An Application Programming Interface for NDF-RT

Lee Peters, M.S., Thang Nguyen, M.S. and Olivier Bodenreider, M.D., PhD
U.S. National Library of Medicine, National Institutes of Health, Bethesda, Maryland, USA
Contact information: RXNAVINFO@LIST.NIH.GOV

The National Drug File Reference Terminology[1] (NDF-RT) is a resource developed by the Department of Veterans Affairs (VA) Veterans Health Administration, as an extension of the VA National Drug File. NDF-RT provides a formal content model that describes and defines medications by naming relevant concepts via preferred and synonymous terms, and describing them via named relations to other terminology concepts, either within NDF-RT or in external terminologies. In other words, NDF-RT is not only terminology, but a source of clinical information, including therapeutic intent (*atorvastatin* may_treat *Hypercholesterolemia*), mechanism of action (*atorvastatin* has_MoA *Hydroxymethylglutaryl-CoA Reductase Inhibitors*), physiologic effect (*atorvastatin* has_PE *Decreased Cholesterol Synthesis*) and drug-drug interactions (e.g., critical interaction between *atorvastatin* and *ketokonazole*).

The NDF-RT API[2] is developed at the National Library of Medicine as part of the RxNav[3] system, which provides access to other drug information sources, including RxNorm and RxTerms. It was released in February 2011. It provides programmatic access to the information in NDF-RT. The API serves the latest version available of NDF-RT. The major functions of the API enable users to find an NDF-RT entity by name or by identifier and to traverse the rich network of relations in NDF-RT, both within and across hierarchies, using the names of the relations. Clinically-oriented functions associate drugs with their pharmacologic classes and can list all interacting drugs for a given drug or test interaction for a given pair of drugs. Although distinct, the RxNorm and NDF-RT APIs are integrated with each other, making it easy for users to query the RxNorm API with NDF-RT identifiers and vice versa. From a technical perspective, the NDF-RT API comes in two flavors: SOAP-based[2] and RESTful web services[4]. Table 1 shows the related functions in the RESTful API and the SOAP-based API.

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[1] http://evs.nci.nih.gov/ftp1/NDF-RT/NDF-RT%20Documentation.pdf
[2] http://rxnav.nlm.nih.gov/NdfrtAPI.html
[3] http://rxnav.nlm.nih.gov/
[4] http://rxnav.nlm.nih.gov/NdfrtRestAPI.html

RESTful resource	SOAP-based function	Type
/	(none)	
/conceptName=*{conceptName}*&kindName=*{kindName}*	findConceptsByName	Find entities
/idType=*{idType}*&idString=*{idString}*	findConceptsByID	
/propertyName=*{propertyName}*&propertyValue=*{propertyValue}*	getConceptsByProperty	
/properties/nui=*{nui}*&propertyName=*{propertyName}*	getConceptProperties	Properties
/childConcepts/nui=*{nui}*&transitive=*{transitive}*	getChildConcepts	Nav. within hierarchies
/parentConcepts/nui=*{nui}*&transitive=*{transitive}*	getParentConcepts	
/associations/nui=*{nui}*&associationName=*{associationName}*	getRelatedConceptsByAssociation	
/nui=*{nui}*&roleName=*{roleName}*&transitive=*{transitive}*	getRelatedConceptsByRole	Nav. across hierarchies
/reverse/nui={nui}&roleName={*roleName*}&transitive={*transitive*}	getRelatedConceptsByReverseRole	
/interaction/nui=*{nui}*&scope=*{scope}*	findDrugInteractions	Clinically-oriented
/interaction/nui1=*{nui1}*&nui2=*{nui2}*&scope=*{scope}*	interactions	
/VA/*{nui}*	getVaClassOfConcept	
/allInfo/*{nui}*	getAllInfo	Convenience
/associationList	getAssociationList	Housekeeping
/typeList	getIdTypeList	
/kindList	getKindList	
/propertyList	getPropertyList	
/roleList	getRoleList	
/version	getNDFRTversion	

Table 1— RESTful resources and corresponding SOAP-based functions for accessing NDF-RT API