

# SDQs – Standardized Drug Queries

Daniel von Sydow

Sunil G. Singh



# Outline

- The project
- Background
- Current analysis tools
- Ideas for future development

# Under development

- A working group has been set up with members from the industry
- The group is identifying 'prototype' queries
- The content, distribution format and versioning are also being discussed
- The 'prototype' queries will be launched to the pilot group in March 2009
- First 'official' SDQs launched in March 2010

# Background

- WHO Drug Dictionary Enhanced is used for coding and analysis.
  - The coder selects an entry
  - Code entered into database
  - Codes and hierarchies are used for aggregation and statistical analysis

# Background

- What is analyzed?
  - Interactions
  - ADRs
  - Drug effectiveness
  - Protocol violations
  - Other conditions

# Current analysis tools

- Drug code
  - Useful to aggregate drugs with the same ingredient(s)
- ATC/Herbal ATC.
  - Useful mainly for statistical analysis
  - Also useful to make pharmacological/Medical analysis

# New ideas

- Other needs
  - Sometimes aggregation of statistics could use other groupings than ATC.
  - Statistical analysis is often followed by medical analysis – what is the mechanism behind an interaction?
  - Sometimes a list of “Drugs of Special interest” is used in a trial.

# Pharmacological classes

- The SDQs could be a pharmacological class; NSAIDs, Colinergic drugs and Steroids
- These groups appears in several places in the ATC hierarchy depending on therapeutic use



# Metabolism

- The SDQs could list drugs that are metabolized by certain enzymes.
  - Example: Substrates, inducers and inhibitors of CYP 2C19
- This could be used to explain interactions, increased effect or lack of effect.
- The SDQs can be used to produce lists of “drugs of special interest”.

# Conditions

- The SDQs could list drugs that are likely to be ‘proxy for conditions’.
- Sometimes medical conditions are not reported as such, but medication taken by patients may indicate that conditions exists

# Implementing SDQs in TMS 4.6

- Current Filter dictionary approach can be used, with the same type of Informative Notes for Description and Source.
- Concept of hierarchical SMQs is also possible
- Similar Algorithm Informative notes can also be used for identifying related terms.

# [X] SDQ Filter Dictionary Definition



Base Dictionary Virtual Dictionary Dictionary Link

Link Type: Filter.Dictionary.of  
To Dictionary: WHODRUG

Base Dictionary Virtual Dictionary Dictionary Link

Short Name: SDQFILTER  
Name: SDQ Filter Dictionary  
Description: SDQ Filter Dictionary

Language: English  
Dict.Type: Filter  
Folder Type: Strong  
Status: Active  
Label Prefix: 1.

VT Level Required?   
Web Search Accessible?   
Accessible to Light Browser?   
Term Uniqueness enforced?   
Autoqueried in Light Browser?

Dictionary Term Display Procedure:

Audit Information

Created By	OPS\$OPAPPS	Creation Time	15-OCT-2008 08:49:10
Modified By	OPS\$OPAPPS	Modification Time	15-OCT-2008 08:53:14

Informative Notes

# [X] SDQ Domain Mapping

The image shows two overlapping windows from a software application. The top window, titled 'Define Domains', has a 'Multi Display Domains' tab selected. It contains input fields for 'Name' (SDQ\_DOMAIN) and 'Description' (SDQ Test Domain). Below these are 'Audit Information' fields for 'Created By' (OPS\$OPAPPS), 'Creation Time' (15-oct-2008 08:57:35), 'Modified By', and 'Modification Time'. The bottom window, titled 'Define Domain Dictionaries (SDQ\_DOMAIN)', displays a table with columns: Dictionary Name, VTA Appr Reqd?, Action Appr Reqd?, Creation Time, Created By, Modification Time, and Modified By. Two rows are visible: 'SDQ Filter Dictionary' and 'WHODRUG', both with 'VTA Appr Reqd?' and 'Action Appr Reqd?' checkboxes checked and a creation time of 15-OCT-2008 08:57:46, created by ORACLE OPAPPS.

Dictionary Name	VTA Appr Reqd?	Action Appr Reqd?	Creation Time	Created By	Modification Time	Modified By
SDQ Filter Dictionary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15-OCT-2008 08:57:46	ORACLE OPAPPS		
WHODRUG	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15-OCT-2008 08:57:46	ORACLE OPAPPS		

# [X] SDQ NRLs: Substrates, Inhibitors, Inducers

Define Named Relationships

Named Relationship Multi Display Named Relationships

Indicator Name: Substrates  
Many Cardinality?

Reciprocal Indicator Name:   
Many Cardinality?

Details

Relationship Code:   
Type: Standard  
Short Name: SUBSTRATES Internal Id: 184  
Activation Rule:   
Category:   
Description: Substrates NRL for SDQs

Define Dictionary Named Relationships (Substrates)

From Dictionary	To Dictionary	Status	Creation	Created By
SDQ Filter Dictionary	WHODRUG	Active		

Define Named Relationships

Named Relationship Multi Display Named Relationships

Indicator Name: Inhibitors  
Many Cardinality?

