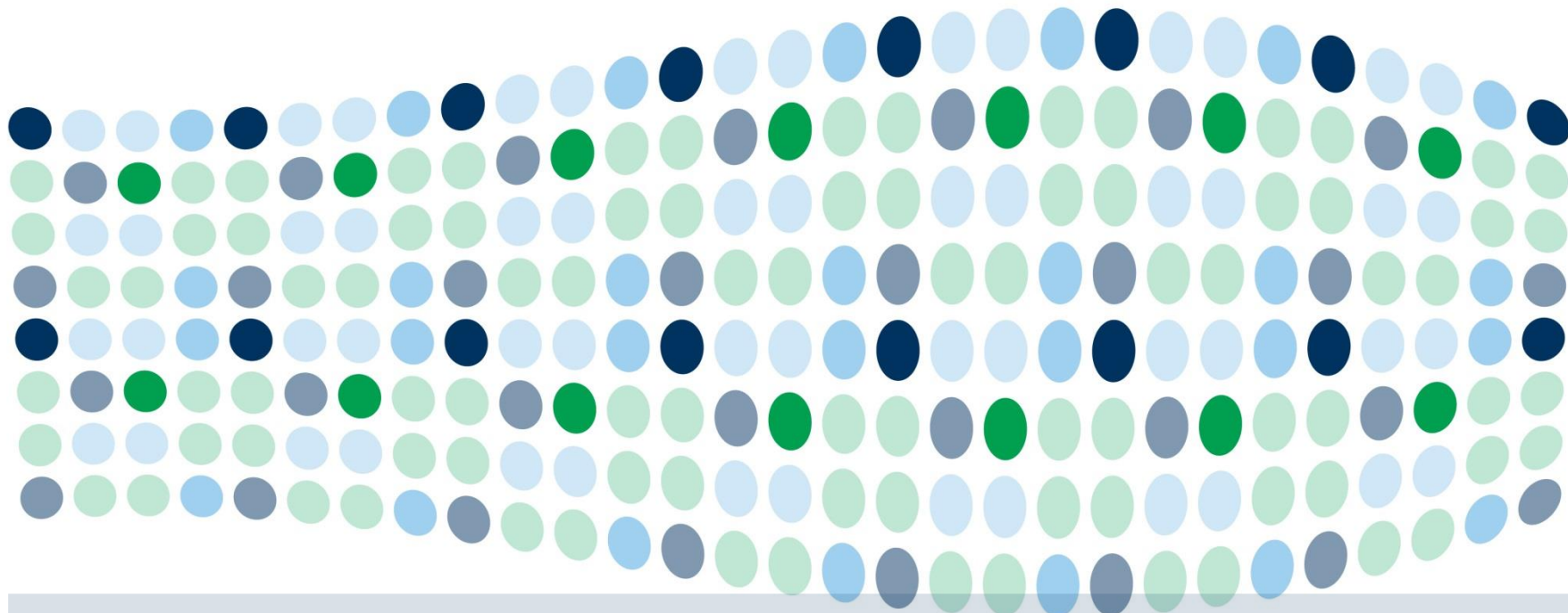


# SNOMED CT: 3 methods for subset creation

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Ian Arrowsmith, Head of SNOMED CT Implementation, NHS Digital

# Methods for developing your surgical subsets

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1. Browsing current SNOMED content and review/amend
2. Make a list of required terms and then check against currently available SNOMED terms
3. Agree a diagrammatic hierarchy for elements required within terms

Or a mix of any of elements listed above

# Methodology 1: Browsing current content

---

First- you will need a BROWSER in order to search current SNOMED terms.

<http://systems.digital.nhs.uk/data/uktc/snomed/browser>

These come in 3 types:

1. Desktop application browsers – provide fast searching and display detailed information from the terminology such as relationships and synonyms but need to be installed on your desktop e.g. CliniClue Xplore, SNOB
2. Online browsers- provide easy online access to the terminology but require you to have an internet connection e.g. NPEx, IHTSDO and Snoflake.
3. Mobile Device browsers- Allows viewing of SNOMED CT on the move. No current free-to-use mobile applications but low cost applications are available.

