

INTRODUCTION TO SNOW OWL – A TOOL FOR SNOMED CT



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Perspective

A **perspective** is a combination of views and editors. It defines the layout of the visual components. The size and position of the visual components can be easily changed.

The **Authoring perspective** is the default setting. It gives access to a range of functionalities such as browsing, authoring, creating reference sets, bookmarking, and working with tasks.

Authoring Perspective

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Tetralogy of Fallot' concept with the following details:

- Descriptions:**
 - Fully Specified Name: Tetralogy of Fallot (disorder)
 - Synonym: Tetralogy of Fallot
 - Synonym: Fallot's tetralogy
 - Synonym: Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy
 - Synonym: TOF - Tetralogy of Fallot
- Properties:**
 - Ungrouped Properties:
 - Is a: Congenital abnormality of ventricles and ventricular septum
 - Is a: Overriding aorta
 - Is a: Pulmonic valve stenosis
 - Is a: Right ventricular hypertrophy
 - Is a: Ventricular septal defect
 - Occurrence: Congenital
 - After:

The interface also includes a Project Explorer on the left showing a hierarchy of SNOMED CT concepts, a Parents pane showing the parent concept 'Congenital abnormality of ventricles and ventricular septum', and a table of version history for 'Tetralogy of Fallot'.

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	2	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Additional components visible include the 'Reference Sets' pane on the right, a 'Task List' pane, and a status bar at the bottom indicating the user 'sulrich@b2international.com [Administrator]' is connected to the local host.

Pre-set perspectives

Snow Owl provides several pre-set perspectives

- ✎ Authoring perspective
- 📍 Mapping perspective
- 🏪 Reference set perspective
- 📄 Value set perspective

Switching perspectives

Click an icon on the right side of the the toolbar to switch perspectives.

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main content area shows the 'Tetralogy of Fallot' concept page. A red box highlights the toolbar on the right side of the main content area, which contains icons for switching perspectives. The interface includes a left sidebar with a concept tree, a central main content area with tabs for Overview, Descriptions, Source relationships, Destination relationships, Value domain membership, Mappings, and References. The right sidebar shows a list of reference sets. A version history table is visible at the bottom of the main content area.

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2iinternational.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	2	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	6	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Component	Changes
SNOMED CT Reference Set Member	Tetralogy of Fallot added to Cardiology reference set.

Views

Views are visual components that are typically used to navigate a list or hierarchy of information (such as the SNOMED CT Concepts), or display information for the active editor.

SNOMED CT view

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the SNOMED CT concept 'Tetralogy of Fallot' (disorder). The left-hand pane shows a tree view of SNOMED CT concepts, with 'Tetralogy of Fallot' selected. The central pane displays the following information:

- Descriptions:**
 - Fully Specified Name: Tetralogy of Fallot (disorder)
 - Synonym: Tetralogy of Fallot
 - Synonym: Fallot's tetralogy
 - Synonym: Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy
 - Synonym: TOF - Tetralogy of Fallot
- Properties:**
 - Ungrouped Properties:
 - Is a: Congenital abnormality of ventricles and ventricular septum
 - Is a: Overriding aorta
 - Is a: Pulmonic valve stenosis
 - Is a: Right ventricular hypertrophy
 - Is a: Ventricular septal defect
 - Occurrence: Congenital
 - After: (empty field)

The right-hand pane shows a list of reference sets, including 'Attribute value type', 'Complex map type reference set', 'Description format', 'Simple map', and 'Simple type reference set'. The bottom pane shows a table of version history for 'Tetralogy of Fallot':

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	2	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Below the table, a component change is listed: 'SNOMED CT Reference Set Member' with the change 'Tetralogy of Fallot added to Cardiology reference set.'

The status bar at the bottom indicates: 'sulrich@b2international.com [Administrator] connected to localhost' and 'Main repository'.

Parents view

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Tetralogy of Fallot' concept with its descriptions and properties. A 'Parents' window is open, listing the following parent concepts:

- Tetralogy of Fallot
- Congenital abnormality of ventricles and ventricular septum
- Ventricular septal defect
- Right ventricular hypertrophy
- Overriding aorta
- Pulmonic valve stenosis

The interface also shows a 'Reference Sets' panel on the right, a 'Task List' panel, and a 'Project Explorer' at the bottom. A table at the bottom of the main window shows the history of changes for the 'Tetralogy of Fallot' concept.

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	2	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Component: SNOMED CT Reference Set Member
Changes: Tetralogy of Fallot added to Cardiology reference set.

SNOMED CT concept history view

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Tetralogy of Fallot' concept page. The left sidebar contains a tree view of SNOMED CT concepts, with 'Tetralogy of Fallot' selected. The main content area shows the concept's details, including its Fully Specified Name, Synonyms, and Properties. The 'Properties' section lists 'Congenital abnormality of ventricles and ventricular septum', 'Overriding aorta', 'Pulmonic valve stenosis', 'Right ventricular hypertrophy', and 'Ventricular septal defect'. The 'History' tab is active, showing a table of changes to the concept. The table is outlined in red and contains the following data:

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	2	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Below the history table, there is a section for 'Component' changes, showing that the 'SNOMED CT Reference Set Member' component was added to the 'Cardiology reference set'.

The bottom status bar indicates that the user 'sulrich@b2international.com [Administrator]' is connected to the local host and is viewing the main repository.

ATC, ICD-10, ICD-10-AM, LOINC, LCS

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Tetralogy of Fallot' concept with its descriptions and properties. A secondary window, titled 'ATC', is stacked on top of the main window, showing a hierarchical view of the ATC classification system. The ATC window is highlighted with a red border. A text overlay in the center of the screenshot reads: 'Views can be stacked. Clicking a tab brings the view to the front.'

Views can be stacked. Clicking a tab brings the view to the front.

Component	Changes
SNOMED CT Reference Set Member	Tetralogy of Fallot added to Cardiology reference set.

Reference set view

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Reference Sets' view for the concept 'Tetralogy of Fallot'. The interface is divided into several panes:

- Left Pane (SNOMED CT Concept):** A tree view showing the hierarchy of SNOMED CT concepts. The selected concept is 'Tetralogy of Fallot'.
- Top Pane (Descriptions):** Displays the fully specified name and synonyms for 'Tetralogy of Fallot'.
 - Fully Specified Name: Tetralogy of Fallot (disorder)
 - Synonyms: Tetralogy of Fallot, Fallot's tetralogy, Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy, TOF - Tetralogy of Fallot
- Bottom Pane (Properties):** Lists ungrouped properties for the concept.
 - Is a: Congenital abnormality of ventricles and ventricular septum
 - Is a: Overriding aorta
 - Is a: Pulmonic valve stenosis
 - Is a: Right ventricular hypertrophy
 - Is a: Ventricular septal defect
 - Occurrence: Congenital
- Right Pane (Reference Sets):** A list of reference sets associated with the concept. A red box highlights this pane, which includes:
 - Attribute value type
 - Complex map type reference set
 - ICD-9-CM equivalence complex map reference set
 - Description format
 - Query specification type
 - Simple map
 - CTV3 simple map
 - ICD-O simple map reference set
 - Mapping Sample
 - SDD Simple map
 - Dose form synonym plural simple map
 - Drug to atc (stated) simple map
 - Drug to gtn (stated) simple map
 - Drug to sin (stated) simple map
 - Ingredient to atc (stated) simple map
 - SNOMED RT ID simple map
 - Simple type reference set
 - 821 examples
 - KP Convergent Medical Terminology
 - Cardiology reference set
 - Endocrinology Urology Nephrology refer
 - Hematology Oncology reference set
 - Mental Health reference set

- Bottom Pane (Changes):** A table showing the history of changes to the reference set.

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
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Editors

Editors display detailed information about a resource and are used to make changes to it.

The visual presentation might be a concept editor (e.g. terminology concepts or reference sets), a text editor (e.g. scripts), or a task editor.

Editors are launched by double-clicking on a resource in a view, e.g. a SNOMED CT concept or a file. They are displayed in the middle part of the user interface.

SNOMED CT editor

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) SNOMED CT editor interface. The main window shows the details for the concept 'Tetralogy of Fallot' (C001417). The interface is divided into several panes:

- Left Pane (Concept Tree):** Shows a hierarchical view of SNOMED CT concepts. The 'Tetralogy of Fallot' concept is selected and highlighted.
- Top Pane (Concept Details):** Displays the 'Tetralogy of Fallot' concept details, including:
 - Descriptions:**
 - Fully Specified Name: Tetralogy of Fallot (disorder)
 - Synonym: Tetralogy of Fallot
 - Synonym: Fallot's tetralogy
 - Synonym: Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy
 - Synonym: TOF - Tetralogy of Fallot
 - Properties:**
 - Ungrouped Properties:
 - Is a: Congenital abnormality of ventricles and ventricular septum
 - Is a: Overriding aorta
 - Is a: Pulmonic valve stenosis
 - Is a: Right ventricular hypertrophy
 - Is a: Ventricular septal defect
 - Occurrence: Congenital
 - After:
- Bottom Pane (History Table):** Shows a table of changes for the concept.
- Right Pane (Reference Sets):** Lists various reference sets associated with the concept, including 'Imported Cardiology reference set'.

The bottom pane contains the following data:

Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
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19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Below the history table, there is a section for 'Imported Cardiology reference set' with a table showing component details:

Component	Changes
SNOMED CT Reference Set Member	Tetralogy of Fallot added to Cardiology reference set.

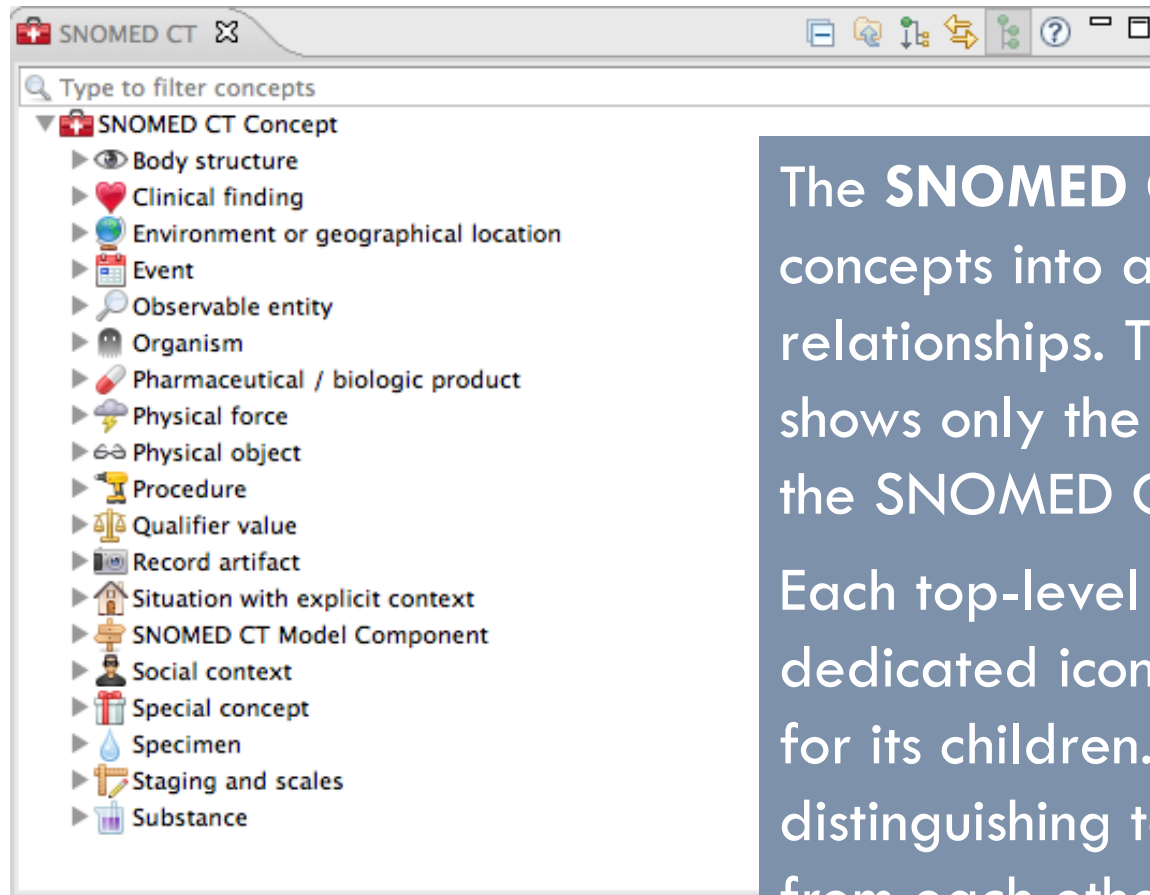
The bottom status bar shows the user 'sulrich@b2international.com [Administrator] connected to localhost' and the 'Main repository'.

Hands-on Snow Owl

Change the look of the user interface

- Click X next to the title to close a view or editor
- Drag the side of a view to resize it
- Grab tab of a view to move it to a different spot
- Double-click the tab on the top of a view or editor to maximize it
- Reset perspective: Go to Window > Reset Perspective

SNOMED CT concept view



The **SNOMED CT** view organizes concepts into a tree by their IS A relationships. The default setting shows only the top-level concepts of the SNOMED CT terminology.

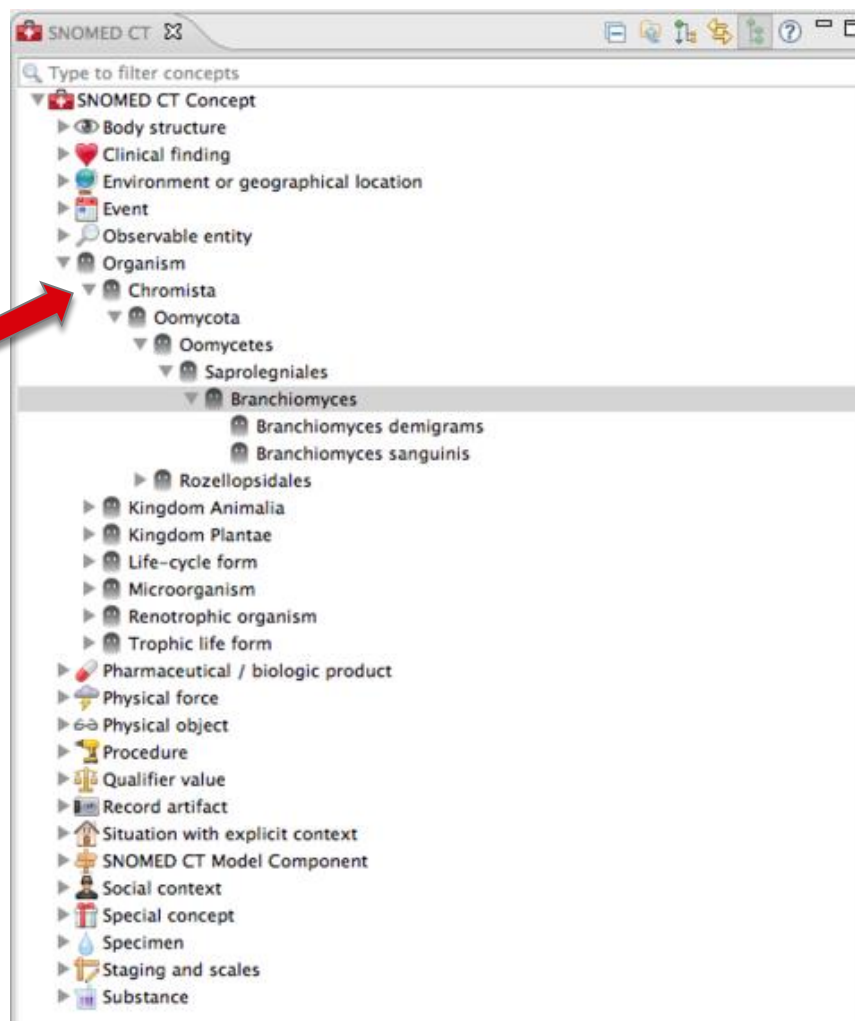
Each top-level concept has its own dedicated icon which is also used for its children. This allows distinguishing top-level hierarchies from each other.

Browsing the SNOMED CT hierarchy

Expanding a node reveals the children of a concept allowing to browse down the hierarchy.

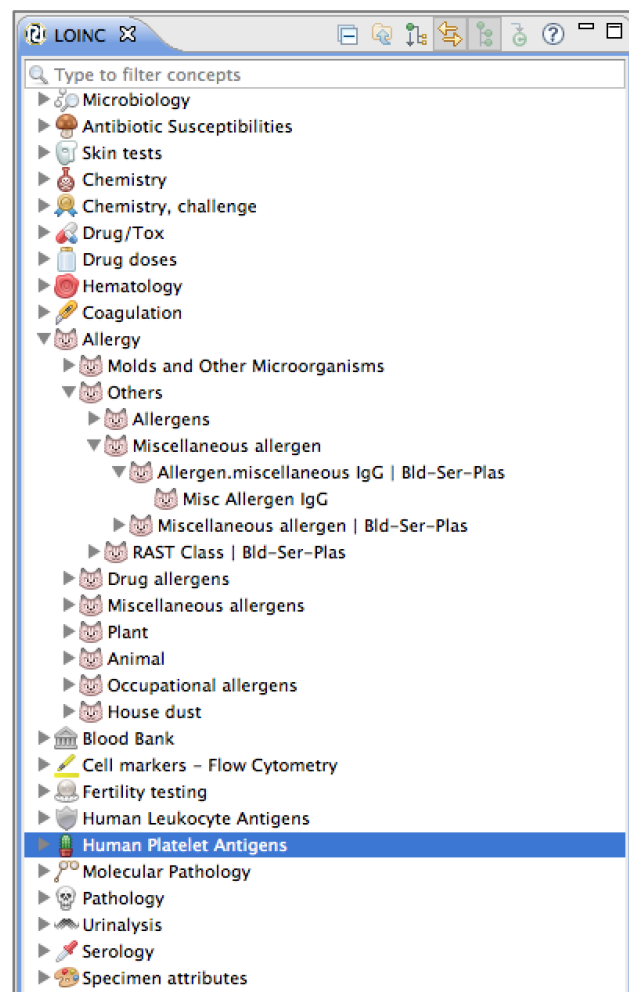
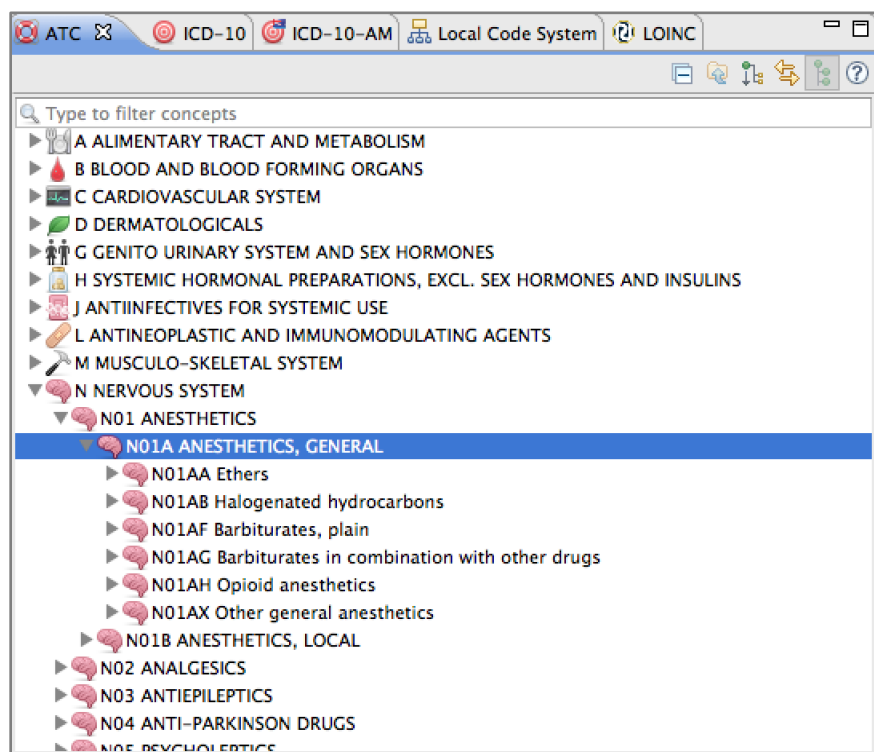
Click on a triangle to expand or collapse the hierarchy.

Note: If you are using windows the nodes look a bit different (plus signs).



Browsing the SNOMED CT hierarchy

Other terminologies and classification systems can be browsed the same way.