Reciprocal Indicator Name:   
Many Cardinality?

Details

Relationship Code:   
Type: Standard  
Short Name: INHIBITORS Internal Id: 185  
Activation Rule:   
Category:   
Description: Inhibitors SDQ

Define Dictionary Named Relationships (Inhibitors)

From Dictionary	To Dictionary	Status	Creation	Created By
SDQ Filter Dictionary	WHODRUG	Active	15-OCT-2008 09:05:4	ORACLE OPAPPS (

Define Named Relationships

Named Relationship Multi Display Named Relationships

Indicator Name: Inducers  
Many Cardinality?

Reciprocal Indicator Name:   
Many Cardinality?

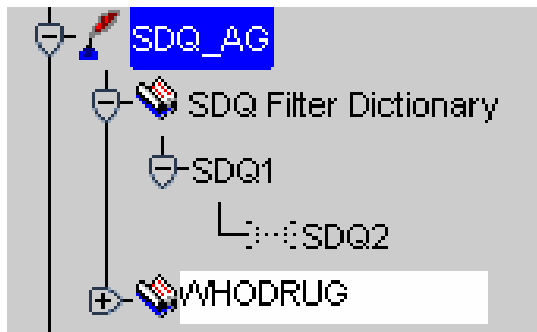
Details

Relationship Code:   
Type: Standard  
Short Name: INDUCERS Internal Id: 186  
Activation Rule:   
Category:   
Description: Inducers SDQ

Define Dictionary Named Relationships (Inducers)

From Dictionary	To Dictionary	Status	Creation	Created By
SDQ Filter Dictionary	WHODRUG	Active	15-OCT-2008 09:10:3	ORACLE OPAPPS (

# [X] SDQ Activation Group



Activation Group

Description

Audit Information

Created By  Creation Time

Modified By  Modification Time

Dictionaries within the Activation Group

Short Name	Name	In Domain?
SDQFILTER	SDQ Filter Dictionary	<input checked="" type="checkbox"/>
WHODRUG	WHODRUG	<input checked="" type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

# [X] SDQ Repository Authoring

Repository Authoring

Master Query: Terms | Currency: Current | Source: All Data | Rel. Level: |  
Group: SDQ\_AG | Domain: SDQ\_DOMAIN | Dictionary: SDQ Filter Dictionary | Level: SDQ1-SDQ1

Terms | Multi Display Terms

Term: CYP3A4  
Code: | Id: 4090267 | Alt. Code: | DML: |  
Comment Text: CYP3A4 SDQ  
Level: SDQ1-SDQ1 | Category: | Status: | Trans.id: |  
Approved?  | Global?  | Type: Dictionary Term | SubType: Company |  
Value\_1: | Value\_2: | Value\_3: | Value\_4: |  
Error Msg: |  
Created By: OPS\$OPAPPS | Creation: 15-OCT-2008 09:28:44 | Valid until: 15-AUG-3501 00:00:00 | Deleted By: |

Relations | Multi Display Relations

Relation: CYP3A4 | Inducers: | A.E.P.  
Code: 00203101001 | Id: 3354260 | Alt. Code: | DML: |  
Dictionary: WHODRUG | Level: PN-Preferred Name | Status: |  
Comment Text: | Error Msg: |  
PL?  | DPL?  | Global?  | Type: Dictionary Term | SubType: Company | Trans.id: |  
Created By: OPS\$OPAPPS | Creation: 15-OCT-2008 09:28:44 | Valid until: 15-AUG-3501 00:00:00 | Deleted By: |

Approved?  | DML: | Glb?  | Status: | Category: | Trans.id: |  
Value 1: R03BX | Value 2: M | Value 3: 70 | Value 4: 03  
Error Msg: | Created By: TMS\_LOAD | Creation: 12-MAY-2007 10:12:11



# [X] SDQ CYP3A4 Lite Browser

ORACLE

Pharmaceuticals

Terminology Management System



Logout



Help

Exploration

Research

Reports

Terminologies | Verbatim Term Assignment | Verbatim Term Status | Hierarchies

Logged in as/Database ORACLE OPAPPS,

Last Updated 15-Oct-2008 09:54:16

## Terminologies

### Simple search

Enter search criteria or click Advanced Search for additional options.

Advanced search

Terminology

Domain

Term

### Terms Viewed

- [CYP3A4](#)

### Results

Term	Approved	Level	Code	Domain	Alt.code	Id
<a href="#">CYP3A4</a>	Yes	SDQ1		GLOBAL		4090267

[Exploration](#) | [Research](#) | [Reports](#) | [Logout](#) | [Help](#)

Copyright 2003,2006 Oracle Corporation. All rights reserved.

