# RxNorm Concept History Service

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Motivation

RxNorm contains drug concepts which represent the currently marketed drugs in the U.S. With each monthly RxNorm release, new drug products are added and obsolete drug products are removed. While this curation supports e-prescribing and drug information exchange use cases, it is detrimental to analytics use cases. The issue in this case is that some of the RxNorm drug identifiers (RxCUIs) stored in clinical data warehouses have become obsolete and can no longer be interpreted in reference to the current RxNorm dataset. There are over 122,000 obsolete RxCUIs, compared to 114,000 current ones. To address this issue, we started developing an RxNorm concept history service as part of the NLM drug APIs (https://rxnav.nlm.nih.gov/). This service is similar to what we developed for managing obsolete identifiers from the National Drug Code (NDC) Directory. For each obsolete RxCUI, the service returns a canonical representation of the drug concept, making it possible to relate an obsolete drug product to a class through its ingredient or to find a similar active drug product based on ingredient, strength and dose form information.

Creating the Historical Concept Data

To create the historical concept information, the RxNorm monthly releases starting in 2007 were queried to reconstruct the history of every RxNorm concept. Relevant features extracted include:

The ingredient name(s) and RxCUI(s) related to the concept

The term type (TTY)

Start and end dates when the concept was active

Indication if the concept is currently active

Indication if the concept represents a brand

Indication if the concept contains multiple ingredients

Strength (number and unit) of each ingredient

Dose form name and RxCUI

For Packs (TTY=GPCK and BPCK), pack alias name, product component RxCUIs and pack numbers

Table 1 shows an example of the history data returned for the RxCUI =853056

| ATTRIBUTE | VALUE |
|---|---|
| RXCUI | 853056 |
| NAME | Amoxicillin 40 MG/ML / Clavulanate 5.7 MG/ML Oral Suspension [Amoclan] |
| TTY | SBD |
| INGREDIENT NAME(S) | Amoxicillin / Clavulanate |
| IN/MIN RXCUI | 19711 |
| MULTIPLE INGREDIENT | Yes |
| BRANDED | Yes |
| START DATE | 072009 |
| END DATE | 122015 |
| CURRENT | No |
| QUANTITY FACTOR | |
| QUALITY DESCRIPTOR | |
| COMPONENT 1: | |
| RXCUI | 723 |
| STRENGTH $^2$ | 40 |
| STRENGTH UNIT | MG/ML |
| COMPONENT 2: | |
| RXCUI | 48203 |
| STRENGTH $^2$ | 5.7 |
| STRENGTH UNIT | MG/ML |
| PACK ALIAS | |

Table 1. RxNorm History Data returned for RxCUI=853056