; the sensitivity would be unchanged
d. The sensitivity and specificity for probable VAP would decrease

S41-2. The software for the electronic surveillance system was designed in an iterative process between the development team and the infection preventionists (the “customers”). This represents an example of:

a. the agile development model
b. object-oriented programming
c. the waterfall development model
d. project management

S41: Papers/Podium Presentations - Disease Prediction
Unsupervised Time-Series Clustering for Identifying Uncontrolled Type-2 Diabetic Patients
Patric Prado; Chunhua Weng

S41-3. What was the latent growth curve analysis used for?

a. To group patients as having diabetes which is under control or not under control
b. To group patients into groups that represented overall A1C linear growth trajectories.
c. To group patients into groups that represented overall A1C polynomial growth trajectories.
d. None of the above
S41-4. The results of any EHR analysis must be cautiously interpreted because the data is not just reflective of the true patient state, but of health care processes and models as well.

   a. True
   b. False

S41: Papers/Podium Presentations - Disease Prediction
Predicting Discharge Mortality after Acute Ischemic Stroke Using Balanced Data
King Chung Ho; William Speier; Suzie M. El-Saden; David S. Liebeskind; Jeffery L. Saver; Alex A. Bui; Corey W. Arnold

S41-5. In binary classification, what is(are) the possible way(s) to deal with the imbalanced dataset problem?
   a. over-sampling the minority through simple over-sampling technique
   b. under-sampling the majority through simple under-sampling technique
   c. over-sampling the minority through generating new data points from a distribution, e.g., normal distribution.
   d. none of the above
   e. all of the above

S41-6. When there is a large proportion of missing values in patient records during modeling, what can you do?
   a. Perform imputation methods, e.g., replacement with means
   b. Remove patient with incomplete record
   c. Remove the features which most patients have missing values
   d. None of the above
   e. All of the above
S41: Papers/Podium Presentations - Disease Prediction
Predicting Electrocardiogram and Arterial Blood Pressure Waveforms with Different Echo State Network Architectures
Allan Fong; Ranjeev Mittu; Raj Ratwani; James Reggia

S41-7. Echo state networks are typically computationally faster than recurrent neural networks.
   a. True
   b. False

S41-8. An initialization phase is required for a echo state network.
   a. True
   b. False

S42: Papers/Podium Presentations - Extending Terminologies
Next-Generation Terminology Requirements for Interprofessional Care Planning
Sarah Collins; Kira Tsivkin; Stephanie Klinkenberg-Ramirez; Dina Ishakova; Hari K. Nandigam; Perry L. Mar; Roberto A. Rocha

S42-1. Please select which options below are published standards or frameworks for care planning and care coordination [select all that apply]
   a. CPCA Coordinated Care Specifications
   b. HL7 Care Plan Domain Analysis Model
   c. AHRQ Care Coordination Measurement Framework
   d. ICI’s Care Planning Focus Framework
S42-2. A Coded Terminology is an effective primary approach to Care Coordination within an EHR infrastructure to enable which of the following: [select all that apply]

a. Interoperability
b. Computable Knowledge Sharing
c. Establishing Accountability or Negotiating Responsibility

S42: Papers/Podium Presentations - Extending Terminologies
Crowdsourcing ICD-11 Sanctioning Rules
Vincent Lou; Samson W. Tu; Csongor Nyulas; Tania Tudorache; Robert J. Chalmers; Mark A. Musen

S42-3. What role can a sanctioning rule play in the use of the terminology? A sanctioning rule:

a. Specifies legal combinations of codes and qualifiers in a terminology
b. Tells a coder when to use a code
c. Provides link synonyms to a code
d. Specifies inclusion and exclusions of code

e. None of the above

S42-4: In this presentation, what formalism is used to model the confidence for a particular choice in possible answers to a question?

a. Rules
b. Bayesian network
c. Description logic
d. Frames
e. None of the above
S42: Papers/Podium Presentations - Extending Terminologies
Coverage of Rare Disease Names in Standard Terminologies and Implications for Patients, Providers, and Research
Kin Wah Fung; Rachel Richesson; Olivier Bodenreider

S42-5: Which of the following is true about rare diseases:

a. In the US, rare diseases are defined as conditions that affect less than 200,000 Americans
b. In the EU, rare diseases are defined as conditions with a prevalence of 5 per 10,000 or less
c. According to one estimate, up to 30 million Americans are affected by a rare disease
d. All of the above

