Retrieving Form Data from Epic Using IHE RFD Standard Enhancement

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3 Integrated hospitals using Epic 2015 (16,513 employees)

- Duke University Hospital: 957 beds
- Duke Raleigh Hospital: 186 beds
- Duke Regional Hospital: 369 beds

• Duke School of Medicine Ranked 8th 2015
  - 1462 investigators, 400+ coordinators in site based research
  - ~2100 open enrolling IRB studies during FY15
  - ~300 NEW clinical trial studies/year open
  - Duke’s REDCap approximately 4000 projects and 4000 users
"The Swivel Chair"
A Play in One Act
Disruptive Innovators
eSource Wish list

1- Facilitates Data Provenance
   Specification dictates archiving/auditing –
   Archive Viewer Web Application

2- Improves Data Quality
   Minimize transcription errors

3- Time: Efficient use of CRC’s effort
   Provides the opportunity to change workflow process

4- Security
   Secure, single-point registration of study participants data into EDC database from Epic
“In every industry, and healthcare is no exception, standards are the key to reuse, trust and interoperability, leading to cost reduction and quality improvement.”

Tim Benson

Principles of Health Interoperability HL7 and SNOMED
Integrating the Healthcare Enterprise® (IHE)

“IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information”
Retrieve Form for Data Capture provides a method for gathering data within a user’s current application to meet the requirements of an external system. RFD supports the retrieval of forms from a form source, display and completion of a form, and return of instance data from the display application to the source application.

http://wiki.ihe.net/index.php/Retrieve_Form_for_Data_Capture
RFD – What is it?

- Integration profile co-developed by Integrating the Healthcare Enterprise (IHE) and CDISC
  - A standard for research data collection from EHRs
  - Allows EHR platform to display a data collection form sourced from an EDC platform
  - Pre-populates form with data sourced from Continuity of Care Document (CCD)
    - CCD contains snapshot of patient chart (XML format)
      - Wrapper includes context – study, patient, form, etc...
- EHR platform and EDC platform must speak RFD
  - Software communications contract
  - SOAP messages over HTTP
Benefits of using the RFD Standard:

• ability to fill in form data within a user's current application
• standardized interaction for filling form data
• Mechanism to amend the data that was collected
• Normative Standard
• Most EHRs RFD enabled
• Epic is RFD “capable”

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RFD Architecture
Both EHR and EDC must be RFD enabled
REDCap – Consortium Partners
Observational Comparative Effectiveness Study

Evaluation of the effect of RFD functionality on completion of Clinical Research data collection

- Primary study – PI initiated registry
- Subjects- Duke Study team
- Real patient data
- Live work environment
- Observed by Industrial engineers augmented by software
Observational Comparative Effectiveness Study
Evaluation of the effect of RFD functionality on completion of Clinical Research data collection

Preliminary Findings

↓ 37 % Total time

↓ 1 FTE

↓ 65 % keystrokes
Observational Comparative Effectiveness Study
Evaluation of the effect of RFD functionality on completion of Clinical Research data collection

Results: Data Quality

Non-eSource

9% data error
On critical data elements:
• Patient’s name
• Medical Record Number

eSource

% data error for RFD sourced
What does this mean?

- Concurrent data collection
- Remote sponsor monitoring
- Flexible use of EDC
Conclusion

Application of eSource principles = Demonstrable Savings in time and effort with strong data quality
Open Source
RFD: Retrieve Form for Data Capture Open Source Software

Open source software for making electronic health data interoperable between Epic & REDCap

Download on GitHub

This open-source software transfers electronic health data across platforms, reduces data collection time, and prevents manual transcription errors, allowing researchers and their teams to conduct more efficient and high-impact clinical research.

What is it?
Retrieve Form for Data Capture (RFD) is a tool that standardizes research data collection from Electronic Health Records (EHRs). The software works as a bridge between Epic and REDcap, allowing researchers to quickly and accurately transfer EHR data and eliminate transcription errors.

Why use it?

https://www.ctsi.duke.edu/rfd
Open Source
For more information:

eSource @duke.edu
Next steps

The RFD use case lives on, but technology needs to evolve...

- FHIR (Fast Healthcare Interoperability Resources)
- Lightweight access to HL7-defined data models
  - Developer friendly RESTful API
  - Patient chart resources represented in JSON or XML format – Patient, Medications, Conditions
- Epic FHIR implementation
- Duke has experience with FHIR
- mRFD or RFD 2.0
Thank you!

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