Parents view

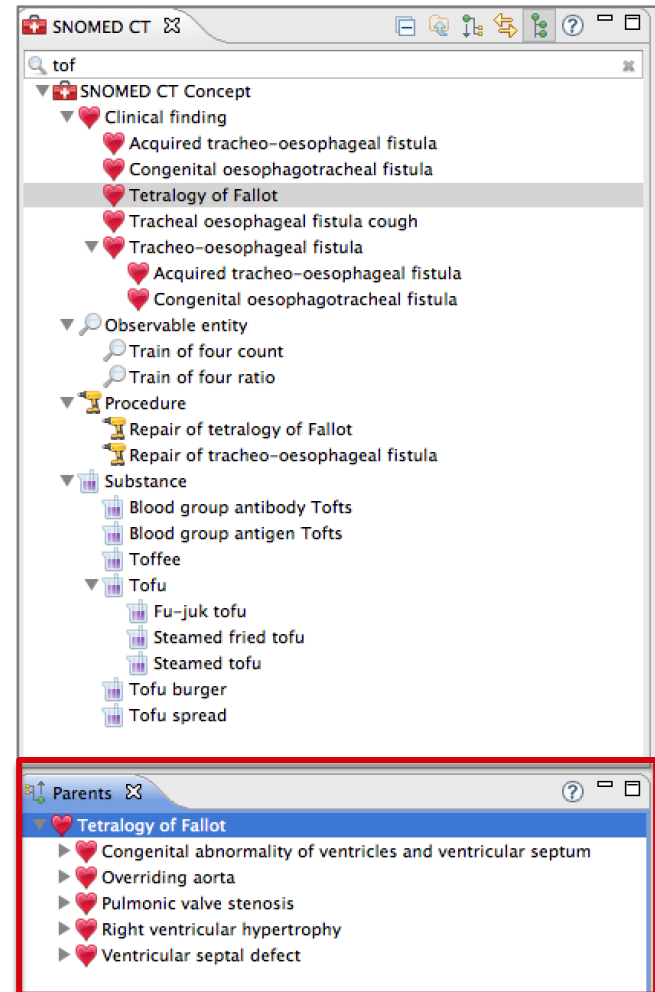
The **Parents view** displays the parents of a concept.

The selected concept is displayed on the top and its parent or parents on the bottom.

Expand the nodes to reveal parent concepts and browse up the hierarchy.

The Parent view is linked to the SNOMED CT view, whenever a concept is selected in the navigator its parents will be automatically displayed in the parent view.

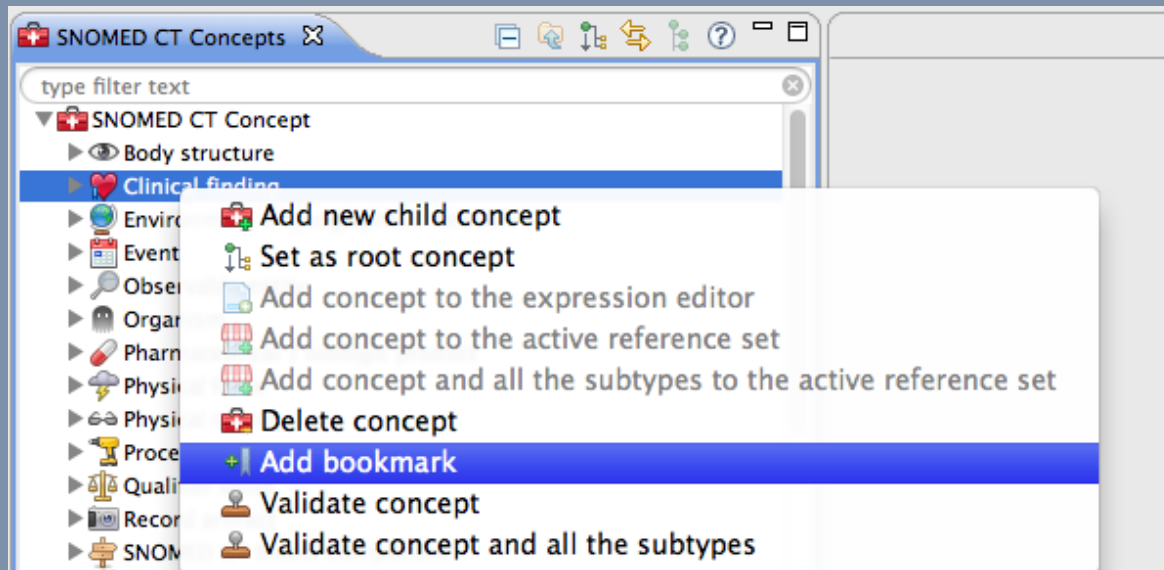
This feature also applies to the other concept navigators (e.g. ATC, ICD-10).



Bookmarking

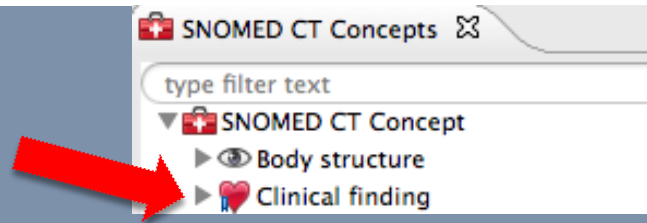
Favorite SNOMED CT concepts, descriptions, ATC, ICD-10, LOINC codes, and reference sets can be bookmarked for future reference (just like the bookmarks in your internet browser).

Right-click a concept in the view and select *Add bookmark*.

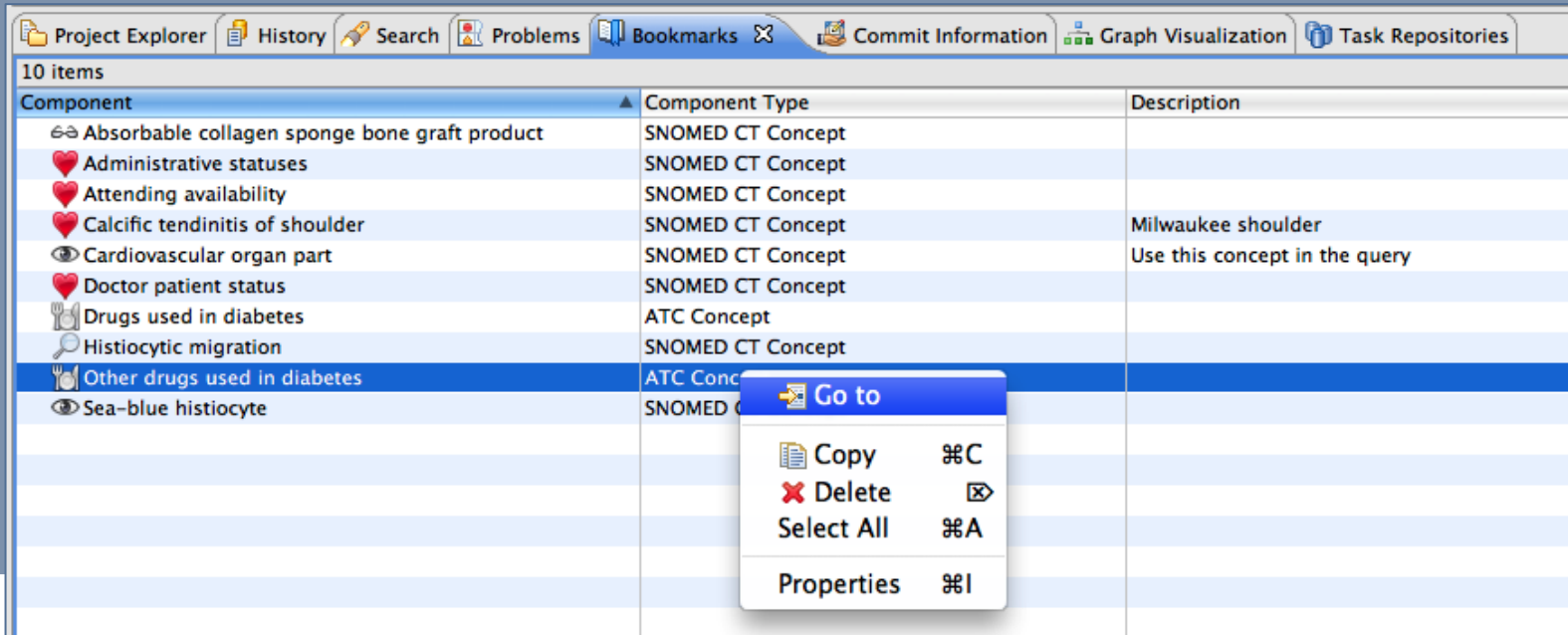


Bookmarking

A small blue decorator indicates bookmarked concepts.



Bookmarked concepts can be opened from the **Bookmark view**. Right-click and select *Delete* to remove a bookmark.



Project Explorer History Search Problems Bookmarks Commit Information Graph Visualization Task Repositories

10 items

Component	Component Type	Description
↔ Absorbable collagen sponge bone graft product	SNOMED CT Concept	
♥ Administrative statuses	SNOMED CT Concept	
♥ Attending availability	SNOMED CT Concept	
♥ Calcific tendinitis of shoulder	SNOMED CT Concept	Milwaukee shoulder
👁 Cardiovascular organ part	SNOMED CT Concept	Use this concept in the query
♥ Doctor patient status	SNOMED CT Concept	
🍴 Drugs used in diabetes	ATC Concept	
🔍 Histiocytic migration	SNOMED CT Concept	
🍴 Other drugs used in diabetes	ATC Concept	
👁 Sea-blue histiocyte	SNOMED CT Concept	

Go to

- Copy ⌘C
- Delete** ⌘X
- Select All ⌘A
- Properties ⌘I

Hands-on Snow Owl

Get familiar with the SNOMED CT view

- Expand nodes in the tree, collapse nodes
- Click a concept and see parents in parent view
- Set concept as a root
- Bookmark a concept
- Open a concept from bookmark view
- Delete a bookmark

How can I search for a concept?

There are three different search tools in Snow Owl

- **Filter search** (part of concept views, filters selected terminology)
- **Quick search** (comprehensive search through all terminologies and resources)
- **Advanced search** (various resources and search criteria, ESCG)

Filter search

The image displays four overlapping windows from a medical ontology viewer, each showing a different concept set with a search filter applied. Red boxes highlight the search input fields in each window.

- LOINC:** The search filter is empty. The list includes categories like Microbiology, Antibiotic Susceptibilities, Skin tests, Chemistry, and Drug/Tox.
- ATC:** The search filter is empty. The list shows anatomical and therapeutic classifications such as A ALIMENTARY TRACT AND METABOLISM, B BLOOD AND BLOOD FORMING ORGANS, and N NERVOUS SYSTEM.
- SNOMED CT:** The search filter is "tof". The results are filtered to show concepts related to "tofu", including "Acquired tracheo-oesophageal fistula", "Train of four count", and "Tofu spread".
- ICD-10:** The search filter is empty. The list shows ICD-10 categories like II Neoplasms, III Diseases of the blood and blood-forming organs, and XXII Codes for special purposes.

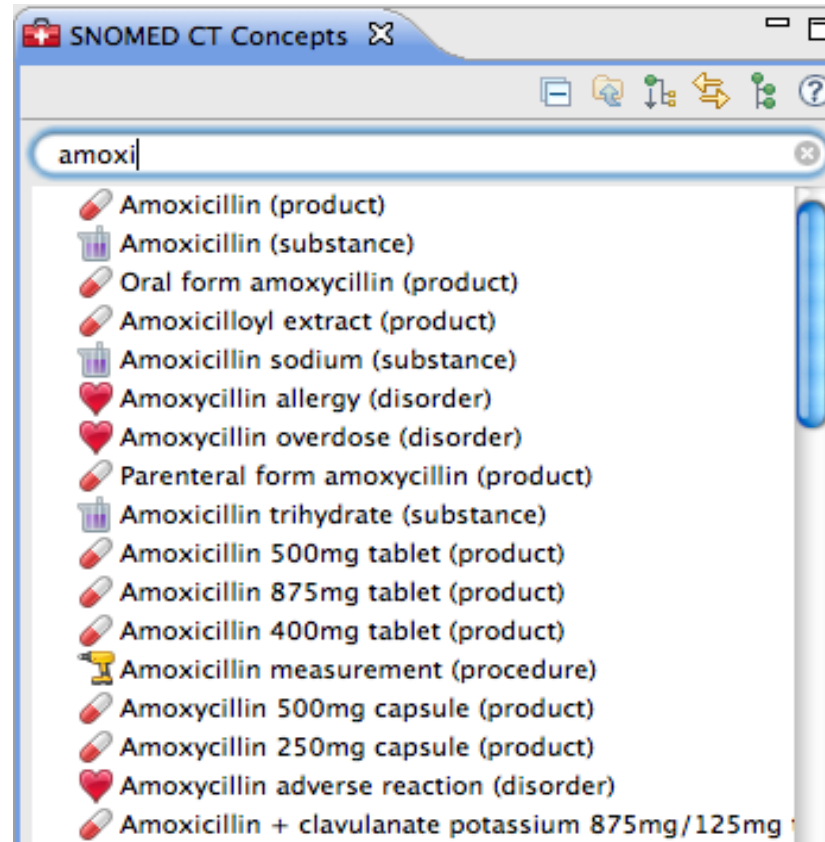
Each of the concept views allows to filter concepts.

Filter search – flat list

Type a search term in the filter text field on the top of the view.

The preferred term is displayed. However, all descriptions are considered during filtering.

The filter also allows to look up a concept by its ID.



SNOMED CT concept view

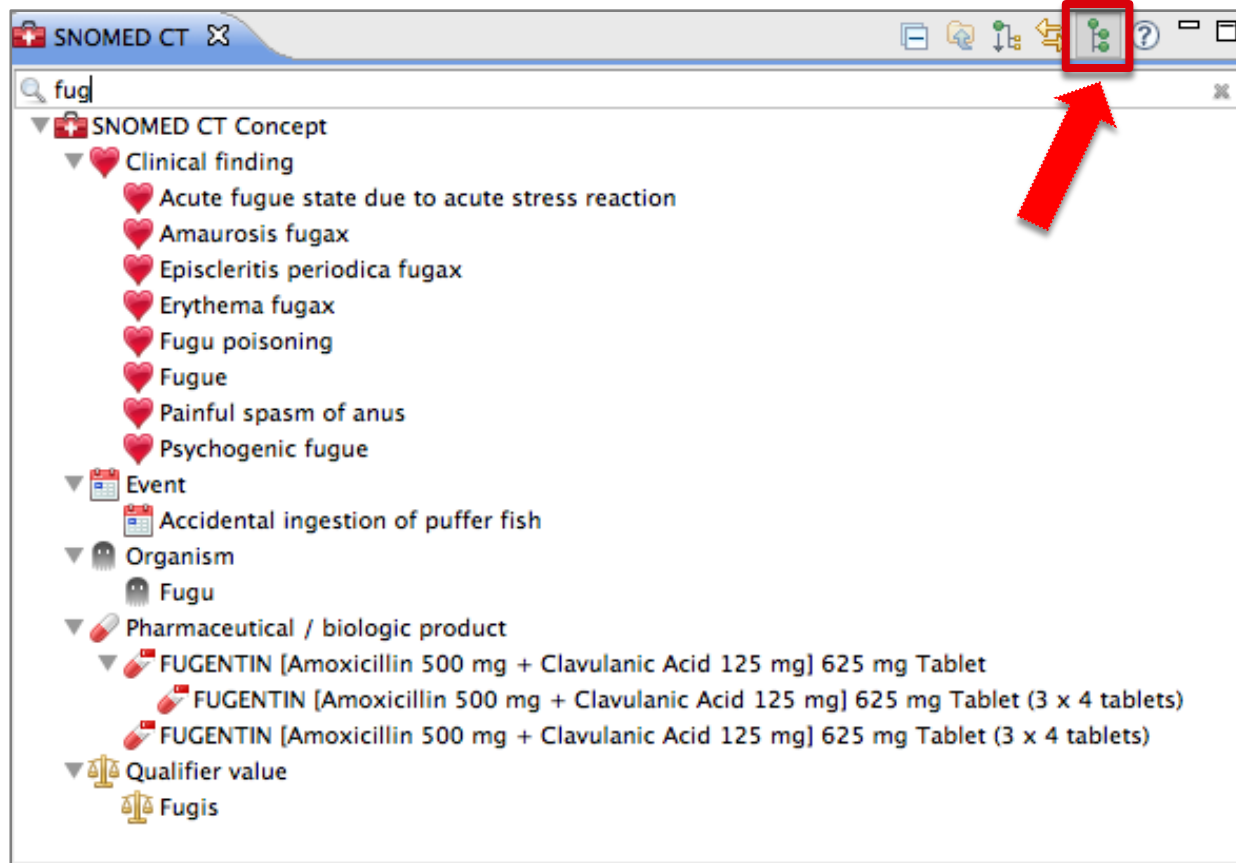
Filter search – hierarchical view

Filter results can also be displayed as a tree.

The **hierarchical view** shows only the matching concepts and their top-level parent concept.

Concepts that are between the parent concept and the matching concept in the hierarchy are omitted.

Use the toggle button to switch between views.



The screenshot shows a web browser window titled "SNOMED CT" with a search bar containing "fug". The search results are displayed in a hierarchical tree view. The tree is expanded to show the following categories and their sub-items:

- SNOMED CT Concept
 - Clinical finding
 - Acute fugue state due to acute stress reaction
 - Amaurosis fugax
 - Episcleritis periodica fugax
 - Erythema fugax
 - Fugu poisoning
 - Fugue
 - Painful spasm of anus
 - Psychogenic fugue
 - Event
 - Accidental ingestion of puffer fish
 - Organism
 - Fugu
 - Pharmaceutical / biologic product
 - FUGENTIN [Amoxicillin 500 mg + Clavulanic Acid 125 mg] 625 mg Tablet
 - FUGENTIN [Amoxicillin 500 mg + Clavulanic Acid 125 mg] 625 mg Tablet (3 x 4 tablets)
 - FUGENTIN [Amoxicillin 500 mg + Clavulanic Acid 125 mg] 625 mg Tablet (3 x 4 tablets)
 - Qualifier value
 - Fugis

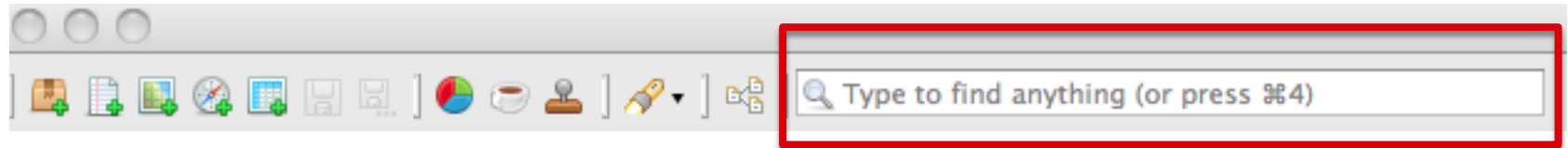
A red arrow points to a toggle button in the top right corner of the window, which is used to switch between views.

Hands-On Snow Owl

Filter search

- Type a search term in filter
- Toggle between hierarchical view and flat list
- Look up a concept ID: 286860006

Quick search



The **Quick Search** box on the toolbar allows searching through all terminologies from a single location.

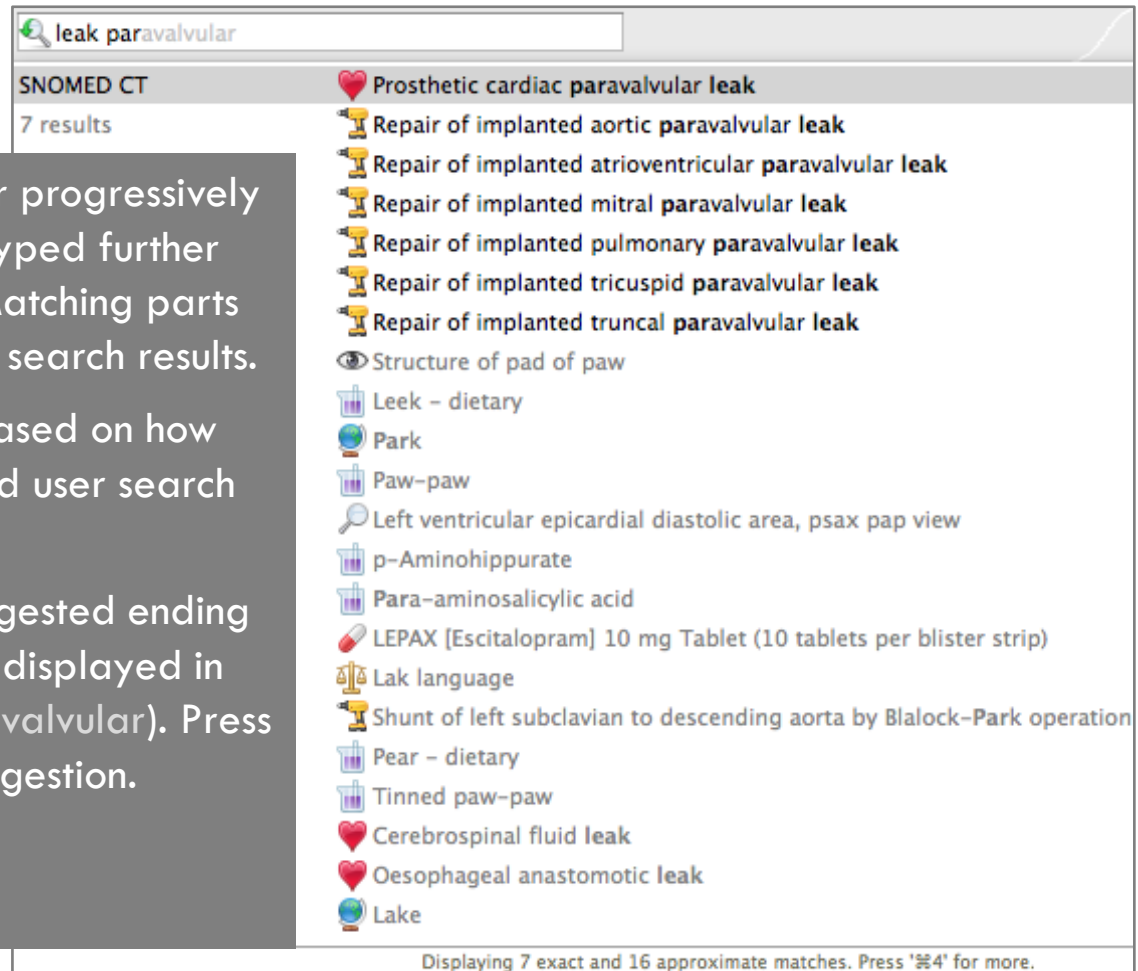
It can also be accessed by pressing CTRL-4 (Windows) or CMD-4 (OS X).

