

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=GPKC 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

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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 #	40
STRENGTH UNIT	MG/ML
COMPONENT 2:	
RXCUI	48203
STRENGTH #	5.7
STRENGTH UNIT	MG/ML
PACK ALIAS	

Table 1. RxNorm History Data returned for RxCUI=853056