Mapping Thai Medicine Terminology to RxNorm: Lesson Learned in Standard Vocabulary Integration

Siriraj Informatics and Data Innovation Center

Presenter: Krittaphas 'Krit' Chaisutyakorn Email: krittaphas.cha@mahidol.edu

Background

Siriraj Hospital is currently transforming 20+ years of EHR data into the OMOP CDM [1] to support observational research. Vocabulary mapping is a crucial process, as having standardized medical concepts is essential for multicenter international collaboration. In this report, we present our methods, mapping processes, and obstacles related to mapping Thai Medicine Terminology (TMT) [2] to RxNorm medication codes.

Method

First, we extracted the source data, which included medication source codes, medication descriptions, and medication usage frequencies. The medication codes included were retrieved from Siriraj Hospital's EHR data, representing a subset of the TMT codes. The mapping process was performed at the code level, encompassing a triad of ingredient, strength, and form. The medication codes were then sorted by usage frequency. Next, the source data was input into the **Usagi** vocabulary mapping tool [3], which returned the automatic matching results.

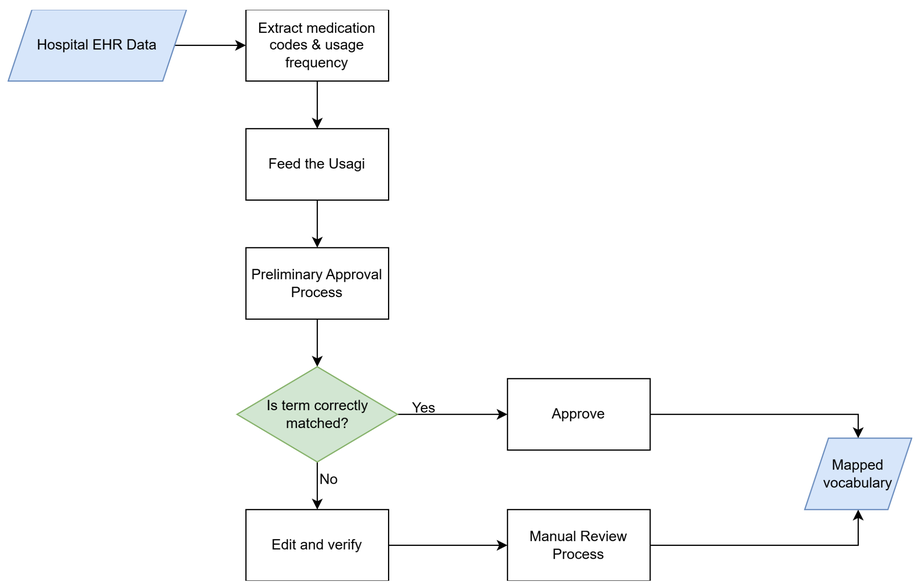

Figure 1: Diagram of the mapping process

Next, we split the mapping process into 2 steps. In the first step, the automated matched codes were quickly reviewed. We approved the automated matches only when they were unquestionably correct (e.g., same medication name, dose, and form). This step was completed by one person. No manual edits were performed in this step. This approach helped accelerate the process, allowing even individuals with minimal medical knowledge to complete this step.

In the second step, we carried out the manual mapping process. This involved correcting incorrect results from the automated step. Four physicians were assigned medication codes, sorted by their usage frequency.

TLDR

- Breaking down the mapping process into steps make the task much more achievable
- Only 60% of medication codes can cover over 95% of the total medication usage count in our Hospital
- In the total of 15 hours, we can cover more than 95% of the medication usage frequency by using proper tools and methods.