Quick search

Search results appear progressively with each character typed further refining the search. Matching parts are highlighted in the search results.

They are sorted by based on how closely they match and user search profile preferences.

Autocomplete: A suggested ending for the search term is displayed in light grey (here: paravalvular). Press TAB to accept the suggestion.



The screenshot shows a search bar with the text 'leak paravalvular'. Below the search bar, the results are displayed under the heading 'SNOMED CT' and '7 results'. The results are listed as follows:

- Prosthetic cardiac paravalvular leak
- Repair of implanted aortic paravalvular leak
- Repair of implanted atrioventricular paravalvular leak
- Repair of implanted mitral paravalvular leak
- Repair of implanted pulmonary paravalvular leak
- Repair of implanted tricuspid paravalvular leak
- Repair of implanted truncal paravalvular leak
- Structure of pad of paw
- Leek - dietary
- Park
- Paw-paw
- Left ventricular epicardial diastolic area, psax pap view
- p-Aminohippurate
- Para-aminosalicylic acid
- LEPAX [Escitalopram] 10 mg Tablet (10 tablets per blister strip)
- Lak language
- Shunt of left subclavian to descending aorta by Blalock-Park operation
- Pear - dietary
- Tinned paw-paw
- Cerebrospinal fluid leak
- Oesophageal anastomotic leak
- Lake

At the bottom of the search results, it says: 'Displaying 7 exact and 16 approximate matches. Press '⌘4' for more.'

Quick search

Results are organized in different sections according to the underlying terminology (e.g. SNOMED CT, ICD-10, ATC, LOINC) or resource (e.g. reference sets, value sets).

Previously selected choices and bookmarks will also appear with the search results in their own sections.

The quick search can be configured to exclude certain terminology artifacts (e.g. reference sets, modules).

Search results for **paravalvular**

Section	Results
Previous Choices	Cardiac paravalvular structure
2 results	Repair of implanted aortic paravalvular leak
Bookmarks	Repair of implanted mitral paravalvular leak
2 results	Prosthetic cardiac paravalvular leak
SNOMED CT	Para 7
2,821 results	Benzyl para -hydroxybenzoate
	Butyl para -hydroxybenzoate
	Para -aminobenzoate measurement
	para -Hydroxyamphetamine measurement
	Para -ileostomy hernia
	para -Methylhippurate measurement
ICD-10	Disseminated paracoccidioidomycosis
188 results	Paragonimiasis
	Paralytic calcification and ossification of muscle
	Paralytic ileus
	Paraneoplastic neuromyopathy and neuropathy
	Parasitic infestation of eyelid in diseases classified elsewhere
	Other parasitologically confirmed malaria, not elsewhere classified
ATC	Paracetamol
22 results	Liquid paraffin , combinations
	Liquid paraffin
	Paraldehyde
	Paramagnetic contrast media

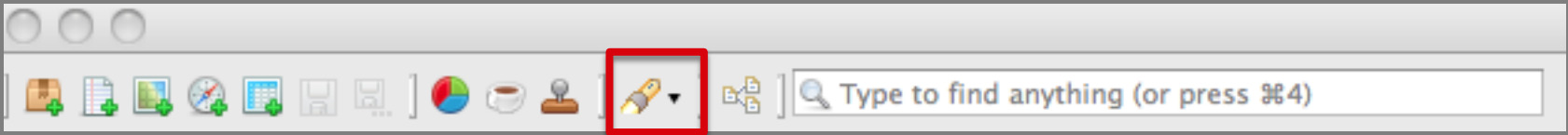
Displaying 24 exact matches. Press '⌘4' for more.

Hands-On Snow Owl

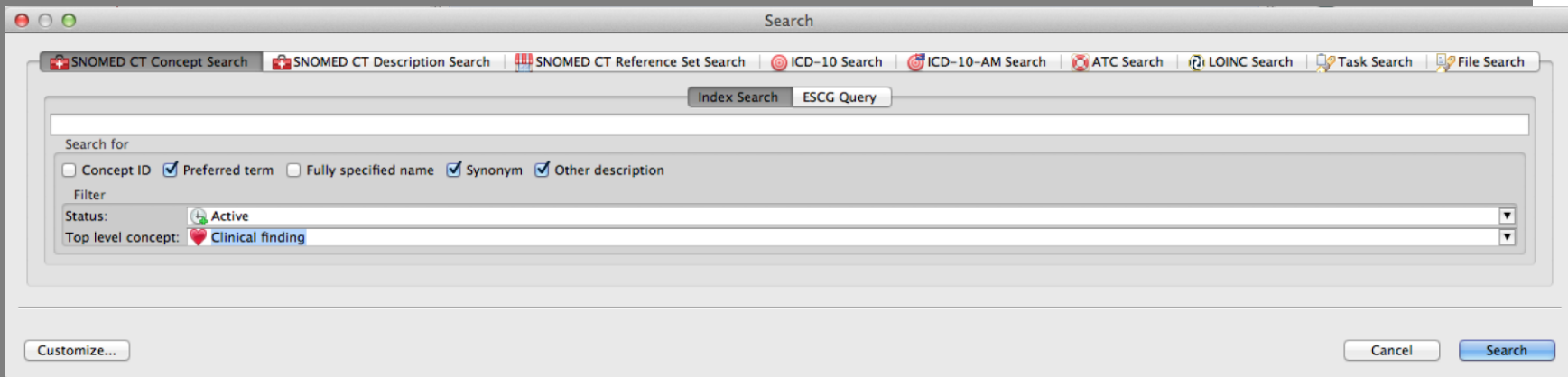
Quick search

- Type search term in quick search field
- Review results
- Select result and open concept in editor
- Use shortcut to display more matches
- Mistype, abbreviate a search term
- Look up a concept ID: 22298006

Advanced Search



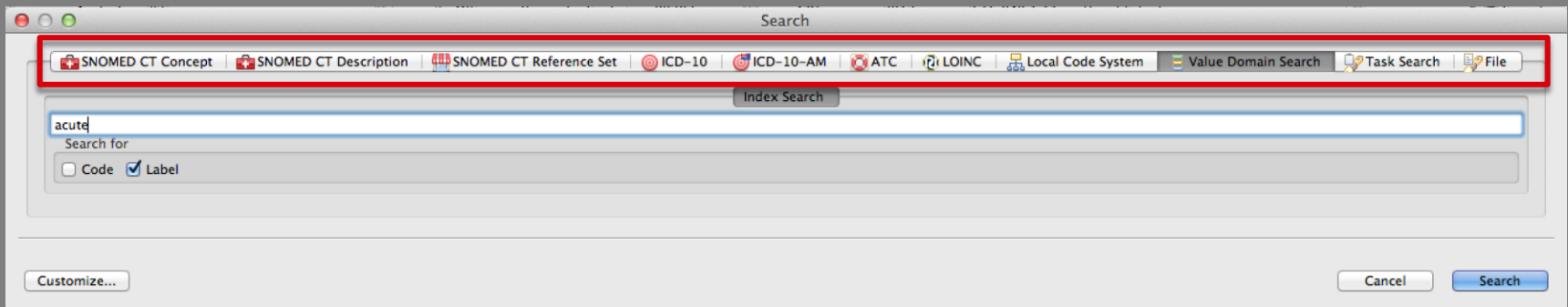
The Flashlight button in the main tool bar opens the advanced search dialog.



Advanced Search

The **advanced search** allows searching on various kinds of resources:

SNOMED CT concepts, SNOMED CT descriptions, ICD-10, ICD-10-AM, ATC, LOINC, reference sets, value sets, local code systems, tasks, and files.



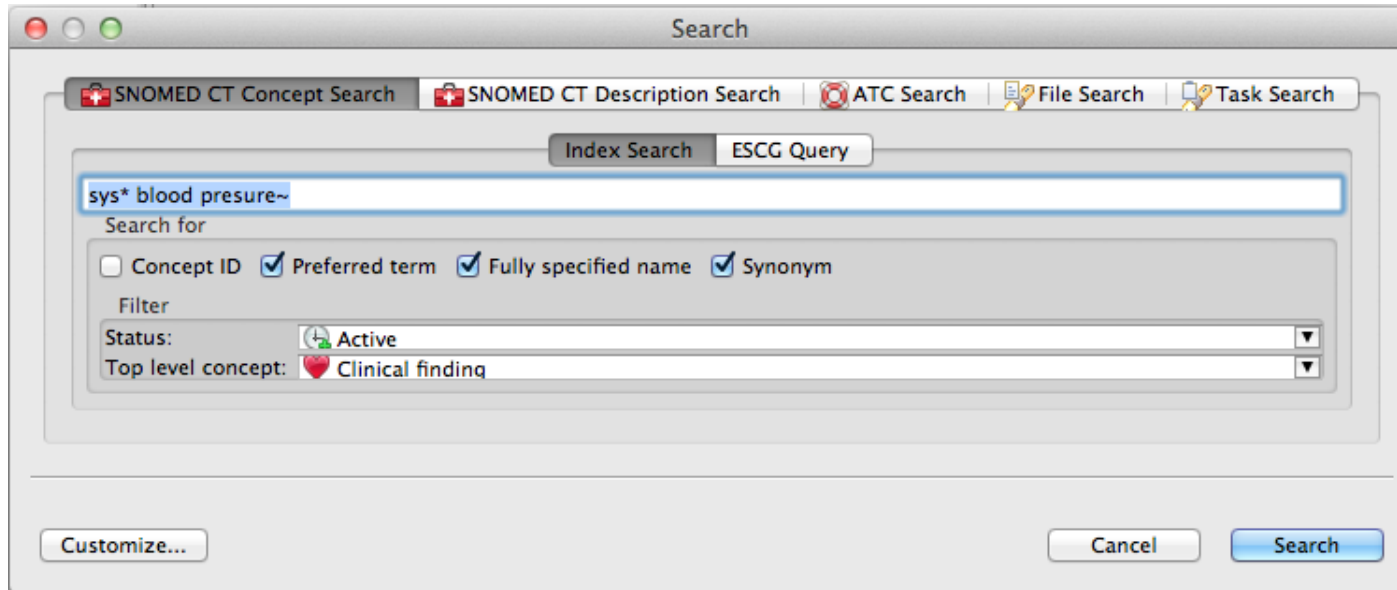
Use the tabs to select the resource.

Advanced Search

The screenshot shows a web application window titled "Search". At the top, there are several tabs for different search types: SNOMED CT Concept Search, SNOMED CT Description Search, SNOMED CT Reference Set Search, ICD-10 Search, ICD-10-AM Search, ATC Search, LOINC Search, Task Search, and File Search. Below these tabs, there are two buttons: "Index Search" and "ESCG Query". A red rectangular box highlights the search criteria section, which includes a "Search for" field with the following options: Concept ID, Preferred term, Fully specified name, Synonym, and Other description. Below this is a "Filter" section with a "Status:" dropdown menu set to "Active" and a "Top level concept:" dropdown menu set to "Clinical finding". At the bottom of the window, there are three buttons: "Customize...", "Cancel", and "Search".

Searches can be restricted to certain criteria:
Concept ID, FSN, Synonym, Preferred Term, Synonym,
top-level hierarchy, status.

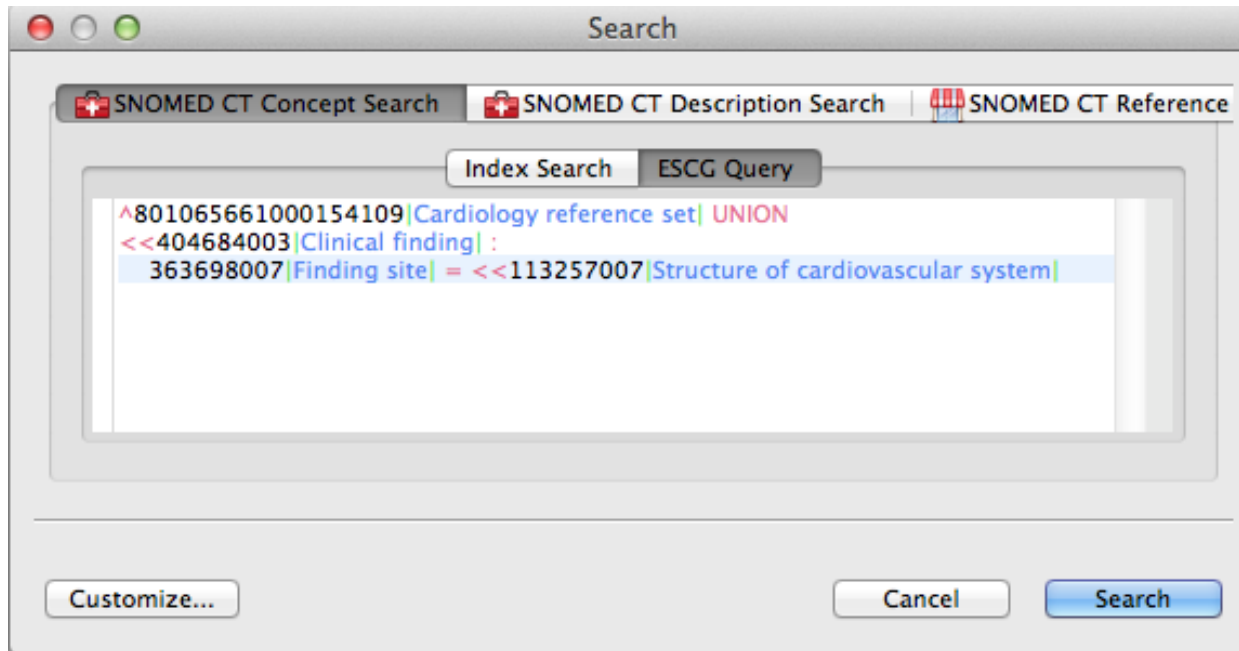
Advanced Search



The screenshot shows a search window titled "Search" with several tabs: "SNOMED CT Concept Search", "SNOMED CT Description Search", "ATC Search", "File Search", and "Task Search". The "Index Search" tab is active, and the search query "sys* blood presure~" is entered in the search field. Below the search field, there are checkboxes for "Concept ID", "Preferred term", "Fully specified name", and "Synonym". The "Filter" section includes a "Status" dropdown menu set to "Active" and a "Top level concept" dropdown menu set to "Clinical finding". At the bottom of the window, there are buttons for "Customize...", "Cancel", and "Search".

Wildcards, fuzzy matching, and Boolean operators are supported...

Advanced Search



...as well as semantic queries with ESCG.

Search results

The results of the advanced search are displayed in the search view. Double-click a result to open the editor.

Score	Concept ID	Preferred term	Fully specified name	Status
4651.5034	73211009	Diabetes mellitus	Diabetes mellitus (disorder)	active
3765.5845	44054006	Diabetes mellitus type 2	Diabetes mellitus type 2 (disorder)	active
691.2489	46635009	Diabetes mellitus type 1	Diabetes mellitus type 1 (disorder)	active
376.77634	313436004	Type II diabetes mellitus without complication	Type II diabetes mellitus without complication (disorder)	active
328.5308	443694000	Type II diabetes mellitus uncontrolled	Type II diabetes mellitus uncontrolled (finding)	active
244.52672	11687002	Gestational diabetes mellitus	Gestational diabetes mellitus (disorder)	active
223.23393	11530004	Brittle diabetes mellitus	Brittle diabetes mellitus (finding)	active
136.3098	421326000	Neurologic disorder associated with type II diabetes mellitus	Neurologic disorder associated with type II diabetes mellitus (disorder)	active
103.227	420279001	Renal disorder associated with type II diabetes mellitus	Renal disorder associated with type II diabetes mellitus (disorder)	active
74.80841	422166005	Peripheral circulatory disorder associated with type II diabetes mellitus	Peripheral circulatory disorder associated with type II diabetes mellitus (disorder)	active
57.196598	9414007	Impaired glucose tolerance	Impaired glucose tolerance (disorder)	active
56.427036	420715001	Persistent microalbuminuria associated with type II diabetes mellitus	Persistent microalbuminuria associated with type II diabetes mellitus (disorder)	active
56.23629	421986006	Persistent proteinuria associated with type II diabetes mellitus	Persistent proteinuria associated with type II diabetes mellitus (disorder)	active
53.130703	237599002	Insulin-treated non-insulin-dependent diabetes mellitus	Insulin-treated non-insulin-dependent diabetes mellitus (disorder)	active
47.551968	422099009	Diabetic oculopathy associated with type II diabetes mellitus	Diabetic oculopathy associated with type II diabetes mellitus (disorder)	active
43.69048	444073006	Type I diabetes mellitus uncontrolled	Type I diabetes mellitus uncontrolled (finding)	active
37.39764	421893009	Renal disorder associated with type I diabetes mellitus	Renal disorder associated with type I diabetes mellitus (disorder)	active
29.91196	422014003	Disorder associated with type 2 diabetes mellitus	Disorder associated with type 2 diabetes mellitus (disorder)	active
28.378103	421707005	Polyneuropathy associated with type II diabetes mellitus	Polyneuropathy associated with type II diabetes mellitus (disorder)	active
25.06164	127013003	Diabetic renal disease	Diabetic renal disease (disorder)	active
24.035942	421468001	Neurological disorder associated with type I diabetes mellitus	Neurological disorder associated with type I diabetes mellitus (disorder)	active
21.154789	190389009	Type II diabetes mellitus with ulcer	Type II diabetes mellitus with ulcer (disorder)	active
21.020596	15771004	Diabetes insipidus	Diabetes insipidus (disorder)	active
20.971352	230572002	Diabetic neuropathy	Diabetic neuropathy (disorder)	active
19.548693	420422005	Diabetic ketoacidosis	Ketoacidosis in diabetes mellitus (disorder)	active
19.092041	423263001	Diabetic autonomic neuropathy associated with type 2 diabetes mellitus	Diabetic autonomic neuropathy associated with type 2 diabetes mellitus (disorder)	active
14.44901	190447002	Steroid-induced diabetes	Steroid-induced diabetes (disorder)	active
12.277929	421365002	Peripheral circulatory disorder associated with type I diabetes mellitus	Peripheral circulatory disorder associated with type I diabetes mellitus (disorder)	active
12.277929	421750000	Ketoacidosis in type II diabetes mellitus	Ketoacidosis in type II diabetes mellitus (disorder)	active
12.127495	428007007	Erectile dysfunction associated with type 2 diabetes mellitus	Erectile dysfunction associated with type 2 diabetes mellitus (disorder)	active
11.361007	420868002	Disorder associated with type I diabetes mellitus	Disorder associated with type I diabetes mellitus (disorder)	active

Hands-on Snow Owl

Advanced search

- Bring up SNOMED CT concept search
- Look for inactive concepts with the description “Diabetes”
- Look for active concepts starting with dia*
- Look for concepts with the FSN “Dressing”
- Open a concept from the search view

SNOMED CT editor

The concept editor serves two functions:

- It displays detailed **information** on a concept.
- It allows to make **changes** to a concept (e.g. adding another clinical phrase to describe the concept, retiring a concept or description).

Opening the concept editor from view

Double-click a concept in the SNOMED CT view to launch the editor.

