Strategies for mapping local labs to CDM laboratory result common measures: ideas from one group in the pSCANNER CDRN
Presentation/discussion Friday, July 31, 2015

Process Template

1. Due Diligence
   1.1. Identify organizational subject matter experts in Laboratory Information Systems and complete business process analysis
   1.2. Document all source systems and lines of stewardship
   1.3. Ask subject matter experts what plans/procedures are in place in each system for mapping to LOINC for Meaningful Use compliance
   1.4. If operational plan is in place to map to LOINC in the next 6m in a source system, do not replicate efforts
   1.5. Retrieve any existing maps that are not in data systems that researchers access and apply these mappings first.
2. Draft Mappings
   2.1. Apply any existing maps and identify gaps
   2.2. Frequency list – create a list of local codes and frequencies (use this for reference and prioritization)
   2.3. Use-case based
      2.3.1. Identify high-priority labs (e.g. PCORNet labs, labs in eCQMs) and apply LOINC mappers guide for those cases
      2.3.2. Review priority labs against highest frequency codes to ensure no missing mappings in highest frequency
      2.3.3. Time permitting, map highest frequency codes
      2.3.4. Alternatives to evaluate
         2.3.4.1. UMLS-based approaches for searching string synonyms
         2.3.4.2. Machine learning (order-code-diagnosis patterns)
3. Verification with SME
   3.1. Review mapped labs – document verified mappings
   3.2. Review priority labs for missed local codes - document verified mappings
4. Publishing - add mapping table to code repository
5. Maintenance – after each refresh, review any newly appearing local codes verify that newly appearing codes are not part of what has been mapped already.

- Utilizing LOINC Mappers' Guide to Top 2000+ list. This document provides explanations of the most common groupings of labs and clinical guidance for suggested mappings.
- Scanned the LOINC Long Common Names to come up with the text strings to search on.
- Given that the ideal text strings will be site-specific, it is best if you can consult with LIS experts about what the tests are called.
- Group plans to do this initial work and then consult with the LIS experts about what they find. It is important to clarify the information system (LIS, EHR, CDW) you are querying when you consult with LIS experts.
- Example: performed text string search on everything from Clarity that had "LDL" in the name.
- Performed pre-querying cleanup on tests that began with “%,” “<,” “>,” etc.
- Also pulled reference unit and whether it was numeric or text.
- Text string search will bring back lab names that don’t really match, so they performed min/max/average results checks to make sure to only include labs that are really the same thing.
- To look for labs that may be missed this way, they looked at the frequencies for all lab components and investigated any with high frequency that did not come up in text string search.
- They are not worried about mapping labs with very small frequencies.
- Group is considering additional checking that could be done by looking at lab tests commonly associated with certain diagnoses, and comparing the frequencies between them.
- The group opted to ignore manually entered labs (they constitute a small percentage of total labs)
- The group noted that in Epic, LOINCs are mapped to the lab components, not the lab results; one component can have different results. For example, ‘hepatitis testing’ has two different reference units, so needs to be mapped to 2 separate LOINCs.
- The group commented that if a LOINC exists in Epic (Clarity) they are using it. Someone else commented that he had come across LOINCs in Epic that are not correct.
- Group sketched out a proposed process for moving forward across their CDRN:
    1. Ask sites if they have any plans to map to LOINC in the near future anyway. If yes, leverage this effort.
    2. Investigate whether there is there a data system capturing LOINCs for inclusion in HL7 messages that could be leveraged.
    3. Determine the source of truth for the mappings and how they will be maintained longitudinally.
- Idea was proposed to keep a running list of search strings used to look for labs and share these with other sites/networks in PCORnet.