The Laboratory's Perspective on the Development and Use of Electronic Health Records

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Why is Lab Important?

- Supplies the largest volume of *clinically actionable* data to the EHR
  - And growing – molecular/precision medicine
- Lab needs data *from* the EHR
- Poor integration of lab and EHR threatens both cost and quality of care
  - Defeats purpose of the EHR – increased productivity with better quality/patient safety

Problem Areas

- Lab/pathology results display
- Order entry
- Clinical decision support
- Structured data
- Accreditation impact
- EHR certification

Root Causes

- Pathologists and other laboratorians are usually not allowed to participate in the design, selection, implementation, and use of EHR's.
- Functional inadequacies of vendor products
  - Legacy technologies
  - Inadequate workflow design
- Poor interoperability
  - Vendor lock, standards issues, interface costs

Causes of problems (cont.)

- Insufficient external standards and requirements for EHR's and lab data
  - Semantic standards for best practices, such as data display/formatting
  - Additional technical standards

Lab/Pathology Results Display

- Failure to follow best practices for display affects medical interpretation and patient safety
  - Poor formatting
  - Improper display of reference ranges, out-of range alerts
  - Interface problems (e.g. PDF pathology reports, mangled HL7-message content)
  - Identity of performing lab
  - Comments/narrative statements
  - Corrections/amendments
  - Redundant display of results

Order Entry

- Challenges for coding, e.g. LOINC
- Personalized order sets/"profiles"
- Functionality
  - Workflow, order fulfillment, appropriateness
  - Prevent redundant testing (e.g., germline genetic tests)
- Information needed or required at the point of order entry
  - Last menstrual period (required for Pap tests by CLIA)

Clinical Decision Support

- For ordering physicians
- For pathologists and laboratorians
- Appropriateness of test orders
- Alerts, notices for error prevention
- Not well developed for Lab
- Require access to structured clinical and lab data to apply rules

Structured Data

- Definition?
- Functionally useful structure
- Do existing technical standards support?
- Anatomic versus clinical lab data
- Not all clinical lab results are easy to structure

Accreditation Impact

- Improper handling or display of lab results may adversely affect lab and facility accreditation by CLIA, JC, CAP, states, etc.
- Lab may not be empowered to ensure proper display due in an institution
- Vendor may not provide functionality required
- Feasibility – how many downstream interfaces can a lab be responsible for?

EHR Certification

- Requirements for EHR's are minimal (fall below current practices in LIS)

Cost and Care Quality

- National goal of incentivizing the use of EHR's is to improve productivity and quality
- Impact of poor coordination of data, best practices already existing in laboratory medicine, and participation by qualified laboratorians could actually result in increased cost, lower quality, and decreased patient safety