The screenshot displays two windows from the SNOMED CT application. The left window, titled 'SNOMED CT', shows a hierarchical tree of concepts. The search bar contains 'tof'. The 'Clinical finding' category is expanded, and 'Tetralogy of Fallot' is selected and highlighted in blue. The right window, titled 'Tetralogy of Fallot', shows the concept editor for this specific concept. It features a red heart icon and the title 'Tetralogy of Fallot'. The editor is divided into sections: 'Descriptions' and 'Properties'. The 'Descriptions' section lists the Fully Specified Name as 'Tetralogy of Fallot (disorder)' and several synonyms: 'Tetralogy of Fallot', 'Fallot's tetralogy', and 'Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy'. The 'Properties' section is further divided into 'Ungrouped Properties', which includes 'Is a' relationships to 'Congenital abnormality of ventricles and ventricular septum', 'Overriding aorta', 'Pulmonic valve stenosis', 'Right ventricular hypertrophy', and 'Ventricular septal defect'. It also shows an 'Occurrence' property set to 'Congenital' and several empty input fields for 'After:', 'Associated with:', 'Causative agent:', and 'Due to:'. At the bottom of the right window, a tabbed interface includes 'Overview', 'Descriptions', 'Source relationships', 'Destination relations...', 'Value domain membership', 'Mappings', and 'References'.

Opening the editor from quick search

Clicking a match from the quick search list also opens the

leak paravalvular

SNOMED CT

7 results

- Prosthetic cardiac paravalvular leak
- Repair of implanted aortic paravalvular leak
- Repair of implanted atrioventricular paravalvular leak
- Repair of implanted mitral paravalvular leak
- Repair of implanted pulmonary paravalvular leak
- Repair of implanted tricuspid paravalvular leak
- Repair of implanted truncal paravalvular leak
- Structure of pad of paw
- Leek - dietary
- Park
- Paw-paw
- Left ventricular epicardial diastolic area, psax pap view
- p-Aminohippurate
- Para-aminosalicylic acid
- LEPAX [Escitalopram] 10 mg Tablet (10 tablets per blister strip)
- Lak language
- Shunt of left subclavian to descending aorta by Blalock-Park operation
- Pear - dietary
- Tinned paw-paw
- Cerebrospinal fluid leak
- Oesophageal anastomotic leak
- Lake

Displaying 7 exact and 16 approximate matches. Press '⌘4' for more.

SNOMED CT concept editor

The screenshot shows the SNOMED CT concept editor for 'Hantaan virus'. The interface includes a tabbed window at the top with three tabs: 'Hantaan virus', 'Train of four count', and 'N01AB Halogenated hy'. The 'Hantaan virus' tab is active and contains the following information:

- Descriptions:**
 - Fully Specified Name: Hantaan virus (organism)
 - Synonym: Hantaan virus
 - Synonym: Korean haemorrhagic fever virus
- Properties:**
 - Ungrouped Properties:
 - Is a: Genus Hantavirus
 - SNOMED CT Properties:
 - Concept ID: 52779006
 - Module: SNOMED CT core
 - Effective time: 2002-01-31
 - Status: Active
 - Definition status: Primitive
 - Subclass definitions: Non-disjoint

At the bottom of the editor, there is a navigation bar with the following tabs: Overview, Descriptions, Source relationships, Destination relations..., Value domain membership, Mappings, and References.

Multiple editors can be open at the same time.

Use the tabs on the top of the editor to switch.

Double-click the tab to maximize the editor.

Click the x symbol to close the editor or right-click to select from many options to close editors.

Displaying editors side by side

The image shows two side-by-side editors in a software application. The left editor is titled "Entire left shoulder region" and the right editor is titled "Structure of right shoulder region". Both editors display a hierarchical view of properties and SNOMED CT details.

Entire left shoulder region

- Descriptions
 - Fully Specified Name: Entire left shoulder region (body structure)
 - Synonym: Entire left shoulder region
 - Synonym: Left shoulder
- Properties
 - Ungrouped Properties
 - Is a: Entire shoulder region
 - Is a: Structure of left shoulder region
 - Laterality: Left
 - Part of: Entire upper limb
 - SNOMED CT Properties
 - Concept ID: 368107006
 - Module: SNOMED CT core
 - Effective time: 2005-07-31
 - Status: Active
 - Definition status: Defined
 - Subclass definitions: Non-disjoint

Structure of right shoulder region

- Descriptions
 - Fully Specified Name: Structure of right shoulder region (body structure)
 - Synonym: Structure of right shoulder region
 - Synonym: Right shoulder
 - Synonym: Right shoulder region
- Properties
 - Ungrouped Properties
 - Is a: Right upper extremity structure
 - Is a: Shoulder region structure
 - Laterality: Right
 - Part of: Entire upper limb
 - SNOMED CT Properties
 - Concept ID: 91774008
 - Module: SNOMED CT core
 - Effective time: 2005-01-31
 - Status: Active
 - Definition status: Defined
 - Subclass definitions: Non-disjoint

The tabs can also be used to display editors side by side:
Drag the tabs to the side of the editor until a small black arrow appears. The arrow will indicate where the new editor will be docked.

Overview Descriptions Source relationships Destination relationships Value sets Mappings References

SNOMED CT concept editor pages

The screenshot shows the SNOMED CT concept editor interface for the concept 'Hantaan virus'. The interface is divided into several sections:

- Descriptions:**
 - Fully Specified Name: Hantaan virus (organism)
 - Synonym: Hantaan virus
 - Synonym: Korean haemorrhagic fever virus
- Properties:**
 - Ungrouped Properties:
 - Is a: Genus Hantavirus
 - SNOMED CT Properties:
 - Concept ID: 52779006
 - Module: SNOMED CT core
 - Effective time: 2002-01-31
 - Status: Active
 - Definition status: Primitive
 - Subclass definitions: Non-disjoint

At the bottom of the window, there is a navigation bar with the following tabs: Overview, Descriptions, Source relationships, Destination relations..., Value domain membership, Mappings, and References. The 'Overview' tab is currently selected and highlighted with a red border.

The concept editor displays information on a series of pages (e.g. value domain membership, mappings).

Click the tabs on the bottom to select a page.

Editor – Overview page

Sleep disorder care management This property violates the concept model.

Descriptions

- Fully Specified Name: Sleep disorder care management (procedure)
- Synonym: Sleep disorder care management

Properties

Ungrouped Properties

- Is a: Care regimes management
- Has focus: Care regimes
- Method: Management – action
- Access:
- Direct device:
- Direct morphology:
- Direct substance:
- Has intent:
- Has recipient category:
- Priority:
- Revision status:
- Route of administration:
- Surgical approach:
- Using energy:
- Using substance:

SNOMED CT Properties

- Concept ID: 81121000119107
- Module: SNOMED CT core
- Effective time: 2013-01-31
- Status: Active
- Definition status: Primitive
- Subclass definitions: Non-disjoint

Overview | Descriptions | Source relationships | Destination relationships | Value domain membership | Mappings | References

The **overview page** shows information on the concept's descriptions, relationships, and metadata.

It is comprised of three sections:

- Descriptions
- Properties
- SNOMED CT Properties

The sections can be expanded or collapsed using the small triangle next to the section heading.

Editor – Overview page

The **descriptions** section shows the clinical phrases that describe this concept.

Sleep disorder care management [This property violates the concept model.](#)

Descriptions

- Fully Specified Name: Sleep disorder care management (procedure)
- Synonym: Sleep disorder care management

Properties

Ungrouped Properties

- Is a: Care regimes management
- Has focus: Care regimes
- Method: Management – action
- Access:
- Direct device:
- Direct morphology:
- Direct substance:
- Has intent:
- Has recipient category:
- Priority:
- Revision status:
- Route of administration:
- Surgical approach:
- Using energy:
- Using substance:

SNOMED CT Properties

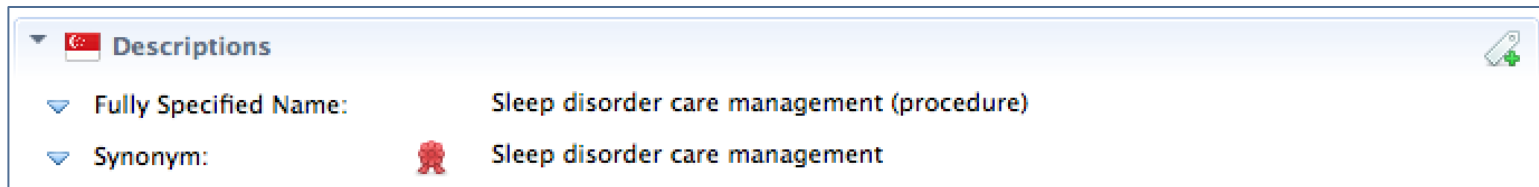
- Concept ID: 81121000119107
- Module: SNOMED CT core
- Effective time: 2013-01-31
- Status: Active
- Definition status: Primitive
- Subclass definitions: Non-disjoint

Overview | **Descriptions** | Source relationships | Destination relationships | Value domain membership | Mappings | References

Editor – Description section

The **description type** is displayed on the left (e.g. FSN, Synonym).

The **description term** is displayed on the right (e.g. *Sleep disorder care management*).



The screenshot shows a software interface for editing descriptions. At the top, there is a section header 'Descriptions' with a small Singaporean flag icon to its left and a plus sign icon to its right. Below the header, there are two entries:

- Fully Specified Name:** Sleep disorder care management (procedure)
- Synonym:** Sleep disorder care management

The 'Synonym' entry has a red rosette icon next to it, indicating it is the preferred term.

A **rosette icon** indicates the preferred term.

The **flag** on the section heading indicates the currently active language dialect (here: Singaporean English).

Editor – Properties section

The **Properties** section displays the concept's relationships and datatype properties.

The property type (here: Is a, Has focus, Method) is displayed on the left.

The property value (e.g. *Care regimes management*) is displayed on the right.

The screenshot shows a web-based editor for a concept named "Sleep disorder care management". The interface is divided into several sections:

- Descriptions:** Fully Specified Name: Sleep disorder care management (procedure); Synonym: Sleep disorder care management.
- Properties:** This section is highlighted with a red border and contains:
 - Ungrouped Properties:** Is a: Care regimes management; Has focus: Care regimes; Method: Management - action.
 - Access: [text input]
 - Direct device: [text input]
 - Direct morphology: [text input]
 - Direct substance: [text input]
 - Has intent: [text input]
 - Has recipient category: [text input]
 - Priority: [text input]
 - Revision status: [text input]
 - Route of administration: [text input]
 - Surgical approach: [text input]
 - Using energy: [text input]
 - Using substance: [text input]
- SNOMED CT Properties:** Concept ID: 81121000119107; Module: SNOMED CT core; Effective time: 2013-01-31; Status: Active; Definition status: Primitive; Subclass definitions: Non-disjoint.

At the bottom, there is a navigation bar with tabs: Overview, Descriptions, Source relationships, Destination relationships, Value domain membership, Mappings, and References.

Concept model backed editing

To prevent the creation of erroneous relationships, the editor displays only attribute relationships of the predefined range and domain.

Example: Since *Biopsy sample* is a specimen, only attributes used to define specimens are displayed.

Biopsy sample

Biopsy sample

- Descriptions
 - Fully Specified Name: Biopsy sample (specimen)
 - Synonym: Biopsy sample
- Properties
 - Ungrouped Properties
 - Is a: Specimen
 - Specimen procedure: Biopsy
 - Specimen source identity:
 - Specimen source morphology:
 - Specimen source topograph:
 - Specimen substance:
 - SNOMED CT Properties
 - Concept ID: 258415003
 - Module: SNOMED CT core
 - Effective time: 2004-07-31
 - Status: Active
 - Definition status: Defined
 - Subclass definitions: Non-disjoint

Overview | Descriptions | Source relationships | Destination relationships | Value domain membership | Mappings | References

Editor – Properties section

The properties section automatically creates entry fields for all relationships and datatype properties specified in the concept model.

A list with valid values is displayed when clicking into the text field. The editor also validates erroneous entries and provides a link (*here: This property violates the concept model*) with further information.

The screenshot shows the 'Sleep disorder care management' editor window. The 'Properties' section is expanded, showing 'Ungrouped Properties'. The 'Access' dropdown is open, displaying a list of values. A red box highlights the 'Access' dropdown and its list of values.

Property	Value
Fully Specified Name:	Sleep disorder care management (procedure)
Synonym:	Sleep disorder care management
Is a:	Care regimes management
Has focus:	Care regimes
Method:	Management - action
Access:	SNOMED CT
Access:	3 results
Access:	Closed approach
Access:	Open approach
Access:	Percutaneous approach

Editor – Overview page

The SNOMED CT Properties section

displays the Concept ID and other metadata such as Module, Effective time, Status, Definition status, and Subclass definition.

The screenshot shows the 'Sleep disorder care management' editor interface. The 'SNOMED CT Properties' section is highlighted with a red box and contains the following information:

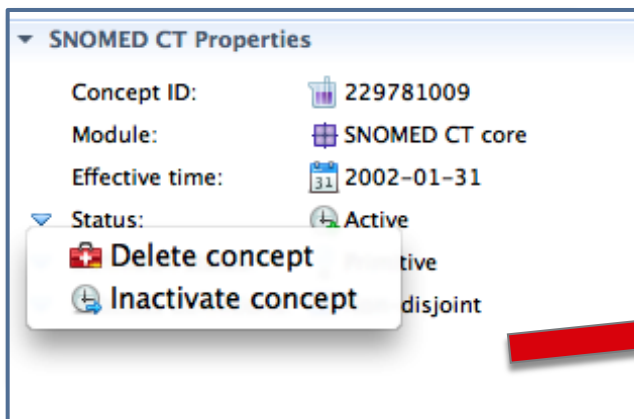
- Concept ID: 81121000119107
- Module: SNOMED CT core
- Effective time: 2013-01-31
- Status: Active
- Definition status: Primitive
- Subclass definitions: Non-disjoint

The interface also shows other sections like 'Descriptions' and 'Properties' with various fields and icons.

Editor – Overview page

The overview page can also be used for editing.

Clicking on the blue triangles will display a list of actions (e.g. create a copy of a description, inactivate a concept).



SNOMED CT Properties

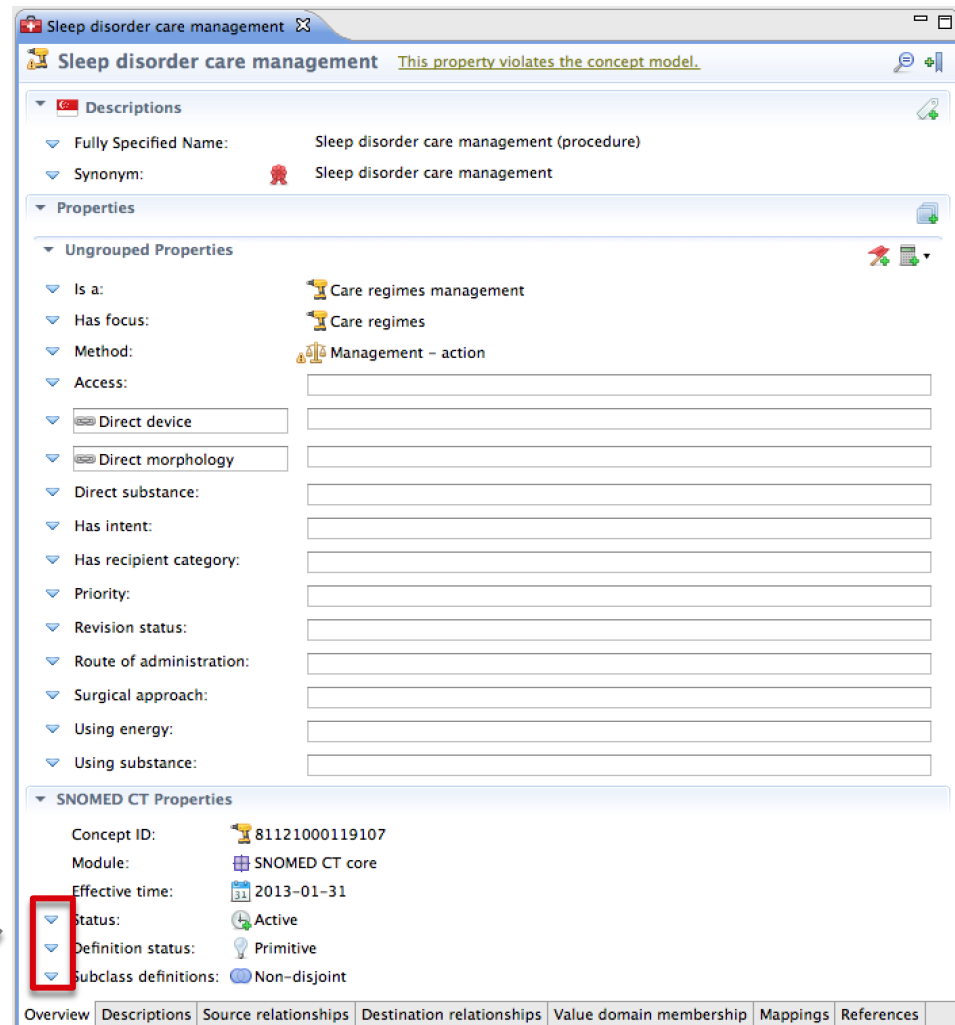
Concept ID: 229781009

Module: SNOMED CT core

Effective time: 2002-01-31

Status: Active

- Delete concept
- Inactivate concept



Sleep disorder care management

Sleep disorder care management *This property violates the concept model.*

Descriptions

Fully Specified Name: Sleep disorder care management (procedure)

Synonym: Sleep disorder care management

Properties

Ungrouped Properties

Is a: Care regimes management

Has focus: Care regimes

Method: Management - action

Access:

Direct device:

Direct morphology:

Direct substance:

Has intent:

Has recipient category:

Priority:

Revision status:

Route of administration:

Surgical approach:

Using energy:

Using substance:

SNOMED CT Properties

Concept ID: 81121000119107

Module: SNOMED CT core

Effective time: 2013-01-31

Status: Active

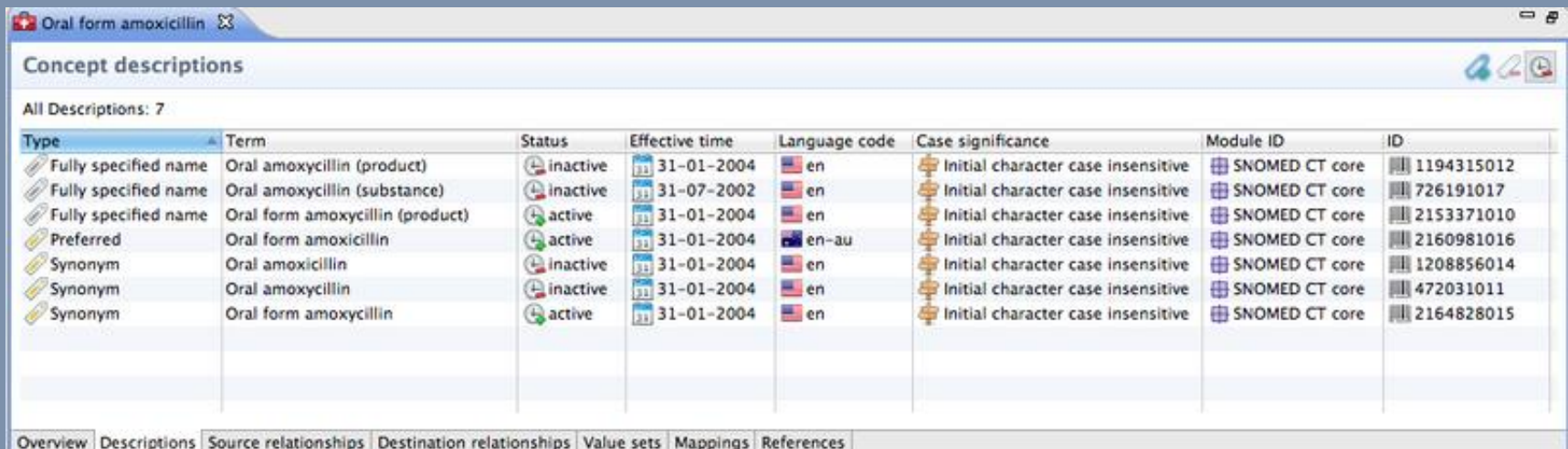
Definition status: Primitive

Subclass definitions: Non-disjoint

Overview Descriptions Source relationships Destination relationships Value domain membership Mappings References

Editor – Descriptions page

The **Description** page shows information about the descriptions associated with the selected concept. Descriptions can be added, modified, deleted and inactivated. Use the toggle button to show inactive descriptions.



Oral form amoxicillin

Concept descriptions

All Descriptions: 7

Type	Term	Status	Effective time	Language code	Case significance	Module ID	ID
Fully specified name	Oral amoxicillin (product)	inactive	31-01-2004	en	Initial character case insensitive	SNOMED CT core	1194315012
Fully specified name	Oral amoxicillin (substance)	inactive	31-07-2002	en	Initial character case insensitive	SNOMED CT core	726191017
Fully specified name	Oral form amoxicillin (product)	active	31-01-2004	en	Initial character case insensitive	SNOMED CT core	2153371010
Preferred	Oral form amoxicillin	active	31-01-2004	en-au	Initial character case insensitive	SNOMED CT core	2160981016
Synonym	Oral amoxicillin	inactive	31-01-2004	en	Initial character case insensitive	SNOMED CT core	1208856014
Synonym	Oral amoxicillin	inactive	31-01-2004	en	Initial character case insensitive	SNOMED CT core	472031011
Synonym	Oral form amoxicillin	active	31-01-2004	en	Initial character case insensitive	SNOMED CT core	2164828015

Overview | Descriptions | Source relationships | Destination relationships | Value sets | Mappings | References

Editor – Source relationships page

Source relationships originate from the selected concept and point to a different concept. The selected concept is the source. Source relationships are also displayed in the properties section of the overview page. They can be viewed and edited on this page.