About TMS Version 4.6

# [X] SDQ Relations Lite Browser

Term (Today)

Term **CYP3A4**  
 Terminology **SDQ Filter Dictionary**  
 Approved **Yes**  
 Filter [Verbatim Term Assignment](#)

Level **SDQ1**  
 Term subtype **Company**

**Terms Viewed**

- [CYP3A4](#)

[▶ Term Details](#)

[▼ Related terms](#)

◀ Previous  Next ▶

Level	Term	Relation	Domain	Related term	Level	
	CYP3A4	<a href="#">Inducers</a>		<a href="#">A.E.P.</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">FAS-3</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">ALZOLE-F</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">AZOSTAT</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">FLUCONAZOLE</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">ORFLAZ</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">INDINAVIR SULFATE W/RITONAVIR</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">KALETRA /01506501/</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">RITONAVIR</a>	WHOD	-PN
	CYP3A4	<a href="#">Inhibitors</a>		<a href="#">TIPRANAVIR W/RITONAVIR</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">TILDIAZIDE</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">BELNIF</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">HYNF-SANDOZ</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">NIFEDIPINE</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">NIF-TEN</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">SALI-ADALAT</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">DILTIAZEM</a>	WHOD	-PN
	CYP3A4	<a href="#">Substrates</a>		<a href="#">TECZEM /01366001/</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">ADENOVASIN</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">ADOCARDIN COMP.</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">AEINE</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">AFPRED /00319601/</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">ALEPSAL</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">ALGIPAN /00165001/</a>	WHOD	-PN
	CYP3A4	<a href="#">Inducers</a>		<a href="#">ANDIPAL /02404301/</a>	WHOD	-PN

# [X] VT Coding for SDQ

**ORACLE**  
Pharmaceuticals Terminology Management System

Logout Help

Exploration Research Reports

Terminologies | **Verbatim Term Assignment** | Verbatim Term Status | Hierarchies

Logged in as/Database ORACLE OPAPPS /  
Last Updated 15-Oct-2008 10:04:29

### Verbatim Terms


**Simple search**  
Enter search criteria or click Advanced Search for additional options. [Advanced search](#)

Terminology: WHODRUG  
Domain: SDQ\_DOMAIN  
Term: TERMIKIT STRONG  
[Go](#)

**Terms Viewed**

- ORFLAZ
- CYP3A4

### Results

Verbatim Term	Source	Approved	Dictionary Term	Code	Domain	Level
TERMIKIT STRONG		Yes	TERMIKIT	03430301003	SDQ_DOMAIN	Synonym

Copyright 2003,2006 Oracle Corporation. All rights reserved.  
[About TMS Version 4.6](#)

[Exploration](#) | [Research](#) | [Reports](#) | [Logout](#) | [Help](#)

# [X] VT Coding for SDQ (2)

Pharmaceuticals

Terminology Management System



Exploration Research Reports

Terminologies | **Verbatim Term Assignment** | Verbatim Term Status | Hierarchies

Logged in as/Database ORACLE OPAPPS /  
Last Updated 15-Oct-2008 10

[Verbatim Term Search](#) >

**Term (Today)**

Term **TERMIKIT STRONG**  
Terminology **WHODRUG**  
Approved **Yes**

Level **Verbatim Term**  
Term subtype **Accepted**

### Terms Viewed

- [TERMIKIT STRONG](#)
- [ORFLAZ](#)
- [CYP3A4](#)

### Term Details

### Paths

Select a path to see its details below

Select Path	Type
<a href="#">ANTIPARASITIC PRODUCTS,INSECTICIDES AND REPELLENTS, P</a> > <a href="#">ANTIPROTOZOALS, P01</a> > <a href="#">AGENTS AGAINST AMOEBIASIS AND OTHER PROTOZOAL DIS., P01A</a> > <a href="#">NITROIMIDAZOLE DERIVATIVES, P01AB</a> > <a href="#">ORFLAZ</a> > <a href="#">TERMIKIT</a> >	Primary

### Path Details

Term	Level	Code
<a href="#">ANTIPARASITIC PRODUCTS,INSECTICIDES AND REPELLENTS, P</a>	ATC1	P
<a href="#">ANTIPROTOZOALS, P01</a>	ATC2	P01
<a href="#">AGENTS AGAINST AMOEBIASIS AND OTHER PROTOZOAL DIS., P01A</a>	ATC3	P01A
<a href="#">NITROIMIDAZOLE DERIVATIVES, P01AB</a>	ATC4	P01AB
<a href="#">ORFLAZ</a>	Preferred Name	03430301001
<a href="#">TERMIKIT</a>	Synonym	03430301003
TERMIKIT STRONG	Verbatim Term	

### Related terms

Level	Term	Relation	Domain	Related term	Level
SYN	<a href="#">TERMIKIT</a>	Strong	SDQ_DOMAIN	TERMIKIT STRONG	

[Exploration](#) | [Research](#) | [Reports](#) | [Logout](#) | [Help](#)

# Conclusion

- SDQs will be a new tool for WHO Drug Dictionary Enhanced users
- The SDQs can be used for:
  - statistical analysis – e.g. finding patterns using pharmacological classes
  - medical analysis – e.g. finding mechanism based on metabolism information
  - finding protocol violations – e.g. if NSAIDs are a prohibited class of drugs
  - finding otherwise unreported condition