

Clinical Information Systems: Discussion Question peer response and compare & contrast

Module 10 – Discussion Responses

1. Respond to both student 1 and student 2's discussion posts. Respectfully encourage analytical and/or synthesize, and/or evaluative type of discussions.
2. Compare and contrast your statement with both student 1 and student 2's discussion posts.

Note: APA formatting required

Module 10 – Discussion Posting

Individually analyze the following statement for accuracy and post your answers.

"National policies in the United States require the use of standard terminology for data exchange between clinical information systems. However, most electronic health record systems continue to use local and idiosyncratic ways of representing clinical observations. To improve mappings between local terms and standard vocabularies, we sought to make existing mappings (wisdom) from healthcare organizations (the Crowd) available to individuals engaged in mapping processes. We developed new functionality to display counts of local terms and organizations that had previously mapped to a given Logical Observation Identifiers Names and Codes (LOINC) code. Further, we enabled users to view the details of those mappings, including local term names and the organizations that create the mappings. Users also would have the capacity to contribute their local mappings to a shared mapping repository".

[Dixon, B. E., Hook, J., & Vreeman, D. J. \(2015\). Learning from the crowd in terminology mapping: The LOINC experience. *Laboratory medicine*, 46\(2\), 168-174. doi: 10.1309/LMWJ730SVKTUBAOJ](#) 

- 1) Do you agree/disagree with the statement?
- 2) Why?
- 3) Anything else you would like to share based on your experience.

Reminder: Formal writing; use APA style; cite your sources.

Student #1 discussion post

Data standards are the principal informatics component necessary for information flow through the national health information infrastructure. With common standards, clinical and patient safety systems can share an integrated information infrastructure whereby data are collected and reused for multiple purposes to meet more efficiently the broad scope of data collection and reporting requirements (Weininger et al.,2017).

Semantic interoperability represents a well-established, consensus-based view from the international health information exchange (HIE) community for shared messaging between health IT systems. The Center for IT Leadership estimates that among various health IT investments, introducing semantic interoperability would produce the greatest economic benefit to the United States health system (Walker et al.,2005). To achieve semantic interoperability, the US health system must adopt and implement consistent clinical messaging and data standards that provide a framework and language for communicating shared meaning (Benson 2016). Standard vocabularies for representing clinical data are now mature and have been internationally adopted. Logical Observation Identifiers Names and Codes (LOINC) provides universal identifiers for laboratory tests and other clinical observations. LOINC has been in development for 20 years and recently published its 53rd release. At present, LOINC has more than 36,000 registered users from 165 countries, and more than 25 countries have officially adopted it as a national standard. Similarly, the Systematized Nomenclature of Medicine–Clinical Terms (SNOMED CT) provides universal identifiers for organisms, substances, diseases, and other findings that may be recorded in the medical record or identified in test results (Dixon et al.,2015).

Most of them available in market are open source. Having defined open source it is expedient to examine open standards. Having an open source implementation of a standard therefore means both that the standard is more likely to be of high quality and that the standard is much more likely to become widely adopted (Reynolds et al.,2011). Mapping local terms to standard vocabularies is necessary to enable semantic interoperability. however, it is complex, time consuming, and often costly. National policies in the United States requiring the use of LOINC not only contribute to this growth but also exert pressure on organizations to provide the mappings quickly because of short timelines (Fraccaro et al.,2015).

References:

Weininger, S., Jaffe, M. B., & Goldman, J. M. (2017). The Need to Apply Medical Device Informatics in Developing Standards for Safe Interoperable Medical Systems. *Anesthesia & Analgesia*, 124(1), 127–135. doi: 10.1213/ane.0000000000001386

Walker, J., Pan, E., Johnston, D., Adler-Milstein, J., Bates, D. W., & Middleton, B. (2005). The Value Of Health Care Information Exchange And Interoperability. *Health Affairs*, 24(Suppl1). doi: 10.1377/hlthaff.w5.10

Benson, T. (2016). Open Source Paradigm: A Synopsis of The Cathedral and the Bazaar for Health and Social Care. *Journal of Innovation in Health Informatics*, 23(2), 488. doi: 10.14236/jhi.v23i2.866\

Dixon, B. E., Hook, J., & Vreeman, D. J. (2015). Learning From the Crowd in Terminology Mapping: The LOINC Experience. *Laboratory Medicine*, 46(2), 168–174. doi: 10.1309/Imwj730svktubaoj