Tetralogy of Fallot

Source concept relationships

Active Relationships: 16

Characteristic type	Status	Attribute	Destination	Destination	Effective time	Group	Union group	Modifier	Module	Refinability	Relationship ID
Inferred relationship	active	Is a	Heart	Congenital abnorm...	2005-07-31	0	0	Some	SNOMED CT core	Not refinable	2772378028
Inferred relationship	active	Associated morpho...	Eye	Hypertrophy	2013-01-31	6	0	Some	SNOMED CT core	Not refinable	4663477021
Inferred relationship	active	Associated morpho...	Eye	Stenosis	2008-07-31	3	0	Some	SNOMED CT core	Not refinable	3362467029
Inferred relationship	active	Finding site	Thoracic aorta	Thoracic aorta stru...	2008-07-31	4	0	Some	SNOMED CT core	Not refinable	3362468023
Inferred relationship	active	Finding site	Heart	Interventricular sep...	2008-07-31	2	0	Some	SNOMED CT core	Not refinable	3362466022
Inferred relationship	active	Finding site	Heart	Entire right ventricle	2013-01-31	6	0	Some	SNOMED CT core	Not refinable	4663478027
Inferred relationship	active	Is a	Heart	Ventricular septal d...	2002-01-31	0	0	Some	SNOMED CT core	Not refinable	288838026
Inferred relationship	active	Associated morpho...	Defect	Defect	2008-07-31	2	0	Some	SNOMED CT core	Not refinable	3362465021
Inferred relationship	active	Associated morpho...	Heart	Congenital anomaly	2008-07-31	1	0	Some	SNOMED CT core	Not refinable	3362464020
Inferred relationship	active	Occurrence	Heart	Congenital	2002-01-31	0	0	Some	SNOMED CT core	Not refinable	890403027
Inferred relationship	active	Is a	Heart	Pulmonic valve sten...	2002-07-31	0	0	Some	SNOMED CT core	Not refinable	1684262020
Inferred relationship	active	Finding site	Heart	Pulmonary valve str...	2008-07-31	3	0	Some	SNOMED CT core	Not refinable	3446505025
Inferred relationship	active	Is a	Heart	Overriding aorta	2002-01-31	0	0	Some	SNOMED CT core	Not refinable	288839023
Inferred relationship	active	Is a	Heart	Right ventricular hy...	2002-07-31	0	0	Some	SNOMED CT core	Not refinable	1684263026
Inferred relationship	active	Finding site	Heart	Cardiac ventricular...	2008-07-31	1	0	Some	SNOMED CT core	Not refinable	3362463025
Inferred relationship	active	Associated morpho...	Heart	Overriding structures	2008-07-31	4	0	Some	SNOMED CT core	Not refinable	3446504026

Editor – Destination relationships page

Destination relationships originate from a different concept and point to the given concept. The selected concept is the target. The page is read-only, if you want to edit the relationships displayed here, you need to open the source concept.

Tetralogy of Fallot

Destination concept relationships

Active Relationships: 18

Characteristic type	Status	Destination	Origin	Attribute	Effective time	Group	Union grou	Modifier	Module	Relationship ID
Inferred relationship	active	no	Repair of tetralogy of F...	Has focus	2011-07-31	0	0	Some	SNOMED CT core	3818729025
Inferred relationship	active	no	Atrioventricular septal...	Associated with	2011-07-31	0	0	Some	SNOMED CT core	3819149022
Inferred relationship	active	no	Repair of tetralogy of F...	Has focus	2007-07-31	0	0	Some	SNOMED CT core	3190468022
Inferred relationship	active	no	Complete repair of tetr...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2727410021
Inferred relationship	active	no	Correction of tetralogy...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2741631027
Inferred relationship	active	no	Correction of tetralogy...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2741632023
Inferred relationship	active	no	Implantation of outflo...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2737137023
Inferred relationship	active	no	Complete repair of tetr...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2738227022
Inferred relationship	active	no	Correction of tetralogy...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2735385028
Inferred relationship	active	no	Augmentation of outfl...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2736571025
Inferred relationship	active	no	Valvuloplasty of pulmo...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2732858021
Inferred relationship	active	no	Repair of tetralogy of F...	Has focus	2005-01-31	0	0	Some	SNOMED CT core	2707762026
Inferred relationship	active	no	Tetralogy of Fallot wit...	Is a	2003-07-31	0	0	Some	SNOMED CT core	2244752024
Inferred relationship	active	no	Tetralogy of Fallot wit...	Is a	2002-01-31	0	0	Some	SNOMED CT core	73466024
Inferred relationship	active	no	Tetralogy of Fallot wit...	Is a	2002-01-31	0	0	Some	SNOMED CT core	73467026
Inferred relationship	active	no	Dextraposition of aort...	Is a	2002-07-31	0	0	Some	SNOMED CT core	1696359020
Inferred relationship	active	no	Ventricular septal defe...	Is a	2002-07-31	0	0	Some	SNOMED CT core	1696360026
Inferred relationship	active	no	Pentalogy of Fallot	Is a	2002-01-31	0	0	Some	SNOMED CT core	330687028

Editor – Value domain membership page

The **Value domain membership** page shows if the concept is a member of a reference set or value set.

Reference set type	Referenced component	Query	Status	Effective time	Module ID	Member ID
Cardiology reference set	♥ Tetralogy of Fallot		active	2011-11-11	SNOMED CT B2i Extensio...	a5768100-5a5c-4f53-aa...
Valvular Heart Disease	♥ Tetralogy of Fallot (disorder)		active	Unpublished		

Editor – Mappings page

The **Mappings** page shows if the concept is part of a map.

Reference set type	Referenced component	Map target	Status	Effective time	Module ID	Member ID
CTV3 simple map	♥ Tetralogy of Fallot	P52..	active	2002-01-31	SNOMED CT core	150eed2-f6c2-59cf-99d4-7aa03b4cd920
ICD-9-CM equivalence complex map reference set	♥ Tetralogy of Fallot	745.2	active	2002-01-31	SNOMED CT core	59322bd1-1c71-5cca-8a25-bad9c15f82a5
SNOMED RT ID simple map	♥ Tetralogy of Fallot	D4-31110	active	2002-01-31	SNOMED CT core	373ed6c8-bc07-5eb0-8b4d-a45d80985d75

Overview | Descriptions | Source relationships | Destination relationships | Value sets | **Mappings** | References

Editor – References page

The **References** page shows if the concept, its descriptions or relationships are referenced in any reference sets, e.g. language acceptability reference sets.

Reference set type	Referenced component	Value	Status	Effective time	Module ID	Member ID
GB English	Tetralogy of Fallot (disorder)	Preferred	active	2002-01-31	SNOMED CT core	00d1c676-f352-5a82-8022-40b2f14c7bfa
GB English	Fallot's tetralogy	Acceptable	active	2002-07-31	SNOMED CT core	ea8cac19-7d20-5413-88f9-d5dd478b1ecf
GB English	TOF - Tetralogy of Fallot	Acceptable	active	2002-07-31	SNOMED CT core	f5349f34-d37b-55a4-a84f-b51465320f6a
GB English	Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy	Acceptable	active	2002-01-31	SNOMED CT core	2fbf87dd-951e-5d3d-a10f-b28b50e7e721
GB English	Tetralogy of Fallot	Preferred	active	2002-01-31	SNOMED CT core	f6c026fd-158b-5ab3-a919-a3a8cda4a2cd
SG English	Subpulmonic stenosis, ventricular septal defect, overriding aorta, AND right ventricular hypertrophy	Acceptable	active	2002-01-31	SNOMED CT Singapore Extension	831b0801-c0c8-4985-8a7c-570c26fc8583
SG English	Tetralogy of Fallot	Preferred	active	2002-01-31	SNOMED CT Singapore Extension	c827e0fd-27d0-40b3-8d6a-020b02732fed
SG English	Fallot's tetralogy	Acceptable	active	2002-07-31	SNOMED CT Singapore Extension	ba335d28-b129-470e-8051-138b4cf72989
SG English	Tetralogy of Fallot (disorder)	Preferred	active	2002-01-31	SNOMED CT Singapore Extension	e6fd1687-d4ab-4800-a97a-687a502d961f
SG English	TOF - Tetralogy of Fallot	Acceptable	active	2002-07-31	SNOMED CT Singapore Extension	a0fc3a26-5776-40df-a318-370ffb5c4404

Note: If the concept is a member of a query or simple type reference set, the membership will be displayed on the value domain membership page.

Hands-on Snow Owl

Get familiar with the editor

- Open multiple concepts in the editor
- Use tabs on top to switch between editors
- Link editor to SNOMED CT view (click link button)
- Click tabs on bottom to review different pages
- Open: Angina (disorder). Review reference set membership (value set tab) and mapping
- Right-click editor tab to “Close all”

Editing concepts

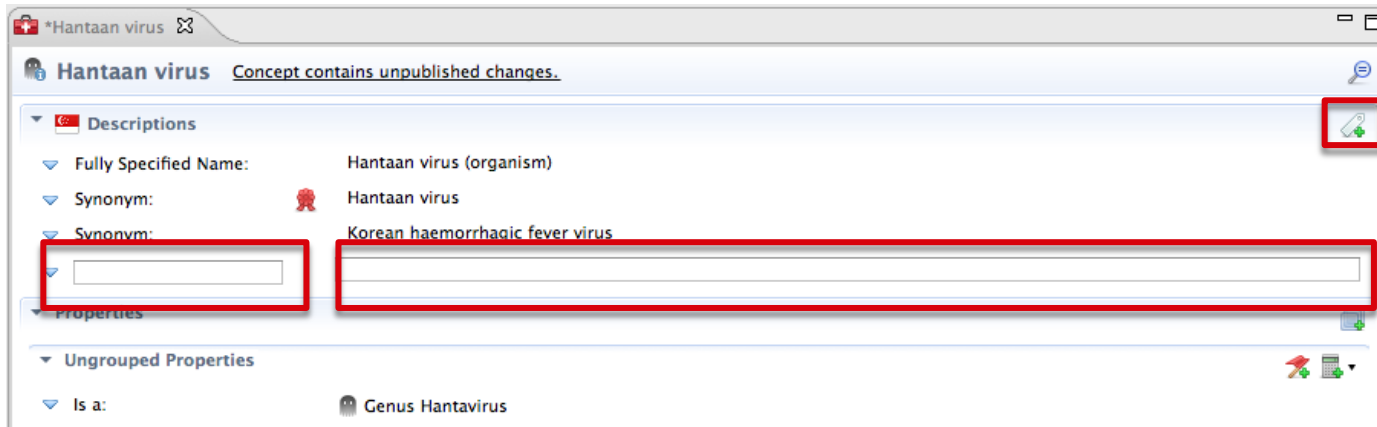
Editing an existing concept

- Adding a description
- Changing the preferred term

Creating a new concept

Adding a synonym

Open concept in editor. Click the *Add unsanctioned description* icon.



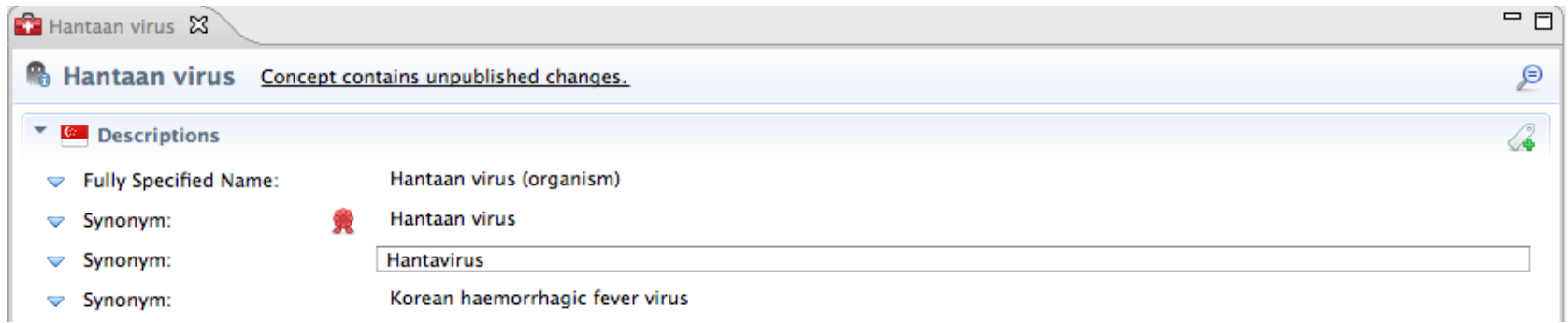
Click into empty text box.

Enter “Synonym” in the text box on the left, and a new description term in the text box to the right.

Save and enter a commit comment.

Adding a synonym

Review the new synonym in the editor



The box around the description term (here: *Hantavirus*) indicates an unpublished change. This means that the change has been saved in the repository but not been formally published yet. Unpublished components don't have an effective time assigned. Once a concept has been published, only the text appears in the editor.

Changing the preferred term

Click the blue triangle in front of new preferred term (in this case: *Korean haemorrhagic fever virus*)

Chose *Set to ... preferred* from the actions. Save and enter commit comment.

The screenshot shows a web application window titled "Hantaan virus" with a sub-header "Concept contains unpublished changes." The main content area is titled "Descriptions" and lists several fields:

- Fully Specified Name: Hantaan virus (organism)
- Synonym: Hantaan virus (marked with a red ribbon icon)
- Synonym: Korean haemorrhagic fever virus

A context menu is open over the "Korean haemorrhagic fever virus" synonym, showing the following options:

- Clone
- Retire
- Clone and retire
- Set to SG preferred** (highlighted with a blue bar)
- Case insensitive
- Case sensitive (checked)
- Initial character case insensitive

Below the menu, the following details are visible:

- Module: SNOMED CT core
- Effective time: 2002-01-31
- Status: Active
- Definition status: Primitive
- Subclass definitions: Non-disjoint

Changing the preferred term

The new preferred term is now displayed in the title of the editor.

The screenshot shows the SNOMED CT editor interface for the concept 'Korean haemorrhagic fever virus'. The title bar indicates 'Concept contains unpublished changes.' The 'Descriptions' section is expanded, showing the following information:

- Fully Specified Name: Hantaan virus (organism)
- Synonym: Hantaan virus
- Synonym: Korean haemorrhagic fever virus
- Synonym: Hantavirus

It also appears in Quick search and SNOMED CT view.

The screenshot shows the SNOMED CT Quick search results for the query 'hantavirus'. The search bar contains 'hantavirus'. The results are displayed as follows:

Previous Choices

- Korean haemorrhagic fever virus

SNOMED CT

- Disease due to Hantavirus
- Disease due to Hantavirus

17 results

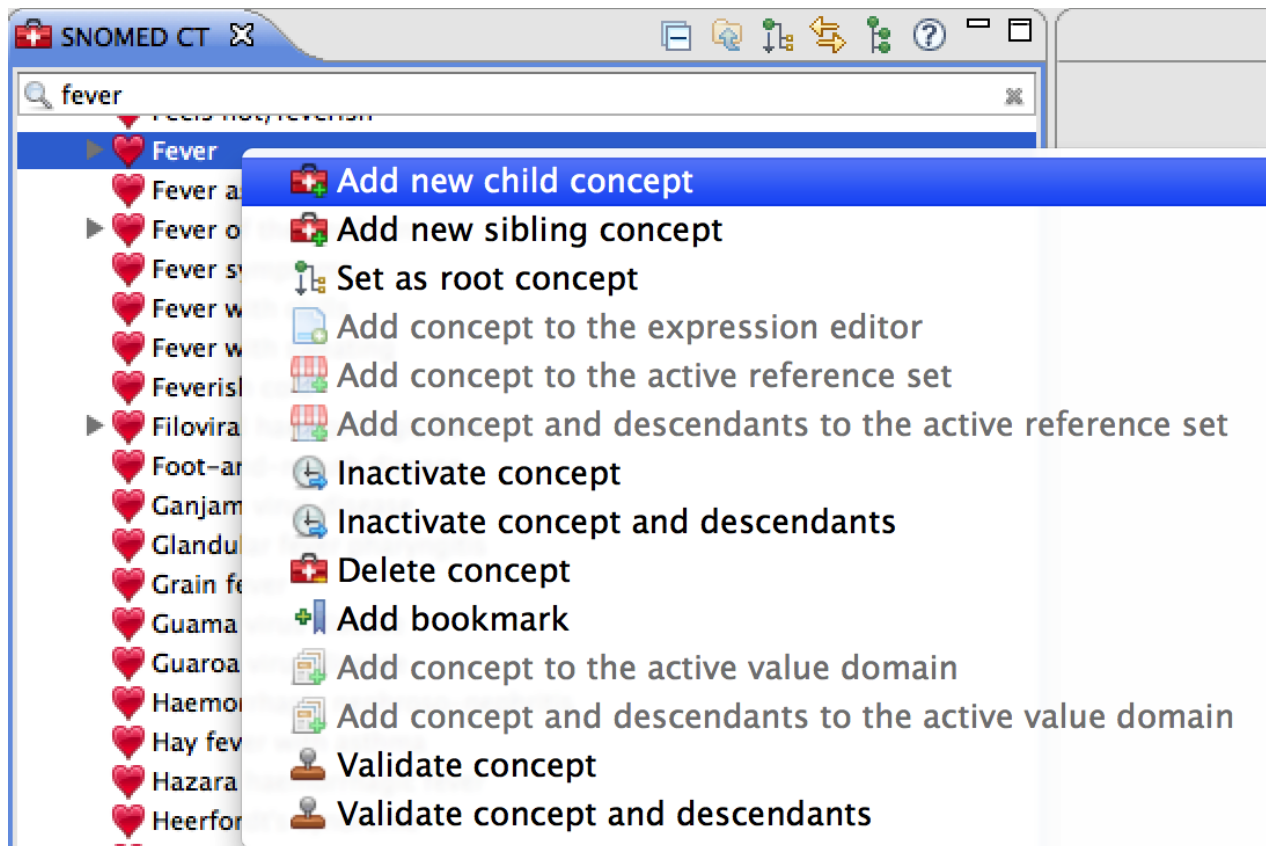
Hands-on Snow Owl

Edit an existing concept

- Open a SNOMED CT concept
- Add a synonym
- Add a definition
- Change the preferred term

Creating a new concept

Right-click on desired parent concept. Select “Add new child concept” from context menu.



Creating a new concept

Review the new concept in the editor.

An IS A relationship to the parent concept was generated as well as unique concept ID.

The new concept has identical SNOMED CT descriptions. This way, only differing information has to be entered.

The screenshot shows a web-based editor for a SNOMED CT concept. The window title is "Copy of: Fever". The main heading is "Fever" with a red warning icon and the text "Fully specified name is not unique." Below this, there are two main sections: "Descriptions" and "Properties".

Descriptions:

- Fully Specified Name: Fever (finding)
- Synonym: Fever
- Synonym: Febrile
- Synonym: Pyrexia
- Synonym: Pyrexial

Properties:

Ungrouped Properties:

- Is a: Fever
- After:
- Associated with:
- Causative agent:
- Due to:
- Finding informer:
- Finding method:
- Has definitional manifestation:
- Has interpretation:
- Interprets:
- Occurrence:
- Pathological process:
- Clinical course:
- Episodicity:
- Severity:

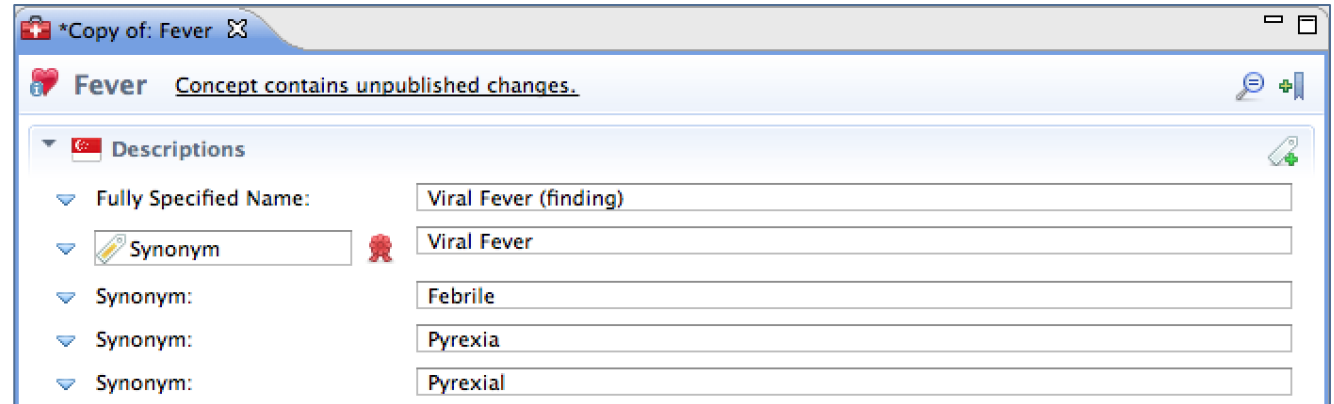
SNOMED CT Properties:


- Concept ID: 101130051000132108
- Module: SNOMED CT Singapore Extension
- Effective time: Unpublished




At the bottom, there is a navigation bar with tabs: Overview, Descriptions, Source relationships, Destination relationships, Value domain membership, Mappings, References.