S42-6: Using lexical matching with the UMLS, the coverage of rare diseases names is estimated to be:

a. ICD-9-CM 11%, ICD-10-CM 21%, SNOMED CT 44%
b. ICD-9-CM 32%, ICD-10-CM 43%, SNOMED CT 65%
c. ICD-9-CM 40%, ICD-10-CM 72%, SNOMED CT 51%
d. ICD-9-CM 55%, ICD-10-CM 67%, SNOMED CT 89%

S42: Papers/Podium Presentations - Extending Terminologies
Extending the HL7/LOINC Document Ontology Settings of Care
Sripriya Rajamani; Elizabeth Chen; Yan Wang; Genevieve B. Melton

S42-7. What are uses of the HL7/LOINC Clinical Document Ontology document standard?

a. Exchange of clinical documents across care settings/organizations
b. Representation of kind of document being exchanged
c. Ability to represent information on Setting, Role, Subject Matter Domain, Type of Service in a clinical document
d. All of the above
S42-8. What is the limitation of current "Setting" axis in Document Ontology?
   a. Lack of comprehensiveness and some settings not included
   b. Misrepresentation of settings
   c. Too many settings
   d. All of the above

   Kensaku Kawamoto; Marc J. Hadley; Kate Goodrich; Jacob Reider

S51-1. Which of the following aspects of clinical decision support and clinical quality measurement standards represent areas for potential harmonization?
   a. Data model
   b. Logical expression
   c. Meta-data
   d. All of the above

S51-2. What are the primary source data models being harmonized into the Quality Improvement and Clinical Knowledge (QUICK) model?
   a. Continuity of Care Document (CCD) and Federal Health Information Model (FHIM)
   b. Virtual Medical Record (vMR) and Quality Data Model (QDM)
   c. CCD and QDM
   d. FHIM and vMR
S51-3. What is the primary motivation behind the CQF initiative?

a. Reduce implementation burden by harmonizing standards for clinical decision support and clinical quality measurement

b. Develop a comprehensive library of clinical decision support resources

c. Develop a comprehensive library of clinical quality measurement resources

S51-4. The CQF effort uses FHIR directly as the common logical model.

a. True

b. False

S51-5. What types of clinical decision support resources are included within the scope of the CQF initiative?

a. Event-condition-action rules

b. Documentation templates

c. Order sets

d. Decision support services

e. All of the above

S51-6. What are some of the design goals of the QUICK data model?

a. Align with FHIR

b. Harmonize vMR and QDM data models

c. Facilitate logical computation

d. All of the above
S51-7. What are some potential types of inferences which can be provided by a decision support service?

a. Immunization forecasting
b. Guidance on appropriateness of radiological exams given a clinical context
c. Chronic disease management recommendations
d. All of the above

S60: Panel - HIE Enablers: A Crucial Need for Care Coordination Communication Among Long-Term and Post-Acute Care Front Line Nursing and Other Staff

Jennie Harvell; Gregory L. Alexander; Colene Byrne; Michelle L. Dougherty

S60-1: Which of the following are current initiatives and strategies that are advancing health information exchange (HIE) in LTPAC settings?

a. Delivery models and payment reform under Affordable Care Act (e.g. patient-centered medical homes (PCMHs), accountable care organizations (ACOs))
b. Medicare Payment Policies (e.g., hospital payment, physician payment for care coordination)
c. Federal and other initiatives promoting advancement of health IT (e.g., meaningful use of EHRs, ONC Beacon Communities)
d. Health IT standards and interoperability initiatives (e.g., standards for health information exchange)
e. All of the above
S60-2: How would you describe the state of the LTPAC industry’s participation in interoperable HIE?

a. High level of participation, clear benefits, few major barriers
b. Moderate participation, some demonstrated benefits, key barriers have or are being addressed
c. Low participation, benefits not clear or widely understood, significant barriers

S60-3: How do LTPAC providers currently exchange health information (access and/or disclose) with physicians and hospitals?

a. In person
b. Phone/Fax and Text Messages
c. HIE Organization
d. Direct access to EHR system
e. All of the above

S60-4. Meaningful use incentives and requirements are driving some providers (e.g. hospitals, physician practices) to seek out LTPAC providers to exchange health information.

a. True
b. False

S60-5. Which of following are benefits of developing use cases for HIE involving LTPAC?