Reynolds, C. J., & Wyatt, J. C. (2011). Open Source, Open Standards, and Health Care Information Systems. *Journal of Medical Internet Research*, 13(1). doi: 10.2196/jmir.1521

Fraccaro, P., Castelerio, M. A., Ainsworth, J., & Buchan, I. (2015). Adoption of Clinical Decision Support in Multimorbidity: A Systematic Review. *JMIR Medical Informatics*, 3(1). doi: 10.2196/medinform.3503

Student #2 discussion post

I think a resource that helps users identify which mapping to select is a great idea. The process of mapping local terms with reference terms is very challenging. However, there are reference codes that are more commonly chosen over others. Therefore, it is beneficial that the resource includes how many times an organization has mapped a local term to a standard term. The resource would also empower users to get more involved in the process of mapping and become more confident with their selections (Dixon, Hook, & Vreeman, 2015).

I also believe creating a shared repository is a great way for users to contribute to the policies that require using standard terminology for health information exchanges. It will also be a great resource for users who want to map their local terms but need some guidance (Dixon, Hook, & Vreeman, 2015). This open-source approach allows anyone to contribute, which leads to greater innovation and lower consumer costs (Reynolds, Carl, & Wyatt, 2011). More people accessing the platform also means that more feedback can be obtained at a faster rate compared to a closed-source model (Benson, 2016).

The repository mentioned above could also be used to support interoperability among technological resources in healthcare. For example, CDS systems need to be able to minimize risks of faulty examinations or treatment decisions. Therefore, it is important that the mapping process is accurate so that issues such as duplicated orders, medication errors, and inadvertent reactions are avoided (Fraccaro, Casteleiro, Ainsworth, & Buchan, 2015). Medical devices also require interoperability, which is aided by standard terminology (Weininger, Jaffe, & Goldman, 2017). Crowd-sourced mapping would aid both of these technologies because it would provide a resource for users to learn and adopt the interoperability standards that promote the best chance of successful operation and patient care.

References

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- Dixon, B. E., Hook, J., & Vreeman, D. J. (2015). Learning from the crowd in terminology mapping: The LOINC experience. *Laboratory Medicine*, 46(2), 168-174. doi: 10.1309/LMWJ730SVKTUBAOJ
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My discussion post

Regarding the proclamations of the statement, I agree. However, I criticize the speculations with this to say. Mapping the local terms to standard vocabularies is intricate. Also, it depends on the demanding foundation (Lin, Vreeman, McDonald, & Huff, 2011). Even practitioners and research facility workforce with a reputable understanding of the tests at their organization regularly come up short on the specific information required to map the entire local conceptions to standard vocabularies effectively. Local test names are frequently seen to lack information expected to recognize the right standard concept correctly.

On the other hand, a few studies have considered distinctive computerized concepts that support to map local research center examinations to LOINC (Stram et al., 2020). Nevertheless, the expert human audit is as yet expected to resolve PC-generated candidate mappings. This is despite having the best accessible computerized tools. Since both local and standard vocabularies progress, the problem of keeping up the mappings is effectively underestimated. Thus, all healthcare institutions require individuals, procedures, and devices to aid in mapping deeds (Demiris 2016).

Based on my experience, I would like to advocate for the development of tools and processes to aid the practitioners to develop better use of biomedical data standards that are readily available, tools such as LOINC. An excellent example that RELMA software can be applied to assist users in viewing how severally LOINC has been plotted towards the local encryptions of various institutes.

References:

Demiris, G. (2016). Thieme E-journals - Yearbook of medical informatics / Abstract. Retrieved from <https://www.thieme->

Dixon, B. E., Hook, J., & Vreeman, D. J. (2015). Learning from the crowd in terminology mapping: The LOINC experience. *Laboratory medicine*, 46(2), 168-174. doi: 10.1309/LMWJ730SVKTUBAOJ

Lin, M. C., Vreeman, D. J., McDonald, C. J., & Huff, S. M. (2011). A characterization of local LOINC mapping for laboratory tests in three large institutions. *Methods of information in medicine*, 50(02), 105-114.

Stram, M., Gigliotti, T., Hartman, D., Pitkus, A., Huff, S. M., Riben, M., ... & Pantanowitz, L. (2020). Logical Observation Identifiers Names and Codes for Laboratorians: Potential Solutions and Challenges for Interoperability. *Archives of Pathology & Laboratory Medicine*, 144(2), 229-239.