Creating a new concept

Enter information for the new concept in the editor. The FSN has to be unique.





*Copy of: Fever 

 **Fever** Concept contains unpublished changes.  

▼  **Descriptions** 

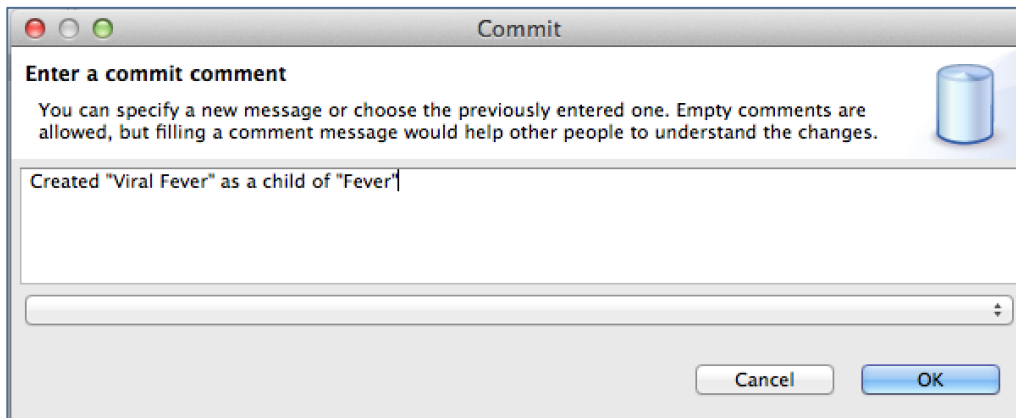
▼ Fully Specified Name:

▼  Synonym 


▼ Synonym:

▼ Synonym:

▼ Synonym:



Commit

Enter a commit comment 

You can specify a new message or choose the previously entered one. Empty comments are allowed, but filling a comment message would help other people to understand the changes.

Save and enter commit comment.

This action submits the change to the repository where it is maintained.

Creating a new concept

The screenshot displays a software interface for creating a new concept. The top toolbar includes 'Project Explorer', 'History', 'Search', 'Problems', 'Bookmarks', 'Commit Information', and 'Graph Visualization'. The main window is titled 'Viral Fever' and contains a table with the following data:

Version	Date	Changes	Author	Comments
1	2013-09-17 10:35:04	7	sulrich@b2international.com	Created "Viral Fever" as child of "Fever"

Below the table, a message states: 'Created "Viral Fever" as child of "Fever"'. A blue box contains the text: 'The new components and be reviewed in the history view'. At the bottom, a table lists the components created:

Component	Changes
SNOMED CT Concept	New concept: "Viral Fever".
SNOMED CT Description	New Fully Specified Name: "Viral Fever (finding)".
SNOMED CT Description	New Synonym: "Febrile".
SNOMED CT Description	New Synonym: "Pyrexia".
SNOMED CT Description	New Synonym: "Pyrexial".
SNOMED CT Description	New Synonym: "Viral Fever".
SNOMED CT Relationship	New relationship: Viral Fever Is a Fever.

On the right side, a tree view shows a hierarchy of concepts under 'Fever'. The 'Viral Fever' node is highlighted with a red box. The tree view includes:

- Fever
 - Aseptic fever
 - Cough with fever
 - Drug fever
 - Fever associated with AIDS
 - Fever greater than 100.4 Fahrenheit
 - Fever of the newborn
 - Fever with chills
 - Fever with sweating
 - Hyperpyrexia
 - Low grade pyrexia
 - O/E – fever
 - Paraneoplastic fever
 - Pattern of fever – finding
 - Postprocedural fever
 - Pyrexia of unknown origin
 - Pyrexia postprocedure
 - Sweating fever
 - Viral Fever**

.. and the SNOMED CT view.

Hands-on Snow Owl

Create a new SNOMED CT concept

- Right-click a concept in the SNOMED CT view to create a child concept
- Enter new FSN, enter new synonym,
- Save, enter commit comment
- Review new concept in SNOMED CT view
- Review new concept in history view

Reference sets

Snow Owl supports the creation of reference sets based on the RF2 specifications. When working with reference sets you will primarily use

- The **Reference set perspective** which is useful to manage reference sets in general.
- The **Reference set view** as an overview of the reference sets in the repository.
- The **Reference set editor** to manage the members. The user interface of the editor changes, dependent on the type of reference set.

Reference set perspective

The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window is titled 'Reference set: Cardiology reference set' and shows 643 matching members. The left sidebar contains a tree view of reference sets, with 'Cardiology reference set' selected. The main area is divided into two panes: 'Reference set members' on the left and 'Descriptions' on the right. The 'Descriptions' pane shows details for the concept 'Abnormal fetal heart rate (finding)', including its fully specified name, synonym, and various properties such as 'Finding site' (Fetal structure, Heart structure) and 'Occurrence' (Fetal period). A red arrow points to a shop icon in the main toolbar, which is highlighted by a red box. A text box on the right explains that clicking this icon brings up the reference set perspective.

Click the shop icon in the main toolbar to bring up the reference set perspective. It displays the reference set view to the left and the editor to the right.

Reference set view

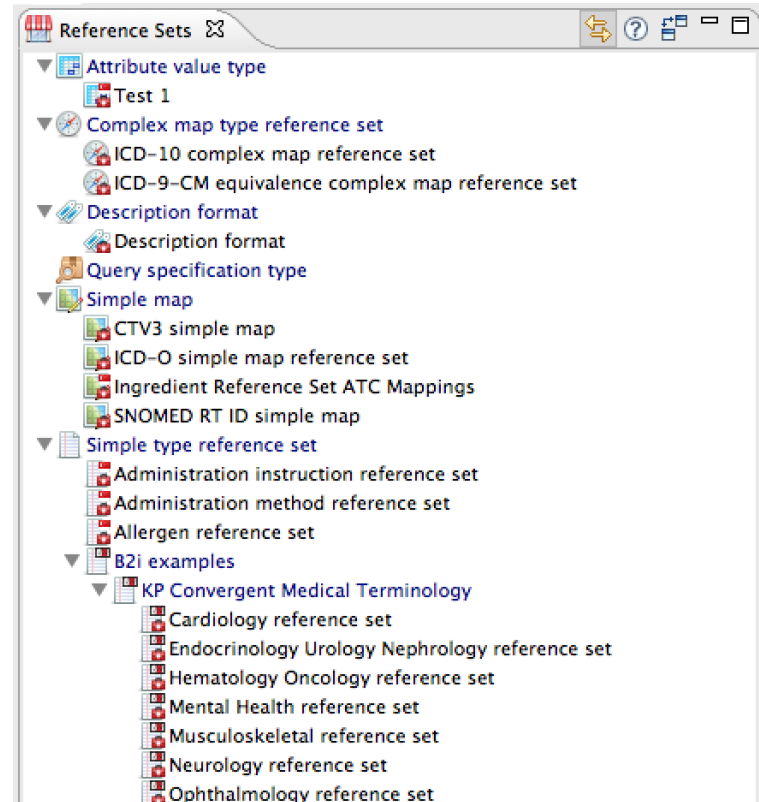
Existing reference sets and maps are displayed in the Reference Sets view.

Reference sets are sorted by type:

- Simple type
- Attribute value type
- Query type

Click the triangle to expand or collapse the categories.

Double-click a reference set to open the editor.



Reference set editor

The screenshot displays the 'Reference set editor' for the 'Mental Health reference set'. The window title is 'Mental Health reference set'. The main area is titled 'Reference set: Mental Health reference set' and shows 'Matching members: 867'. A search bar is present with the text 'Type to filter members'. The left pane, 'Reference set members', lists various SNOMED CT concepts under the 'Clinical finding' category, with 'Aggressive behaviour' selected. The right pane shows the details for 'Aggressive behaviour', including its Fully Specified Name, synonyms, and properties.

Referenced component	Status
SNOMED CT Concept	
Clinical finding	
Abnormal behaviour	active
Abnormal sexual function	active
Academic underachievement	active
Acculturation difficulty	active
Acute drug intoxication	active
Adjustment disorder	active
Adult antisocial behaviour	active
Aerophagy	active
Aggressive behaviour	active
Alcohol abuse	active
Alcohol intake above recom...	active
Alcohol-induced pancreatitis	active
Alcoholic encephalopathy	active
Alcoholic ketoacidosis	active
Alexia	active
Altered mental status	active
Amnesia	active
Amphetamine abuse	active
Amphetamine or psychostim...	active
Amphetamine or psychostim...	active
Amphetamine or psychostim...	active
Anhedonia	active
Anxiety	active
Anxiety disorder	active
Battered husband	active
Battered wife	active
Behavioural and emotional d...	active
Behavioural problems at school	active
Bruxism (teeth grinding)	active
Calcified haematoma of head	active
Camptocormia	active
Cannabis abuse	active
Cannabis intoxication	active
Cataplexy	active
Catatonia	active

Descriptions

- Fully Specified Name: Aggressive behavior (finding)
- Synonym: Aggressive behaviour
- Synonym: Aggression

Properties

Ungrouped Properties

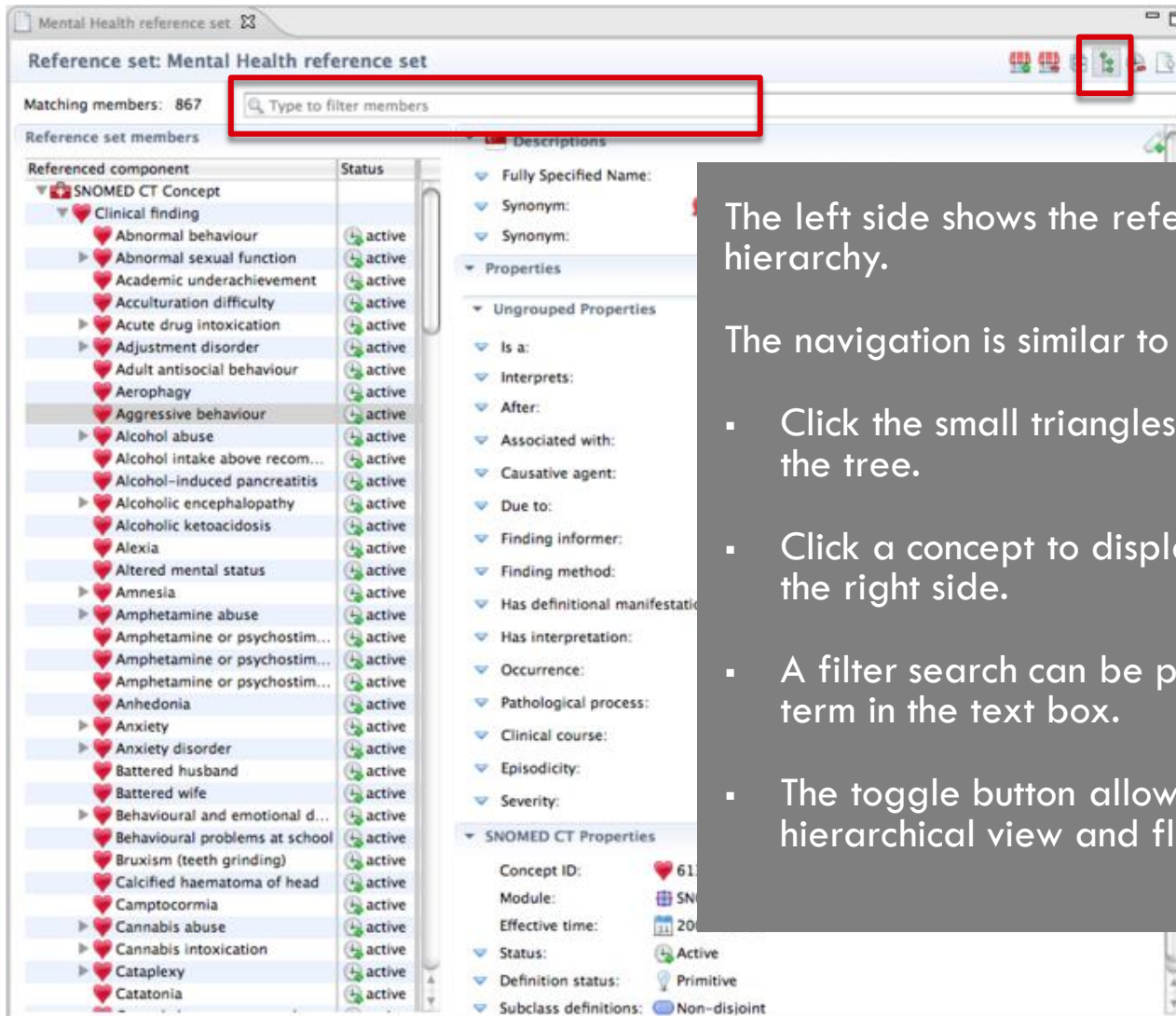
- Is a: Finding relating to aggressive behaviour
- Interprets: Behaviour observable

SNOMED CT Properties

- Concept ID: 61372001
- Module: SNOMED CT core
- Effective time: 2002-01-31
- Status: Active
- Definition status: Primitive
- Subclass definitions: Non-disjoint

The reference set editor contains components from the SNOMED CT concepts view and the SNOMED CT concepts editor.

Reference set editor – left side



The left side shows the referenced components as a hierarchy.

The navigation is similar to the SNOMED CT view:

- Click the small triangles to expand or collapse the tree.
- Click a concept to display more information on the right side.
- A filter search can be performed by typing a term in the text box.
- The toggle button allows to switch between hierarchical view and flat list.

Reference set editor – right side

The right side displays information about a selected concept.

Layout and functions are similar to the overview page of the SNOMED CT Concept editor:

- Click the black triangles to expand or collapse the sections.
- Click the blue triangles to open a list with actions for editing the selected concept.

The screenshot displays the 'Reference set editor' interface for a 'Mental Health reference set'. The top section shows 'Matching members: 867' and a search bar. Below this is a table of 'Reference set members' with columns for 'Referenced component' and 'Status'. The right side of the interface is divided into sections: 'Descriptions', 'Properties', and 'SNOMED CT Properties'. The 'Properties' section is expanded, showing 'Ungrouped Properties' with various relationships like 'Is a', 'Interprets', 'After', 'Associated with', 'Causative agent', 'Due to', 'Finding informer', 'Finding method', 'Has definitional manifestation', 'Has interpretation', 'Occurrence', 'Pathological process', 'Clinical course', 'Episodicity', and 'Severity'. The 'SNOMED CT Properties' section shows details like 'Concept ID: 61372001', 'Module: SNOMED CT core', 'Effective time: 2002-01-31', 'Status: Active', 'Definition status: Primitive', and 'Subclass definitions: Non-disjoint'. Red boxes highlight the 'Properties' section and the 'Associated with' property.

Hands-on Snow Owl

Get familiar with reference sets

- ❑ Open the reference set perspective
- ❑ Expand nodes in reference set view
- ❑ Open a simple type reference set (e.g. Cardiology)
- ❑ Review members in the reference set editor
- ❑ Click member to see it in the reference set editor
- ❑ Double-click member to open the concept editor

Creating a new reference set

Click an icon in the toolbar to create a reference set.


The screenshot displays the Snow Owl 2.9.0 (build 201308271106) interface. The main window shows the 'Tetralogy of Fallot' concept page. The toolbar at the top left contains several icons, with a red box highlighting the 'Reference Set' icon (a document with a plus sign). The left sidebar shows a tree view of SNOMED CT concepts, with 'Tetralogy of Fallot' selected. The main content area displays the 'Descriptions' and 'Properties' for 'Tetralogy of Fallot'. The 'Properties' section includes 'Ungrouped Properties' such as 'Congenital abnormality of ventricles and ventricular septum', 'Overriding aorta', 'Pulmonic valve stenosis', 'Right ventricular hypertrophy', and 'Ventricular septal defect'. The bottom section shows a table of version history for 'Tetralogy of Fallot' and a table of component changes for 'SNOMED CT Reference Set Member'.


Version	Date	Changes	Author	Comments
20.1	2013-08-18 20:42:30	1	info@b2international.com	Imported Cardiology reference set
20	2013-08-18 00:59:29	6	importer	Imported relationships from release fi...
19.2	2013-08-17 23:51:42	2	importer	Imported relationships from release fi...
19.1	2013-08-17 23:08:05	4	importer	Imported relationships from release fi...
19	2013-08-17 22:56:52	2	importer	Imported relationships from release fi...

Component	Changes
SNOMED CT Reference Set Member	Tetralogy of Fallot added to Cardiology reference set.

Different kinds of reference sets

 The **simple type** reference set is a plain grouping of concepts by user preferences.

 An **attribute value type** reference set allows associating a value concept with the referenced component. It can be used to extend the ontology with custom properties on the concept.

 The members of a **query type** reference set are determined based on a semantic query.

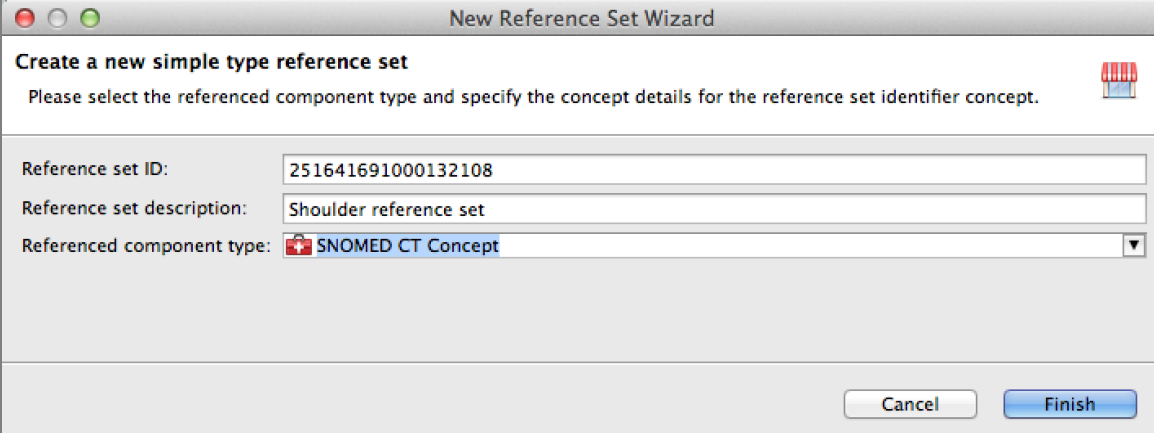
Creating a simple type reference set

To create a simple type reference set click the notebook  icon on the main tool.

The wizard automatically creates a reference set identifier concept with the title as a description.

Type a reference set description (here: Shoulder Reference Set), and select SNOMED CT Concept as the referenced component type.

Click *Finish* to proceed.




New Reference Set Wizard

Create a new simple type reference set

Please select the referenced component type and specify the concept details for the reference set identifier concept.

