Special Lecture | JCMI/APAMI Special Keynote Session | HL7 FHIR
[JCMI/APAMI Special Keynote Session 1] HL7 FHIR
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[SKS-1-02] Tools for Validating, Entering and Retrieving FHIR Clinical Data from the Lister Hill Center FHIR Brigade

Paul Lynch[1], Ye Wang[1], Ajay Kanduru[1], Xiaocheng Luan[1], Yury Sedinkin[1], Liz Amos[1], *Clement J. McDonald[1]
（1. Lister Hill Center/National Library of Medicine (NLM), National Institutes of Health (NIH), USA , 2. Lister Hill National Center for Biomedical Communications, National Library of Medicine, USA）

Keywords: Fast Health Interoperability Resources (FHIR) , National Library of Medicine (NLM), tools for FHIR based medical record systems

Fast Health Interoperability Resources (FHIR) is a web-based, easy to implement, standard for exchanging healthcare information electronically. Apple, Google, Microsoft, large health IT companies, federal agencies (Office of the National Coordinator, Centers for Medicare and Medicaid Services, Veterans Administration) and Big Pharma have embraced it, as has NIH (NIH, NOT-OD-19-122). NIH sees it a possible pathway to their long term goal for reusable and interoperable research data (NIH, Data Sharing Guidance 2003);
NLM has a longstanding interest in the support and development of clinical terminology and message standards. At NLM’ s Lister Hill Center, we have developed a number of open source support tools for FHIR based medical record systems.
This session will provide a quick overview with links to all our tools but dedicate most of the time to our implementation of FHIR Questionnaire/SDC, the UCUM validator, and as time permit, the HGVS validator.

Tools for Validating, Entering and Retrieving FHIR Clinical Data from the Lister Hill Center FHIR Brigade

Paul Lynch[a], Ye Wang[a], Ajay Kanduru[a], Xiaocheng Luan[a], Yury Sedinkin[a], Liz Amos[a] and **Clement J. McDonald[a]**

[a] *Lister Hill Center/National Library of Medicine (NLM), National Institutes of Health (NIH), Bethesda, Maryland, USA*

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NLM has a longstanding interest in the support and development of clinical terminology and message standards. At NLM's Lister Hill Center, we have developed a number of open source support tools for FHIR based medical record systems. Two of these tools directly implement FHIR specifications. 1) Questionnaire/Structured Data Capture (SDC) implements FHIR's definition of a data capture form that includes sophisticated data entry capabilities such as skip logic, nesting, field pre-population with data from a FHIR medical record, calculations, etc. This package includes tools for rendering FHIR form descriptions into live web forms, for building and revising, storing and retrieving them from/to a FHIR server. A demo of the SDC Questionnaire App is available here. 2) We have also implemented a JavaScript version of FHIRPath, a core component of FHIR for navigating and extracting data from FHIR's tree structure and for executing logic and calculation across FHIR data types. We have also the Research Data Finder for pulling selected data from FHIR medical record servers. It is available but still under construction.

We have also developed auxiliary capabilities for checking medical record code systems including:

- Our popular UCUM Units of Measure Validator/Converter. UCUM is the HL7, DICOM and IEEE and ISO 11240:2012 standard for units of measure. This function validates UCUM strings in batch mode or on-the-fly as a web service. It also will convert values represented in one UCUM code to values in any other commensurate unit of measure
- LOINC validator to check whether the LOINC mappings for the records in a given CSV file are appropriate.
- HGVS Validator will check the syntax for describing a genetic variant. API available, web-based version is forthcoming.
- The Clinical Table Search Service provides autocomplete access to 25 coding systems important to health care and genetics. Our FHIR forms takes advantage of this service but any system can take advantage of them and/or user our software to build an autocomplete service for their own files.

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Address for correspondence

Clement J. McDonald, MD
Lister Hill Center/National Library of Medicine (NLM)
National Institutes of Health (NIH), Bethesda
Maryland, USA
E-mail: clemmcdonald@mail.nih.gov