Terminology Status APIs – Mapping Obsolete Codes to Current RxNorm, SNOMED CT, and LOINC Concepts

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Abstract

We created the Terminology Status Application Programming Interface (API) to assist users in mapping obsolete codes to current RxNorm, SNOMED CT and LOINC concepts. Use cases include support for information retrieval, maintenance of value sets, and analytics of legacy clinical databases. Our terminology status APIs typically receive over 4 million calls per month on average.

Keywords:

RxNorm; Systemized Nomenclature of Medicine; Logical Observation Identifiers Names and Codes

Motivation

In medical terminologies, new releases introduce new concepts, remove obsolete concepts and reorganize others through remapping. Managing change in large terminologies can be burdensome to users. We created the Terminology Status Application Programming Interface (API) to assist users in mapping obsolete codes to current RxNorm, SNOMED CT and LOINC concepts.

Terminology Status APIs

The *status* APIs have been developed to help manage change in three major medical terminologies, whose use is required for the Meaningful Use certification criteria: RxNorm, SNOMED CT and LOINC. While the RxNorm service has been part of the RxNorm API for several years, we developed equivalent services for SNOMED CT (including concepts specific to the U.S. extension of SNOMED CT) and LOINC more recently, for the purpose of validating value sets for clinical quality measures.

The **RxNorm** *status* **API** [1] returns three elements: **Status** – active, "alien" (i.e., present in one of the source terminologies, but without an RxNorm type), remapped, retired or unknown; **Last active release date**; and **Concept information** for active and remapped status.

The **SNOMED CT** *status* **API** [2] returns three elements: **Current status** – retired, active or moved; **Effective time** – the version of the latest change; and **SNOMED CT identifiers** for remapped concepts.

The **LOINC** *mapto* **API** [3] returns an array of LOINC identifiers when the original identifier is remapped.

All three APIs are available in two flavors, SOAP-based and RESTful. Each API also has a version function so that users can determine which version of the data set is being used. The services are updated as new terminology versions become available. Figure 1 shows an example of query to the SNOMED CT status API (RESTful version), along with the information returned.

```
https://rxnav.nlm.nih.gov/REST/SnomedCT/
status?id=187959005

<snomedctStatus>
  <inputId>187959005</inputId>
  <status>2</status>
  <effectiveTime>20120131</effec-
tiveTime>
  <mappedId>449627008</mappedId>
  <mappedId>449628003</mappedId>
</snomedctStatus>
```

Figure 1 - SNOMED CT Status example. Status 2 indicates that the input concept (Malignant neoplasm of long bones of leg) was replaced by the 2 concepts, Malignant neoplasm of long bone of lower limb and Malignant neoplasm of long bone of lower leg

Use Cases

Use cases for these *status* APIs include: 1) Supporting information retrieval systems that accept concept identifiers as queries (e.g., MedlinePlusConnect uses this service); 2) Determining outdated or remapped drug concepts in clinical drug databases (e.g., updating value sets); and 3) Supporting analytics of older datasets coded to past versions of the terminologies.

Our terminology status APIs typically receive over 4 million calls per month on average.

Acknowledgements

References

[1] United States National Library of Medicine (2017), RxNorm API, https://rxnav.nlm.nih.gov/RxNormAPIs.html

[2] United States National Library of Medicine (2017), Snomed CT Status API, https://rxnav.nlm.nih.gov/SnomedCTAPI.html

[3] United States National Library of Medicine (2017), LOINC Mapto API, https://rxnav.nlm.nih.gov/LoincAPI.html

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