Reference set ID: 251641691000132108

Reference set description: Shoulder reference set

Referenced component type:  SNOMED CT Concept

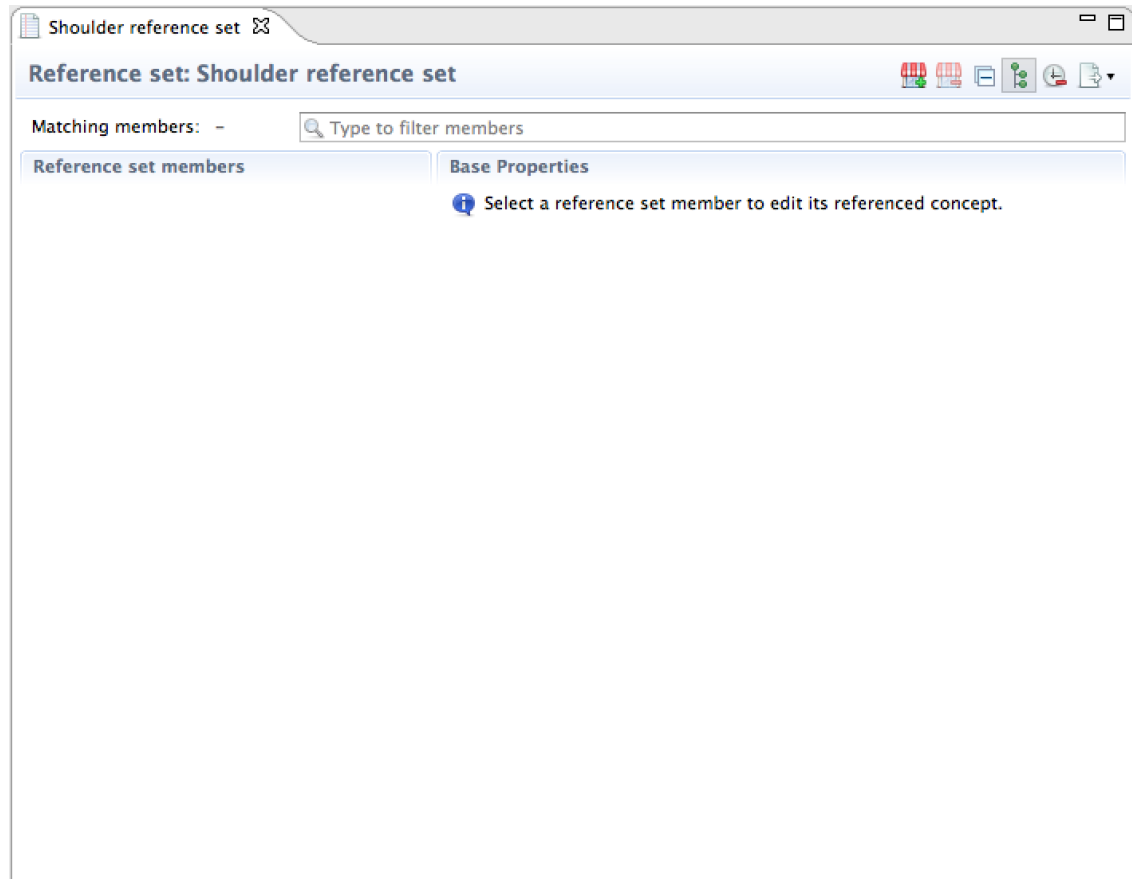
Cancel Finish

Creating a reference set

The new reference set will appear in the reference set view.

The editor is automatically opened.

The list of reference set members in the editor is empty since there were no referenced components added yet.

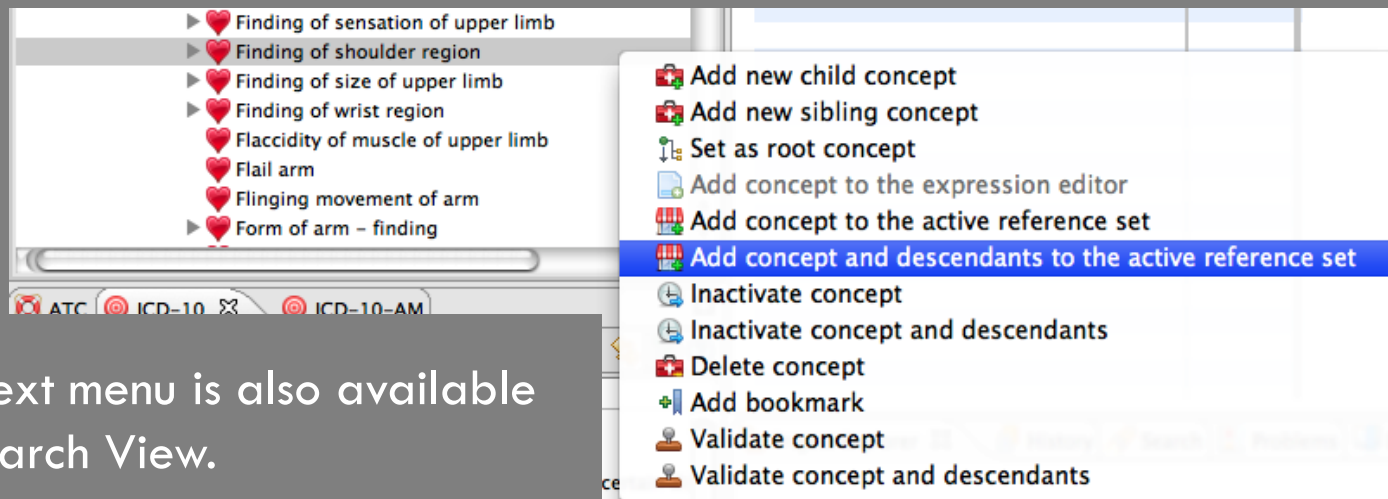


Adding members to a reference set

To add referenced components go to the SNOMED CT View and choose a concept from the hierarchy (here: Finding of shoulder region).

Right-click the concept and select *Add concept and descendants to the active reference set*. This will add the concept and all of its children to the reference set.

If you want to add only this particular concept use *Add concept to the active reference set*.

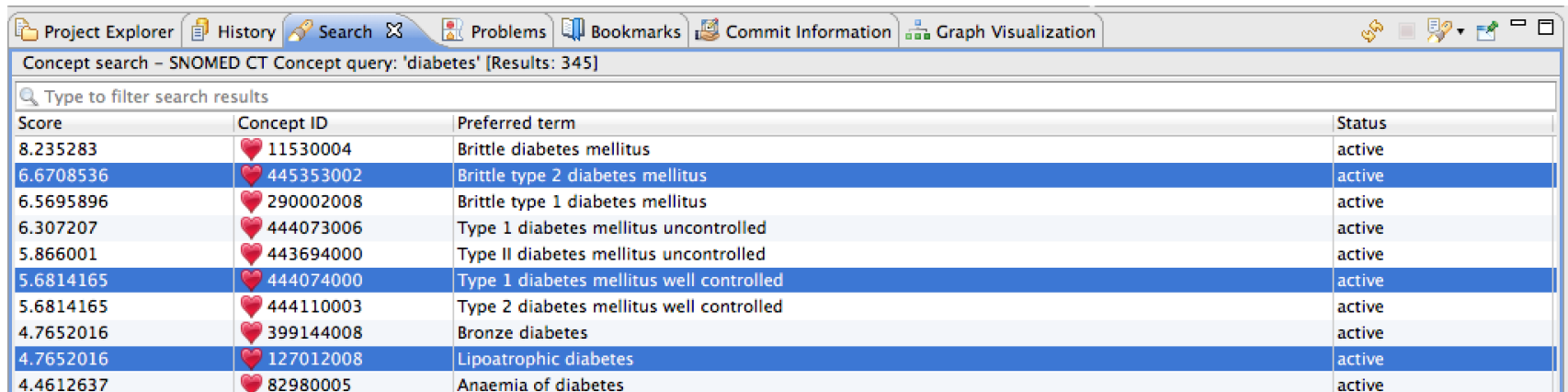


The context menu is also available in the Search View.

Adding members to a reference set

A concept can also be dragged from the SNOMED CT Concepts view and dropped into the Reference set editor. This will add only the selected concept.

Search results can also be added this way from the search view. Press CTRL (Windows) or CMD (Mac) to select multiple search results and drag them into the editor.

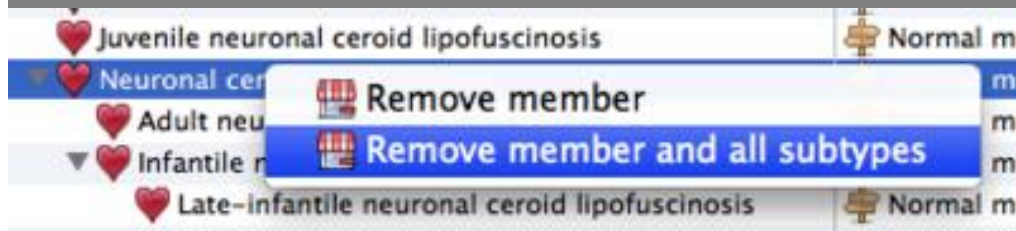


Concept search - SNOMED CT Concept query: 'diabetes' [Results: 345]

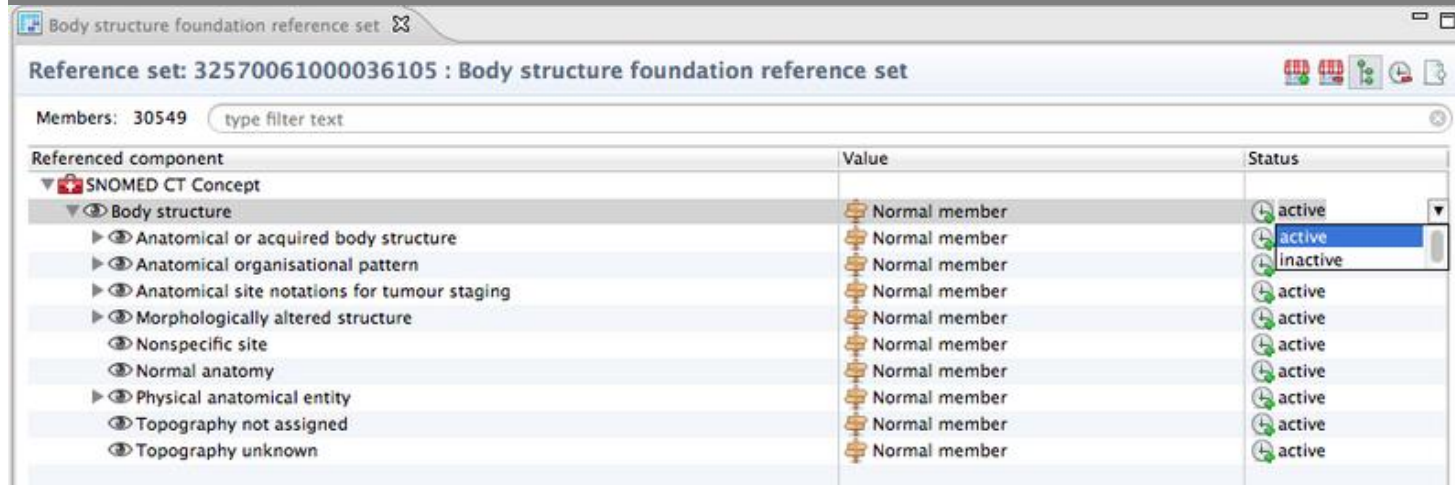
Score	Concept ID	Preferred term	Status
8.235283	♥ 11530004	Brittle diabetes mellitus	active
6.6708536	♥ 445353002	Brittle type 2 diabetes mellitus	active
6.5695896	♥ 290002008	Brittle type 1 diabetes mellitus	active
6.307207	♥ 444073006	Type 1 diabetes mellitus uncontrolled	active
5.866001	♥ 443694000	Type II diabetes mellitus uncontrolled	active
5.6814165	♥ 444074000	Type 1 diabetes mellitus well controlled	active
5.6814165	♥ 444110003	Type 2 diabetes mellitus well controlled	active
4.7652016	♥ 399144008	Bronze diabetes	active
4.7652016	♥ 127012008	Lipoatrophic diabetes	active
4.4612637	♥ 82980005	Anaemia of diabetes	active

Deleting and inactivating members

Right-click a member to remove it from the reference set. You can also remove a member and its descendants.



Click in the status column to deactivate a member. Published reference set members can only be deactivated, not deleted.



Hands-on Snow Owl

Create a reference set and add members

- Create a new simple type reference set
- Find new reference set in reference set view
- Add members from SNOMED CT view (drag and drop, context menu)
- Delete member
- Save and close reference set

Creating a query type reference set

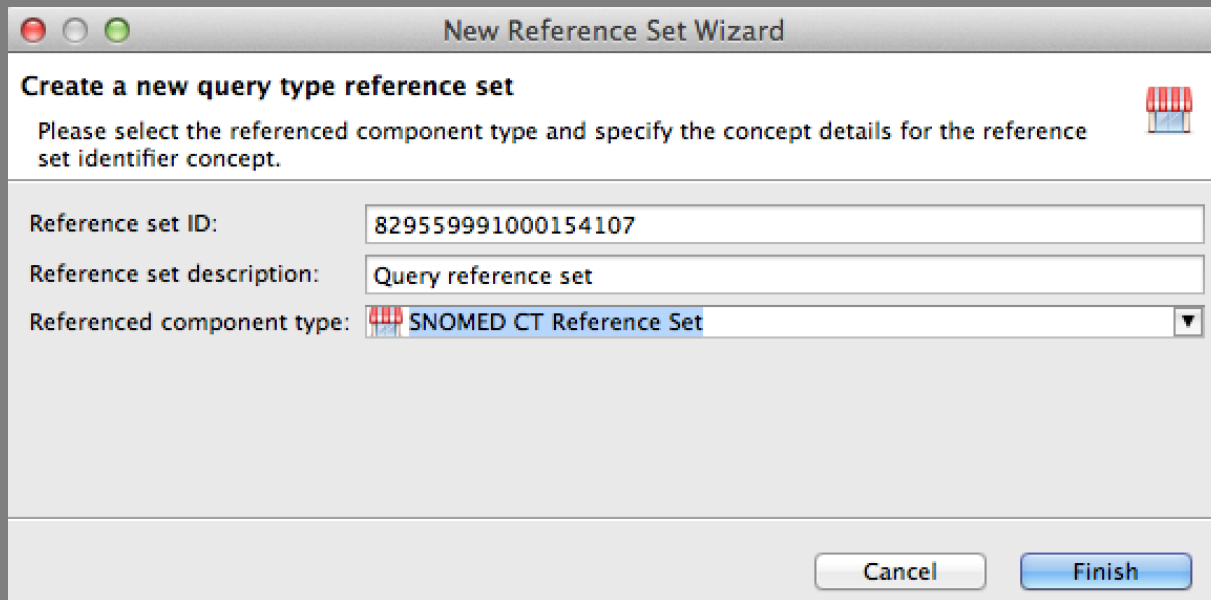
The members of a query type reference set are determined based on a semantic query.

They can be automatically updated when a new version of SNOMED CT is released.

Creating a query type reference set

To create a query type reference set click the  box icon on the main tool.

The wizard automatically creates a reference set identifier concept with the title as a description. Type a reference set description (here: Query reference Set).




New Reference Set Wizard

Create a new query type reference set

Please select the referenced component type and specify the concept details for the reference set identifier concept.

Reference set ID: 829559991000154107

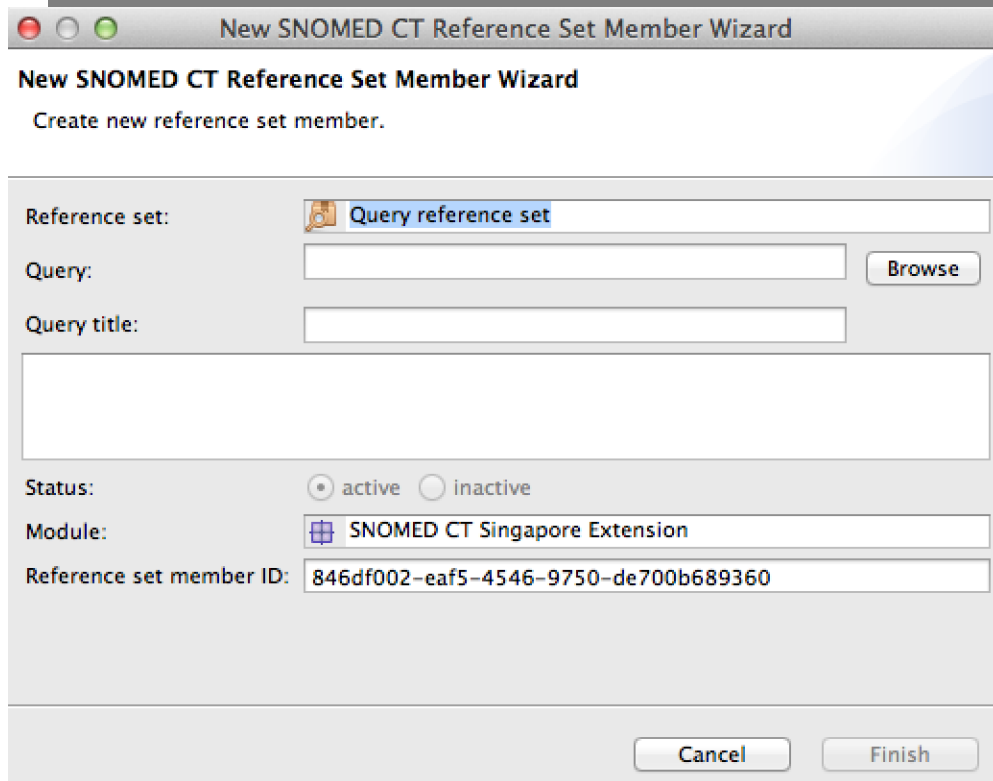
Reference set description: Query reference set

Referenced component type:  SNOMED CT Reference Set

Cancel Finish

Adding queries

Click the *Add member* icon the toolbar of the editor to bring up the wizard.



The screenshot shows a dialog box titled "New SNOMED CT Reference Set Member Wizard" with the subtitle "Create new reference set member." The dialog contains several input fields and controls:

- Reference set:** A text field containing "Query reference set" with a small icon to its left.
- Query:** An empty text field with a "Browse" button to its right.
- Query title:** An empty text field.
- Status:** Radio buttons for "active" (selected) and "inactive".
- Module:** A text field containing "SNOMED CT Singapore Extension" with a small icon to its left.
- Reference set member ID:** A text field containing the ID "846df002-eaf5-4546-9750-de700b689360".

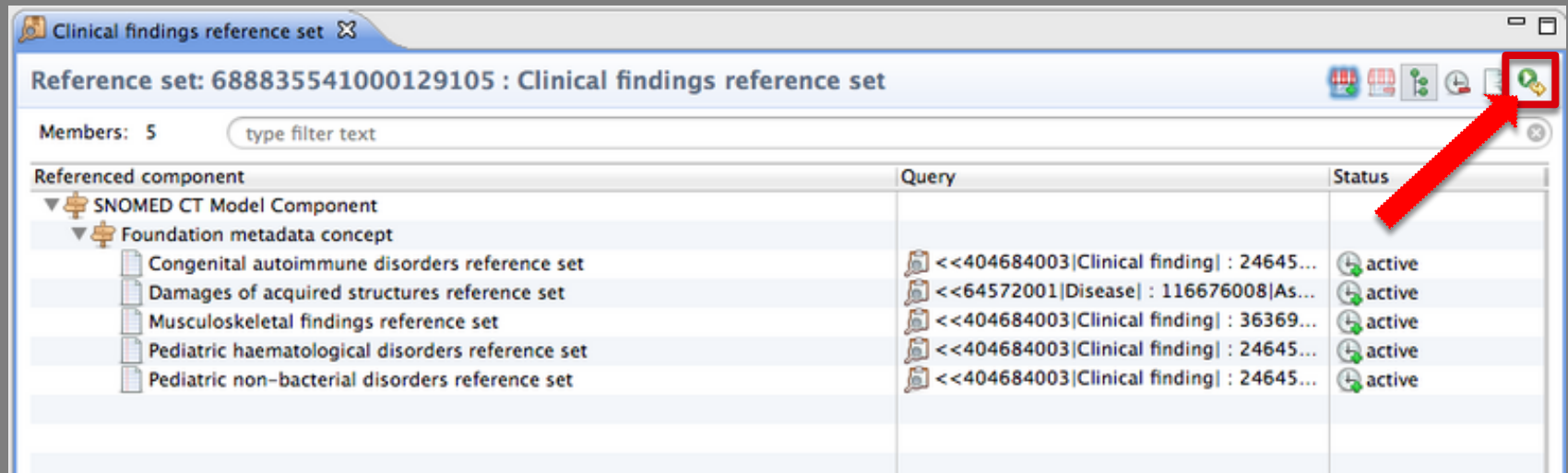
At the bottom of the dialog are "Cancel" and "Finish" buttons.

Click Browse to select a query.

Query type reference set

A query type reference set can include multiple ESCG queries and therefore contain references to multiple simple type reference sets.

When a new version of SNOMED CT is released, all the reference sets can be updated by using the *Update to current ontology* button in the toolbar.