a. Develop staff training on HIE use
b. Compare workflow to support HIE implementation across affiliated and unaffiliated organizations
c. Identify optimization points for HIE use
d. Identify potential care coordination and transition efficiencies
e. Develop a HIE deployment budget
f. a-d are all benefits of developing use cases
g. All of the above are benefits of developing use cases
S61: Panel - Imaginary and real costs of implementing HIT
Jos Aarts; Mark Dente; Andrea Gelzer; Ross Koppel; Catherine K. Craven

S61-1: Population health management systems differ from electronic health records by relying on which of the following components:

a. Provide real-time alerts
b. Support medication reconciliation
c. Leverage large data sets
d. Support health information exchanges

S61-2: Health plan experience with health information exchanges (HIEs) suggest they are most effective when they:

a. Take a “build it and they will come”
b. Leverage automation of existing processes in pursuit of a compelling use case
c. Focus solely on Meaningful Use as an incentive
d. Meet the needs of a single stakeholder

S61-3. Why is calculating the return on an HIT investment so complex?

a. The cost of the software is so expensive
b. It involves multiple clinicians, who have different pay schedules
c. Cost of implementation is spread across many departments, people and divisions, and it is often unknown
d. Hospital bookkeeping is often dependent on unknown payers and reimbursement formulae
e. The cost of the software must include yearly maintenance fees.
S61-4. HIT markets differ from open competitive markets in the following ways:

a. They don’t differ: providers buy systems based on reviews and install them based on needs.

b. HIT markets are “captured” in the sense that providers face penalties and can gain incentives and subsidies for not buying/buying the HIT products.

c. They differ because clinicians and hospital IT leaders are far more informed about options than are general customers of electronics.

d. Don’t differ: Many industries face regulations but compete on the basis of quality or price, just like HIT.

e. They differ from many regulated industries because providers, academics and HIT vendors contributed equally to Meaningful Use policy and HITECH regulations. In contrast, many other industries have accomplished regulatory capture, whereby the industry determines the policy for its own benefit.

S61-5. What are the benefits and limitations of implementation cost models for HIT?

a. A cost model allows for a back-of-the-envelope calculation of HIT implementation costs, but is of limited value because of the complexity of HIT implementation and its associated cost elements.

b. A cost model is an ideal instrument for boardroom discussions about the costs of contracting vendors, but of limited use because of the inherent reduction of reality of models.

c. A cost model helps clinicians and executives to identify not only explicit costs of software and hardware purchase, implementation and maintenance but also the hidden costs of impacting organization and people. Its limitation lies in the fact that the latter costs remain hard to quantify.

d. A cost model helps clinicians and executives to identify not only explicit costs of software and hardware purchase, implementation and maintenance but also the hidden costs of impacting organization and people. Its limitation lies in the fact that cost elements that are not in the contract are hard to identify.
S61-6. How should a research agenda of HIT costing look like for the next five years?

a. A research agenda should focus on identifying and quantifying non-trivial cost element of HIT implementation.

b. A research agenda should focus on cost-effectiveness studies of HIT as an intervention to improve patient outcomes.

c. A research agenda should focus on an early detection of health information technologies that significantly will improve patient outcomes.

d. All of the above

S68: Papers/Podium Demonstrations - Health Screening and Surveillance

Syndromic surveillance in an ICD-10 world

Achala U. Jayatilleke; Jeffrey M. Kriseman; Lisa Bastin; Umed Ajani; Peter Hicks

S68-1. Compared to ICD-9-CM codes, ICD-10-CM codes...

a. are less specific

b. enable the reporting of laterality

c. are more or less equal in the total number of unique codes

d. are not significantly different

S68-2: Which data source can be used for syndromic surveillance?

a. Data from Pharmacies

b. School class attendance data

c. Ambulance call data

d. Laboratory data

e. All of the above
S68: Papers/Podium Demonstrations - Health Screening and Surveillance
Examining the Use, Contents, and Quality of Free-Text Tobacco Use Documentation in the Electronic Health Record
Elizabeth Chen; Elizabeth W. Carter; Indra N. Sarkar; Tamara J. Winden; Genevieve B. Melton

S68-3. How can the EHR be used to support tobacco use assessment and cessation?

a. Enable users to record, update, and view smoking status of a patient
b. Provide alerts or reminders to document smoking status and assess willingness to quit
c. Offer pre-defined order sets of tobacco cessation interventions
d. All of the above