Result

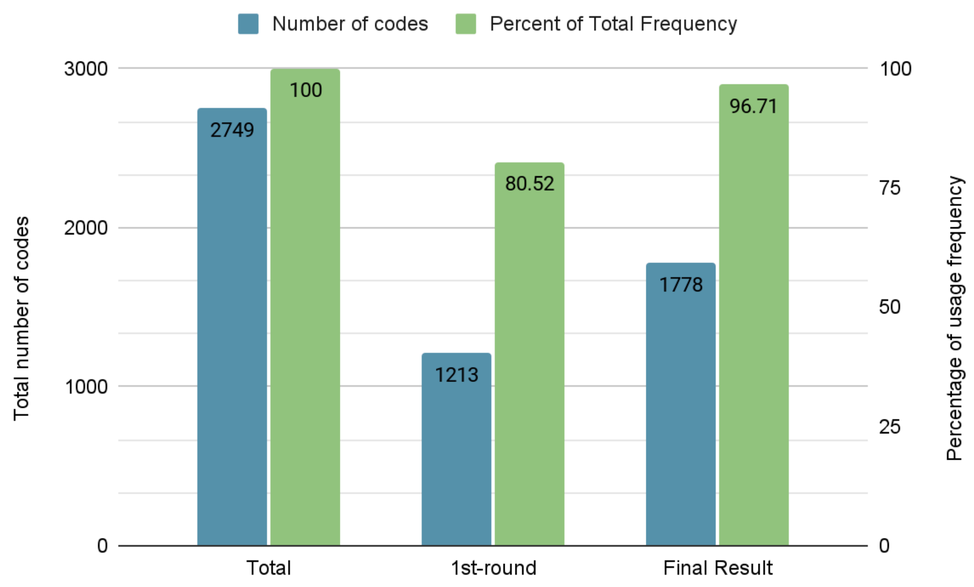

Figure 2: Number and percentage of mapped codes of each step

Our hospital has a total of 2,749 medication codes in use. After the automated matching and first approval processes 1,213 codes were correctly mapped and approved, covering 80% of the medication usage frequency.

In the manual mapping process, we extended the vocabulary to cover 1,778 codes, resulting in 96% coverage of the total usage frequency.

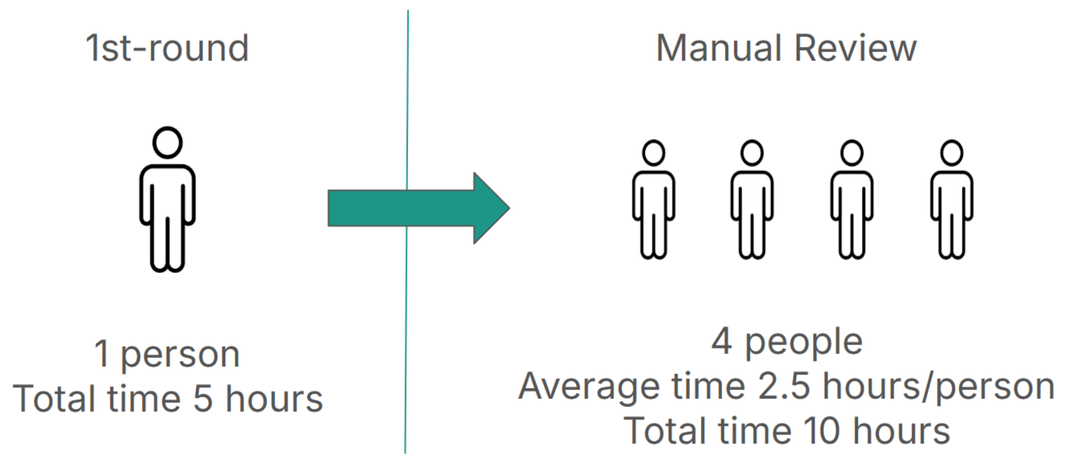

Figure 3: Time and Person investment in the project

The total time investment for this project was 3 weeks. The first round approval process was completed by single person in a total of 5 hours. The manual mapping process was completed by 4 physicians, each spending an average of 2.5 hours.

Even though the automatic matching result from Usagi tool can help quickening the mapping process, there are some types of medications that the Usagi tool tends to fail. In our observation, these medications are as follow:

- Intravenous medication with varied concentration
- Combination of medications
- Vaccines

References

1. Data Standardization – OHDSI;. Available from: https://www.ohdsi.org/data-standardization/
2. Thai Medicines Terminology (TMT) - Thai Health Information Standards Development Center (THIS);. Available from: https://www.this.or.th/service/tmt/
3. USAGI for vocabulary mapping – OHDSI;. Available from: https://www.ohdsi.org/analytic-tools/usagi/

Krittaphas Chaisutyakorn, Peamboon Thomchotpong, Natpatchara Pongjirapat, Jirapat Aiamsopon, and Natthawut Adulyanukosol