Using LOINC for vocabulary in HL7 V2 laboratory messages and HL7 CDA documents

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Abstract

This tutorial will provide attendees with a practical approach to developing and deploying clinical Interoperability. The learning objectives. The first part of the tutorial will be delivered as an integrated series of slide-based lectures by all of the tutorial faculty members. This will be followed by a division of attendees into small groups, each of which will apply this process with the assistance of faculty members against a sample clinical objective, putting the didactic material into practice.

Keywords:
Clinical Practice, Interoperability, UMLS terminology, LOINC, Message, HL7, CDA, Documents, FHIR.

Tutorial Description

Medical language is heterogeneous. The interconnection of heterogeneous computer applications in medicine raises the issue of semantic interoperability, going beyond traditional approaches of terminological standardization in basically three aspects. First, the variety of medical vocabularies that currently coexist in different domains is a major barrier for the integration of autonomously developed applications. (1)

Interoperability will be presented as a bridge crossing fragmented information systems in healthcare settings. We will introduce fundamental concepts related to flow of data within and across healthcare organizations. Emphasis will be on real-time data with some coverage of analytics. (2)

Also diseases like Diabetes Mellitus represents a heterogeneous group of metabolic disorders. (3)

The method of storing information is not uniform, it is essential appeal to these standards to interoperate is why clinical terminology is a problem to be addressed. Many health care organizations face the challenge of data interoperability. Standard vocabularies are a means of encoding data for exchange, comparison or aggregation among systems. (4)

Interoperability is the ability of health information to be shared seamlessly across medical devices and systems. Is a cornerstone to improving care coordination and the delivery of healthcare to the automated, connected and coordinated future care we all imagine. (5) The HL7 standard has evolved, currently the FHIR, allows easier clinical interoperability. Most modern programming languages, like C# and Java, in their latest versions are available framework for FHIR. (6)

Tutorial Speakers

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General Organization of the Tutorial Proposal

The first part of the tutorial will be delivered as an integrated series of slide-based lectures by all of the tutorial faculty members. One key objective of the tutorial is to show how a standarized vocabulary like LOINC is necessary and useful for interoperability process, the tutorial supports the use case for HL7 V2.x messages with orders and laboratory results, and HL7 CDA Documents. The tutorial includes real practice with the use of open tools that let to the participant to achieve a theorical and practical learning using LOINC, HL7 messaging and HL7 CDA documents. This will be followed by a division of attendees into small groups, each of which will apply this process with the assistance of faculty members against a sample clinical objective, putting the didactic material into practice. We organized it in the following order:

General Topics: Introduction to interoperability in clinical practice, Introduction to HL7 v2.x messaging standards, Introduction to LOINC ICD9 ICD10 controlled terminologies SNOMED, Introduction to the standards, XML, CDA and FHIR.

• Tutorial Structure and Arguments All participants will be presented with material in electronic format (CD) of the presentations and tutorial content in Spanish and Portuguese, it is required that participants have notebook to see the material.

• Target audience; This would include physicians, nurses, developers of clinical software, and clinical systems architects and designers.

• Specific Educational Goals The learning objectives of this tutorial are: The educational goal is to know how terminologies are necessary for clinical terminologies and know how use interoperability in the clinical field.
Attendees will learn the odds that offer LOINC, HL7 and CDA for interoperability in health systems and now how standard coded terminologies and standard of messages like HL7 are necessary for clinical interoperability

- Expected Attendees: we expect and average of fifteen attendees minimum five maximum twenty
- Languages: Spanish and some translation in Portugues (Portognol)

**LOINC Codes for Documents**

HL7 recommend the use of LOINC codes for CDA documents. The LOINC Document Ontology

The CDA header identified the type of document with a LOINC document.

```xml
<code codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" code="34133-9" displayName="Summarization of Episode Note"/>
```

The schema that is proposed within the LOINC Clinical Document Taxonomy uses the following structure:

- Kind of Document: Characterizes the general structure of the document at a macro level. Document types are differentiated based on the need to define distinct document headers.
- Type of Service: Characterizes the kind of service or activity provided to/for the patient.
- Setting: The establishment of setting within the ontology model is used to establish an initial level of classification of the types of settings where clinical documents are created and used.
- Role: “Role” in the context of the LOINC Document Ontology may also refer to an individual's training or professional level.
- Subject Matter Domain (SMD): Characterizes the subject matter domain of a note.

In the workshop show the LOINC Document Ontology and the use of the LOINC codes in a CDA document.

**References**