S68-4. What approaches can be used to improve the use, contents, and quality of documentation in the EHR?

a. Develop documentation tools to support only structured data entry
b. Encourage primarily free-text documentation
c. Enhance documentation tools to provide an optimal balance of structured and free-text documentation
d. None of the above

S68: Papers/Podium Demonstrations - Health Screening and Surveillance
Integrating Public Data Sets for Analysis of Maternal Airborne Environmental Exposures and Stillbirth
Eric S. Hall; Natalia Connolly; David E. Jones; Emily A. DeFranco

S68-5. What data elements allow for linkage between vital records and EPA air quality data?

a. A unique medical record number provided at the maternity hospital is also contained in the EPA database for each pregnant mother.
b. Coordinates of air monitoring stations may be matched by proximity to geocoded residential addresses of mothers at the time of birth.
c. The EPA air quality database maintains a unique identifier for every pregnant woman representing her individual day-to-day environmental exposures.
d. The American Community Survey measures neighborhood socioeconomics and demographics annually.
S68-6. Which of the following has been a factor limiting previous analyses of diseases related to pollutant exposures?

   a. A. Lack of spatial granularity  
   b. Lack of temporal granularity  
   c. Confounding risk factors  
   d. All of the above

S71: Panel - There is Nothing as Practical as a Good Theory: Building the PCORNet Clinical Data Research Network  
Charles Borromeo; Bari Dzomba; Mark Weiner; Harold Lehmann

S71-1. Big Data is defined as "high volume, velocity and/or variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation" (Gartner, 2014). Which of the following would be part of the optimal plan to get the best value out of EHR big data for a collaborative effort such as the PCORI CDRN?

   a. Conduct a comprehensive review all of the EHR data for inconsistencies and hire a team of data analysts to clean up the data  
   b. Perform an internal data profiling exercise to determine the best approach for data re-use  
   c. Send out an RFP for a data warehouse vendor and implement a project for an Enterprise Data Warehouse Solution  
   d. Collect the data that is needed for the collaborative effort in a separate system outside of the EHR

S71-2. The use of SHRINE across the PaTH CDRN partners ensures semantic interoperability of the queries.

   a. True  
   b. False
S71-3. In the PaTH project, which of the following is true regarding the Requirements and the Specifications for the Common Data Elements

a. Requirements don’t provide details
b. The Requirements takes the perspective of the domain, while the Specifications focus on the database
c. Both include the codes used for the data elements and the formulas for calculation
d. The Requirements is database agnostic, while the Specifications specifies the target technology

S71-4. Sharing of information across the PaTH network is facilitated by Requirements and Specifications that mandate that

a. All institutions share the same EHR technology
b. All institutions share the same i2b2 schema
c. All institutions share the same underlying relational database technology
d. All institutions share the same IRB

S71-5. Which of the following is true of the database architecture used by the PaTH CDRN?

a. Source data is extracted, transformed, and loaded on a regular basis
b. ICD 10 diagnostic observations will be stored in a distinct table from older ICD9 observations
c. Queries can come from any investigator in the country
d. The database management system is required to be the same across all participants.
S71-6. Which of the following is true about LOINC codes?

a. Test results associated with the same LOINC code have the same units
b. Test associated with the same LOINC code have the same reference ranges for results

c. Tests for common chemistries (e.g., sodium, chloride, bicarbonate, BUN, creatinine, glucose) having the same LOINC code have the same specimen source

d. A and C only

S72: Interactive Panel - Patient Health Records (PHRs), Patient Access to their Records/Medical Information: Issues and Challenges

Catherine K. Craven; Joseph Kannry; Jessica S. Ancker; Paul R. DeMuro; Carolyn Petersen

S72-1: What’s the primary difference between a tethered and an untethered patient health record (PHR)?

a. Hosted by site(s) of care and integrated with EHR
b. Hosted by third party and not integrated with EHR
c. Whether or not access to PHR is wireless or wired
d. View, download, and transmits using DIRECT protocol

S72-2: Which of the following do patients most want to do using their PHR?

a. Ability to review and pay bills
b. Review upcoming appointments with providers
c. Review laboratory test results
d. View, download, and transmit

S72-3: “The evidence that electronic patient portals/PHRs improve health outcomes is strong.”

a. True
b. False
**S72-4:** “Low adoption rates present a barrier to demonstrating the effectiveness of electronic patient portals/PHRs.”

