

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