The screenshot shows a software window titled 'Clinical findings reference set'. The main area displays a table with the following data:

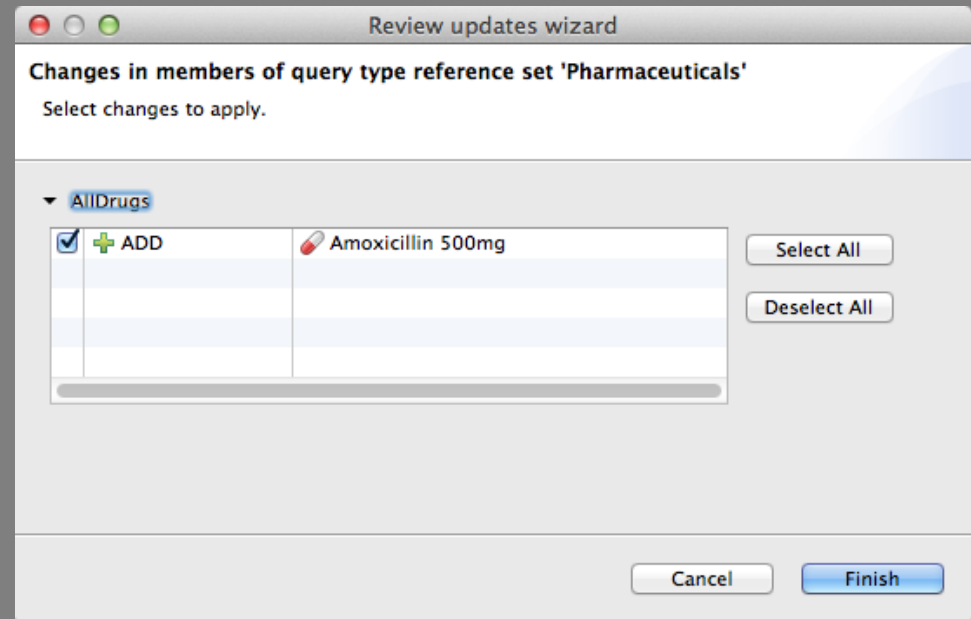
Referenced component	Query	Status
SNOMED CT Model Component		
Foundation metadata concept		
Congenital autoimmune disorders reference set	<<404684003 Clinical finding : 24645...	active
Damages of acquired structures reference set	<<64572001 Disease : 116676008 As...	active
Musculoskeletal findings reference set	<<404684003 Clinical finding : 36369...	active
Pediatric haematological disorders reference set	<<404684003 Clinical finding : 24645...	active
Pediatric non-bacterial disorders reference set	<<404684003 Clinical finding : 24645...	active

A red arrow points to the 'Update to current ontology' button in the toolbar.

Query type reference set

This action will display any changes that would be included by re-running the queries.

The changes can be reviewed and selected to update the corresponding reference sets.



Introduction to semantic queries

Snow Owl includes an editor and execution environment for Extended SNOMED CT Compositional Grammar (ESCG) expressions.

ESCG is a formal grammar to compose expressions that include operators and defined concept identifiers. It can be used for semantic querying.

All of the operators and grammar constructs are supported as defined in the NHS LRA terminology binding specification, which is itself an extension of the HL7 Terminology specification.

Concepts can be queried by their relationships, as opposed to their human readable descriptions.

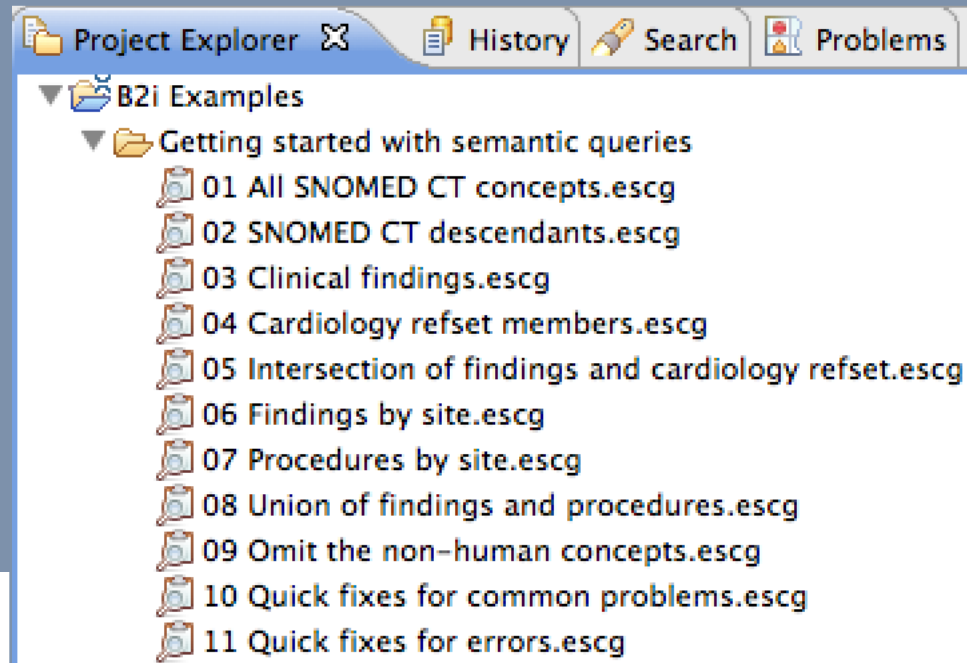
ESCG operators

Operator	Function
<<	Retrieves the concept and all of its subtypes
<	Retrieves all subtypes of this concept, but not the concept itself
!textl	Displays Preferred term of the concept to aid readability
^	Retrieves all the members of this reference set
+	Retrieves only concepts that are results of both expressions (intersection)
UNION	Combines the result set of two queries
!^	Excludes members of this reference set
!<<	Excludes this concept and all of its subtypes
!<	Excludes this concept's subtypes
=	Defines an attribute refinement, e.g. a finding site or a causative agent
:	Refines an attribute range, operator is used in combination with an attribute
AND	Used to express intersections of attribute ranges
OR	Used to express unions of attribute ranges

Sample queries

The free Snow Owl download contains a B2i examples folder with sample queries.

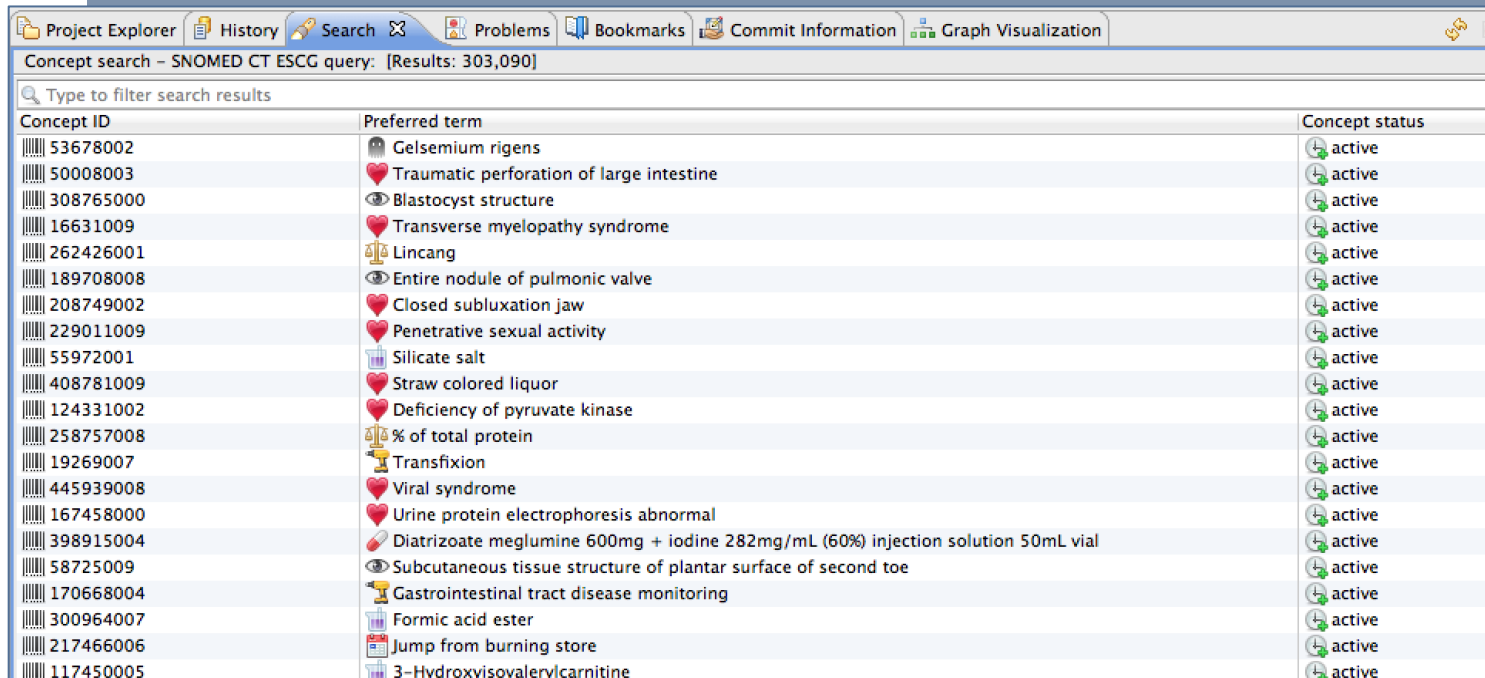
Go to Project Explorer View, and open the B2i Folder. Double-click *All SNOMED CT Concepts.escg* to open the editor and see the query script.













































Query results

Click Execute button  in the toolbar to run the query.

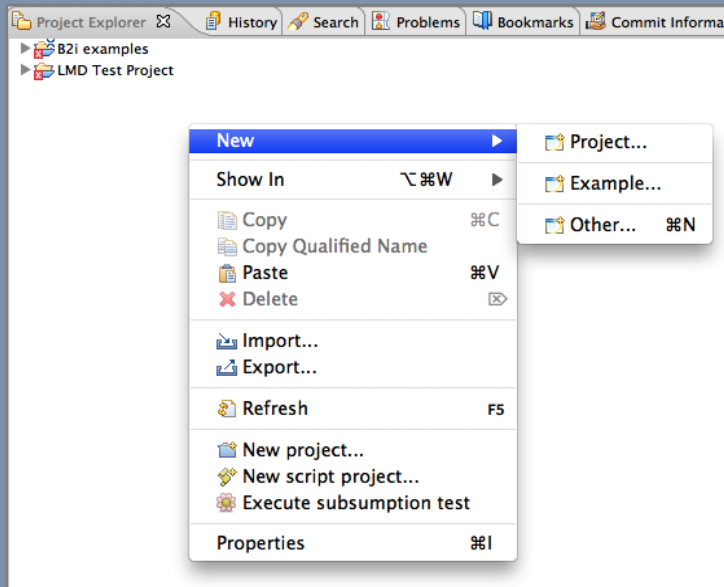
Review query results in the Search view. The results comprise all SNOMED CT concepts including the root concept.



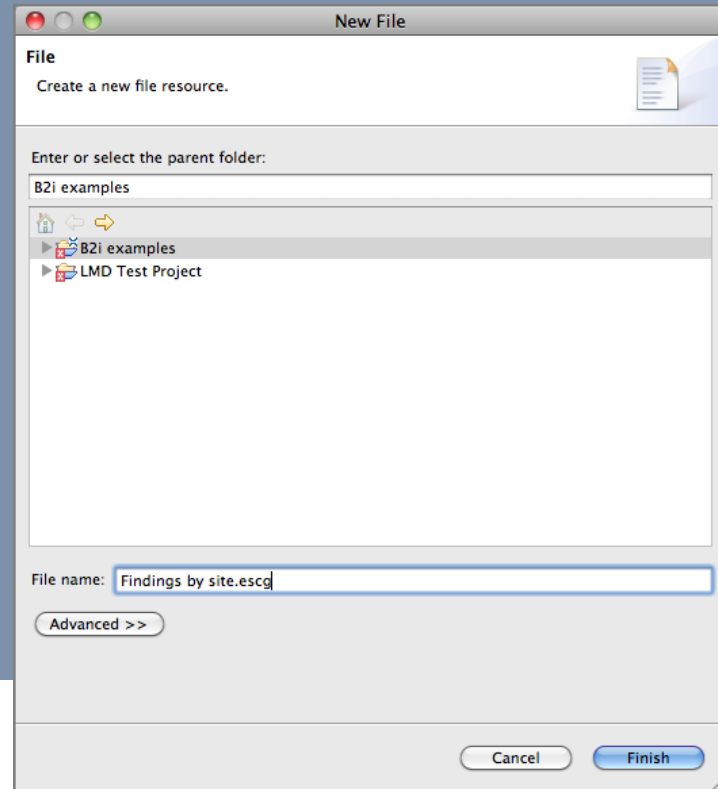
Concept ID	Preferred term	Concept status
53678002	 Gelsemium rigens	 active
50008003	 Traumatic perforation of large intestine	 active
308765000	 Blastocyst structure	 active
16631009	 Transverse myelopathy syndrome	 active
262426001	 Lincang	 active
189708008	 Entire nodule of pulmonic valve	 active
208749002	 Closed subluxation jaw	 active
229011009	 Penetrative sexual activity	 active
55972001	 Silicate salt	 active
408781009	 Straw colored liquor	 active
124331002	 Deficiency of pyruvate kinase	 active
258757008	 % of total protein	 active
19269007	 Transfixion	 active
445939008	 Viral syndrome	 active
167458000	 Urine protein electrophoresis abnormal	 active
398915004	 Diatrizoate meglumine 600mg + iodine 282mg/mL (60%) injection solution 50mL vial	 active
58725009	 Subcutaneous tissue structure of plantar surface of second toe	 active
170668004	 Gastrointestinal tract disease monitoring	 active
300964007	 Formic acid ester	 active
217466006	 Jump from burning store	 active
117450005	 3-Hydroxyisovalerylcarnitine	 active

Creating a new .escg file

Create a project in the Project explorer (New > Project).



Right-click on project folder
Select New > File. Enter a file name with an .escg extension (e.g. Findings.escg).



Entering query script

Double-click the file to launch the empty expression editor.

Type the operator < in the text field.

Drag *Clinical Finding* from the SNOMED CT view into the editor. Concept ID and optional text will be automatically added to the query. This query retrieves all clinical findings.

```
<404684003|Clinical finding|
```

It might be useful to save the query script, so that you can easily update your search results when release data are changing.

Content assist

Hit **Ctrl + Space** to bring up content assist.

Only operators that can be used at the active part of the query are displayed.

Content assist also includes a quick search to find concepts.

The screenshot shows a software window titled "Congenital anomaly of artery" with a tab "disease.escg". The main area contains a query with several lines of code, including comments and metadata. A content assist popup is visible, showing a list of operators that can be used at the current cursor position. The operators include "Concept - add new concept from picker", "Template - Bleeding finger", "associated morphology - Associated morphology", "causative agent - Causative agent", "finding site - Finding site", "has active ingredient - Has active ingredient", "has dose form - Has dose form", "interprets - Interprets", "isa - Is a", "method - Method", "part of - Part of", and "procedure site-direct - Procedure site - Direct". At the bottom of the window, there is a "SCT Search" section with a "Validation" button and a search bar. Below the search bar, it says "Concept search - Results: 43". A table at the bottom shows "Concept ID" and "Preferred" columns, with the first row containing "469081000000106" and "[X]Dislocation, sprain and strain of unspecified joint and ligament of leg, level".

Refinement

The refinement operator ($:$) is usually used in combination with the attribute value operator ($=$). These operators are useful to restrict a query to concepts with certain attributes.

Example: All Clinical findings that have a Finding site relationship with the target concept being the Cardiovascular system.

```
<<404684003|Clinical finding|:  
  363698007|Finding site| = <<113257007|Structure of  
  cardiovascular system|
```

Refinement

It's also possible to refine the query by adding additional property constraints using a comma as a separator.

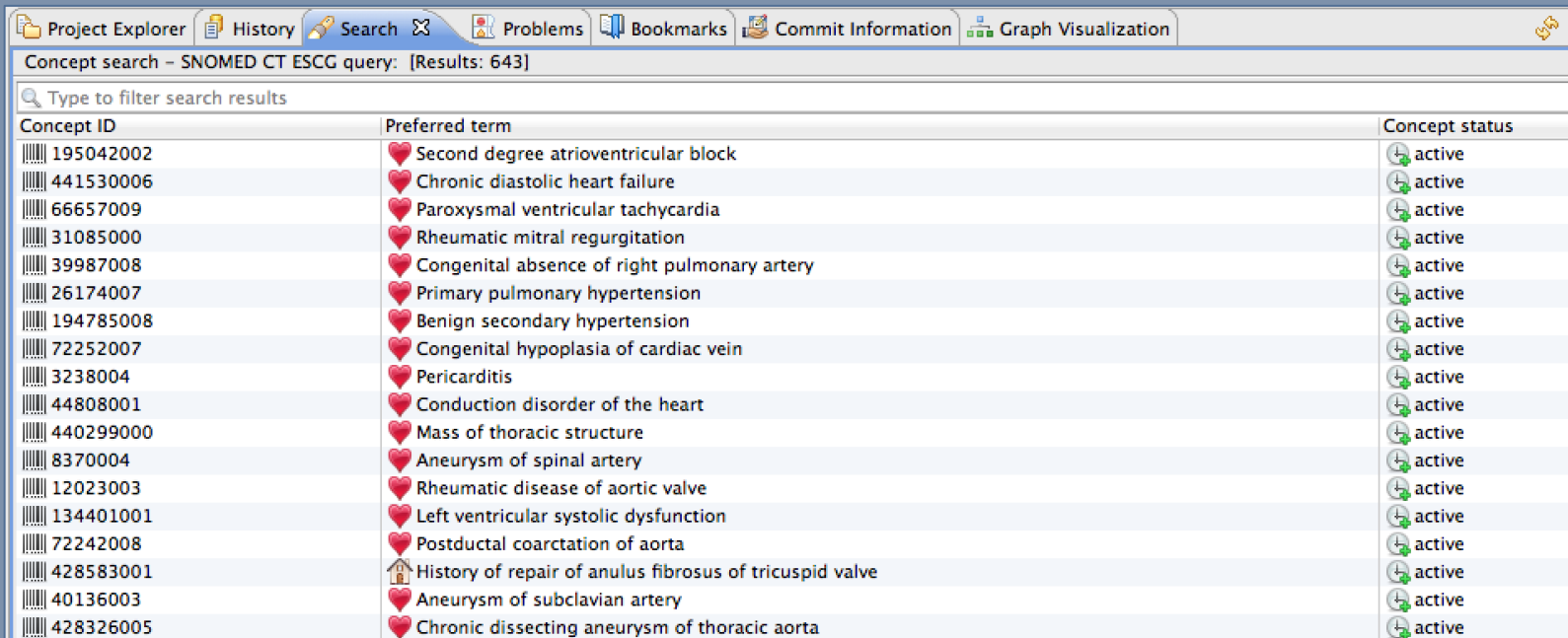
This query retrieves bacterial infectious diseases of the lung caused by streptococcus pneumonia.

```
<<87628006|Bacterial infectious disease|:  
  363698007|Finding site| = <<39607008|Lung structure|,  
  246075003|Causative agent| = <<9861002|Streptococcus pneumoniae|
```

Retrieving reference set members

The **caret** operator \wedge will list the members of a reference set. Here is an example for retrieving the members of the Cardiology reference set.

```
 $\wedge$ 152725851000154106|Cardiology reference set|
```



Concept ID	Preferred term	Concept status
195042002	Second degree atrioventricular block	active
441530006	Chronic diastolic heart failure	active
66657009	Paroxysmal ventricular tachycardia	active
31085000	Rheumatic mitral regurgitation	active
39987008	Congenital absence of right pulmonary artery	active
26174007	Primary pulmonary hypertension	active
194785008	Benign secondary hypertension	active
72252007	Congenital hypoplasia of cardiac vein	active
3238004	Pericarditis	active
44808001	Conduction disorder of the heart	active
440299000	Mass of thoracic structure	active
8370004	Aneurysm of spinal artery	active
12023003	Rheumatic disease of aortic valve	active
134401001	Left ventricular systolic dysfunction	active
72242008	Postductal coarctation of aorta	active
428583001	History of repair of anulus fibrosus of tricuspid valve	active
40136003	Aneurysm of subclavian artery	active
428326005	Chronic dissecting aneurysm of thoracic aorta	active

Intersection

The query below retrieves all Clinical findings that are also members of the Cardiology reference set.

The **intersection** operator is used to connect the two expressions.

```
<404684003|Clinical finding| + ^152725851000154106 |Cardiology  
reference set|
```

Excluding concepts

The ! operator is used to **omit concepts** or members of a reference set from a query. It excludes the concept behind it.

All Clinical findings that are not a disease:

```
<<404684003|Clinical finding| + !<<64572001|Disease|
```

All Clinical findings that are not a member of the non-human reference set.

```
<<404684003|Clinical finding| + !^447564002|Non-human simple reference  
set|
```

Excluding concepts

You can also use the exclusion to express **negation**.

This query will return all Clinical findings that do not have a Bacteria causative agent. These concepts either do not have any causative agents at all, or they have a different causative agent.

```
<<404684003|Clinical finding|:  
246075003|Causative agent| = !<<409822003|Bacteria|
```

Additional features of Snow Owl

- Collaborative authoring
- Workflow
- Value Domains, Local Code Systems, Mapping sets
- Ontology generation framework
- Pluggable classifiers
- Reporting
- Groovy scripting
- Integrated help



QUESTIONS?

FURTHER INFORMATION

Online videos

<http://b2international.com/portal/video-tutorials>

Snow Owl on Facebook

<http://facebook.com/SnowOwlPlatform>

Documentation

<http://b2international.com/help>