a. True  
b. False

**S72-5:** What can a patient access, view, copy, and amend in his or her medical record?

a. Psychotherapy notes  
b. Protected health information  
c. Information arising outside the physician patient relationship  
d. All of the above

**S72-6:** How might components of an EHR provided to others be monitored and/or tracked?

a. By access controls  
b. By audit controls  
c. By integrity controls  
d. By authentication controls

**S72-7:** What are patient challenges associated with patient portal use?

a. Technology problems, such as difficulty logging in  
b. Problems reading and/or understanding the information provided  
c. Negative patient views about the use of patient portals in health care, e.g., “I shouldn’t have to retrieve my lab results; they should send them to me.”  
d. Unmet expectations, e.g., lack of expected information  
e. All of the above
**S72-8: What are patient expectations regarding patient engagement efforts?**

a. My provider(s) will give me more of a voice in decisions about my care.
b. I will have more time during appointments to spend with my care provider.
c. Providers will be more willing to prescribe drugs that I request.
d. A and B
e. A and C
f. B and C

**S82: Didactic Panel - Allergies and Intolerances – Standards for Interoperability**

*Elaine Ayres; Russell Leftwich; Lisa R. Nelson*

**S82-1. Which of the following template patterns is not part of the representation for an Allergy or Intolerance in Consolidated CDA?**

a. Allergy Problem Concern
b. Allergy – Intolerance Observation
c. Criticality Observation
d. Reaction Observation
e. Adverse Event Observation
f. Severity Observation
g. Medication Activity
h. Procedure Activity Procedure

**S82-2. How do the value sets used to communicate allergy-intolerance information in C-CDA and a value set used to communicate allergy-intolerance information in FHIR compare?**

a. The value set used in FHIR profiles and C-CDA templates are exactly the same.
b. The value sets used in FHIR profiles include concepts for exceptional values like “unknown,” “no information” and “other,” and the value sets in C-CDA templates do not. Otherwise they are exactly the same.
c. The value sets used in FHIR profiles included totally different concepts from the value sets used in C-CDA templates.
S82-3. What terminologies are used to represent food substances and products related to allergies and intolerances?

   a. SNOMED-CT
   b. UNII Codes
   c. Langual
   d. All of the above

S82-4. What is the difference between severity and criticality?

   a. Severity and criticality are synonyms for the same concept
   b. Severity applies to the adverse reaction and criticality applies to the condition of allergy or intolerance
   c. Criticality applies to the adverse reaction and severity applies to the condition of allergy or intolerance
   d. Severity is the key concept and criticality is optional for describing a reaction.

S82-5. What standard terminology is used to represent drugs on an allergy and intolerance list?

   a. RxNorm
   b. SNOMED-CT
   c. UNII codes
   d. LOINC

S82-6. Meaningful Use (Stage 1) states that an EHR must maintain an active medication allergy list. The definition of this requirement states that an active medication allergy list is a list of medication to which a given patient has known allergies. What other types of substances can be represented in most EHR systems?

   a. Food
   b. Devices
   c. Biologics
   d. Environmental agents
   e. All of the above
S86: Papers/Podium Presentations - Early Detection - Better Outcomes
Automated Detection of Early Physiological Deterioration in Hospitalized Patients
R. Scott Evans; Kathryn G. Kuttler; Kathy J. Simpson; Stephen Howe; Peter F. Crossno; Kyle V. Johnson; Misty N. Schreiner; Jim Lloyd; William H. Tettelbach; Roger K. Kedington; Alden B. Tanner; Chelbi Wilde; Terry P. Clemmer

S86-1. Physiologic deterioration is expected by all patients and thus should not be of additional concern.
   a. True
   b. False

S86-2: Which of the following features of an automated detection system are reported to support nursing care?
   a. Graphical alerts containing patient trending information
   b. An alert management system set to default values
   c. Observation technology staffed by nurses instructed to learn on the job

S86: Papers/Podium Presentations - Early Detection to Improve Outcomes
COPD Hospitalization Risk Increased with Distinct Patterns of Multiple Systems Comorbidities Unveiled by Network Modeling
Young Ji Lee; Andrew D. Boyd; Jianrong Li; Vincent R. Gardeux; Colleen Kenost; Donald R. Saner; Haiquan Li; Ivo L. Abraham; Jerry A. Krishnan; Yves A. Lussier

S86-3. How does network analysis of co-morbidities simplify the identification of key determinants in risk of re-hospitalization?
   a. The clusters of physicians who work on the co-morbidities together
   b. The clinically relevant clusters of co-morbidities group together
   c. The group of patients who had same co-morbidities
   d. None of the above
S86-4. What specific statistical method would be appropriate to predict re-hospitalization using the comorbidity data?

- a. Odds Ratio
- b. Relative risk
- c. Prevalence
- d. Incidence

S86: Papers/Podium Presentations - Early Detection to Improve Outcomes
Refining a Patient Risk Assessment using Adjusted Clinical Groups (ACG) with Outpatient Lab Results
Kimberly Gudzune; Klaus Lemke; Hadi Kharrazi; Jonathan Weiner

S86-5: What type of clinical data has been shown to potentially improve diagnosis-based patient risk assessment?

- a. Inpatient laboratory data
- b. Outpatient laboratory data
- c. Both inpatient and outpatient laboratory data
- d. Neither inpatient and outpatient laboratory data

S86-6: While laboratory data can be used clinically to diagnose, stage and assess control status of disease, these measures can explain variation in the following:

- a. Concurrent costs
- b. Concurrent hospitalizations
- c. Retrospective costs
- d. Retrospective hospitalizations
- e. Both concurrent costs and hospitalizations
- f. Both retrospective costs and hospitalizations
S86: Papers/Podium Presentations - Early Detection to Improve Outcomes
Development and Implementation of a Real-Time 30-Day Readmission Predictive Model
Patrick R. Cronin; Jeffrey Greenwald; Gwen Crevensten; Henry Chueh; Adrian Zai

S86-7. Why is developing a predictive model for high-risk patients important?

   a. Developing high risk models is interesting
   b. Major payers are beginning to penalize hospitals for readmission rates that exceed certain thresholds.
   c. Hospitals want to increase length of stay and they feel more justified keeping high risk patients.
   d. It is less expensive to use predictive models than clinical judgment

S86-8. What is different about developing a predictive model retrospectively when the goal is to implement in real-time?

   a. Data must be limited to what is available in real-time
   b. Complexity should be limited to capabilities of the implementation team
   c. Physicians using the model should feel it is clinically relevant
   d. Model outcomes should be measured periodically to ensure implementation is correct
   e. All of the above
S96: Papers/Podium Presentations - Drug Alerts
Alerts for Low Creatinine Clearance: Design Strategies to Reduce Prescribing Errors
Brittany Melton; Alan J. Zillich; Michael Weiner; M. Sue McManus; Jeffery R. Spina; Alissa Russ

S96-1: What alert features may improve appropriate renal-based medication prescribing?
   a. Presenting after medication selection
   b. Providing risk information
   c. Tabular format
   d. All of the above

S96-2: “Presenting a creatinine clearance alert prior to any medication prescribing reduces errors.”
   a. True
   b. False

S96: Papers/Podium Presentations - Drug Alerts
An Algorithm Using Twelve Properties of Antibiotics to Find the Recommended Antibiotics, as in CPGs
Rosy Tsopra; Alain Venot; Catherine Duclos

S96: Papers/Podium Presentations - Drug Alerts
A visual analytics antibiogram dashboard as part of a comprehensive approach to perioperative antibiotic administration
Luis Ahumada; Allan F. Simpao; Jorge A. Galvez; Mohamed A. Rehman; Jeffrey S. Gerber; John Martin; Beatriz Larru; Kaede Ota; Talene A. Metjian; Bimal Desai

S96-3. Under which circumstances is tabular data more likely effective for data communication when compared to charts/graphs?
   a. When trying to convey relationships between its parts (dimensions, facts) for large data sets
   b. When displaying the Change/Rate using more than one variable over time
   c. Presenting numerous rows/record/vector of quantitative data so the reader can discern exact numbers.
   d. Summarizing large amounts of data concisely thus the reader could convey new information.
S96-4. Which of the following statements regarding categorical and quantitative data is true?

a. Categorical data is another term for quantitative data.
b. Quantitative data belongs to the nominal class of measurements.
c. Methods used to analyze quantitative data differ from the methods used for categorical data.
d. Only descriptive and graphical statistical methods are appropriate for quantitative data.

S96: Papers/Podium Presentations - Drug Alerts
Earlier Switching from Intravenous to Oral Antibiotics Due to eReminders
Patrick E. Beeler; Dr. Stefan P. Kuster; Emmanuel Eschmann; Rainer Weber; Jürg Blaser

S96-5: Which important advantages are associated with an early IV-PO switch of antimicrobial prescriptions? (Check all that apply)

a. Lower risk of catheter-associated infections.
b. Reduced nursing workload.
c. Decreased direct costs.
d. Decreased indirect costs.

e. The algorithm should not necessarily check whether the antibiotic is administered to a patient receiving parenteral nutrition.

S96-6: How can the specificity of electronic reminders fostering early IV-PO switches be increased?

a. The algorithm should display reminders ASAP after onset of the intravenous (IV) administration of an antibiotic.
b. The algorithm should check whether the administration of the IV antibiotic is scheduled to stop soon.
c. The algorithm should suppress electronic reminders if the patient is afebrile.
S99: Papers/Podium Presentations - Consumer Generated Data

SOEMPI: A Secure Open Enterprise Master Patient Index Software Toolkit for Private Record Linkage
Csaba Toth; Elizabeth A. Durham; Murat Kantarcioglu; Yuan Xue; Bradley Malin

S99-1: What is the lifecycle of patient record linkage?

a. Encoding -> Blocking -> Comparison -> Linkage
b. Encoding -> Comparison -> Blocking -> Linkage
c. Linkage -> Comparison -> Encoding -> Blocking
d. Blocking -> Encoding -> Linkage -> Comparison

S99-2: Why is privacy preserving record linkage not practiced on a large scale?

a. The HIPAA Privacy Rule makes it illegal.
b. There is a lack of software for supporting the process.
c. There are no third parties who oversee the process.
d. There is a lack of trust in the linked records.

S99: Papers/Podium Presentations - Consumer Generated Data
A smart suite for the evaluation of data generated by a smartphone application for nutritional triage in oncological outpatients
Jeroen de Bruin; Christian Schuh; Eva Luger; Michaela Gall; Karin Schindler

S99-3: How can quality control of user-generated data best be checked, in order not to contaminate routine-data when integrated? (Select all that apply)

a. By manually reviewing samples of data for correctness
b. By using advanced statistics and goodness-of-fit to check data
c. By contacting patients again to confirm their initial responses
d. By outsourcing the data to a data research organization for review
S99-4: Given the concerns people have about personal privacy, how can one overcome this hurdle and ensure patients that their personally generated data are safe?

a. Convince them by telling them their medical data is also safe and private, and that their mobile phone or medical device is a simple extension
b. Create a framework for safe data handling and tell them about it

c. Give patients control over their data: Educate them, give them informed consent, and build in mechanisms to make patients feel that they are in control of the data, and that giving the data is their choice and not an automatism

S99: Papers/Podium Presentations - Consumer Generated Data
Prevalence of Security Concerns in Communication and Storage in Android mHealth Apps
Dongjing He; Muhammad Naveed; Carl A. Gunter; Klara Nahrstedt

S99-5: What are some consequences of potential data breaches of mHealth apps?

a. Profiling
b. Medical identity theft
c. Healthcare decision-making errors
d. Insurance fraud
e. All of the above

S99-6. What are valid arguments for FDA regulation of mHealth apps? [Select all that apply.]

a. The FDA should regulate mobile apps that pose a risk to patient safety should they be used incorrectly
b. The FDA has a public health responsibility to oversee the safety and effectiveness of mHealth apps
c. Regulation could provide incentives to industry to collaborate with the FDA to develop best practices
d. FDA regulations will facilitate the innovation of mHealth apps
S99: Papers/Podium Presentations - Consumer Generated Data
Mining Consumer Health Vocabulary from Community-Generated Text
V.G. Vinod Vydiswaran; Qiaozhu Mei; David A. Hanauer; Kai Zheng

S99-7: Which of the following community-generated resources did the authors use to mine (extract and label) professional and consumer terms for the consumer health vocabulary?

a. A. Posts and comments on online health forums
b. Abstracts of peer-reviewed articles from scientific journals
c. Articles contributed on Wikipedia by volunteers
d. Blog and microblog (Twitter) posts
e. All of the above
f. Only A, B, and C

S99-8: What approaches did the authors use to label a word as a professional or a consumer term?

a. They looked the terms up in a knowledge resource such as a dictionary or ontology.
b. They considered the author of the text from which the term was extracted
c. They compared the frequency of occurrence of the terms in different text corpora.
d. All of the above