# Links to browsers

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- CliniClue Xplore: <http://www.cliniclue.com/>
- SNOB: [http://www.openclinical.org/dld\\_snob.html](http://www.openclinical.org/dld_snob.html)
- NPEx: <http://www.snomedbrowser.com/>
- IHTSDO: <http://browser.ihtsdotools.org/?>
- Snoflake: <http://www.snoflake.co.uk/Account/LogOn?ReturnUrl=%2f>

# IHTSDO Online browser

## The IHTSDO SNOMED CT Browser

The IHTSDO SNOMED CT Browser has just got better! This is version 2.0. Please go to the [release notes](#) to see what's changed!

The IHTSDO SNOMED CT Browser provides ways to browse and search SNOMED CT. The browser has been implemented as part of development within the IHTSDO Open Tooling Framework, by the IHTSDO and its development partners

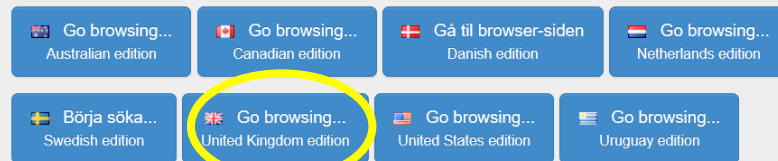
The Browser is provided by the IHTSDO to anyone for reference purposes. The interface and REST APIs are **not** to be used as part of production systems in health care settings.

Please provide any feedback on the browser by clicking on the feedback button at the top of the page. Your feedback is essential to the evolution and improvement of this service. Please visit [SIRS](#) to provide content feedback.

### International Editions



### Local Extensions



or [take the Tour...](#)

Many thanks to the IHTSDO Member countries who have provided their extensions in this browser. If you would like to enquire further about any of the Member country extensions in this browser, please contact the relevant National Release Center via the URLs below:

# IHTSDO Browser

The screenshot displays the IHTSDO SNOMED CT Browser interface. The top navigation bar includes the title "IHTSDO SNOMED CT Browser", the release information "Release: United Kingdom Edition 20160401", and links for "Perspective: Full", "Feedback", "About", and the IHTSDO logo. The main interface is divided into two panels. The left panel, titled "Taxonomy", shows a hierarchical list of SNOMED CT concepts. The right panel, titled "Concept Details", shows the details for a selected concept, including its parents and children.

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**Taxonomy**

Inferred view ▾

- SNOMED CT Concept
  - Body structure (body structure)
  - Clinical finding (finding)
  - Environment or geographical location (environment / location)
  - Event (event)
  - Observable entity (observable entity)
  - Organism (organism)
  - Pharmaceutical / biologic product (product)
  - Physical force (physical force)
  - Physical object (physical object)
  - Procedure (procedure)
  - Qualifier value (qualifier value)
  - Record artifact (record artifact)
  - Situation with explicit context (situation)
  - SNOMED CT Model Component (metadata)
  - Social context (social concept)
  - Special concept (special concept)
  - Specimen (specimen)
  - Staging and scales (staging scale)

**Concept Details**

Summary | Details | Diagram | Expression | Refsets | Members | References

Parents

- SNOMED CT Concept (SNOMED RT+CTV3)

Clinical finding (finding) ☆

SCTID: 404684003

404684003 | Clinical finding (finding) |

Clinical finding (finding)

Clinical finding

No attributes

Children (31)

31 Children

Content Hierarchies

## Search



## Options

Search Mode: Partial  
matching search modeStatus: Active components  
only☐ Group by conceptFilter results by  
Language

english

676

Filter results by Semantic  
Tag

disorder

268

procedure

149

body structure

131

finding

37

morphologic abnormality

34

organism

18

specimen

13

situation

12

observable entity

5

qualifier value

3

Type at least 3 characters ✓ Example: shou fra

appen



676 matches found in 0.643 seconds.

Appendix	Entire appendix (body structure)
Appendix	Appendix structure (body structure)
Appendicitis	Appendicitis (disorder)
Appendectomy	Appendectomy (procedure)
Appendicotomy	Incision of appendix (procedure)
Appendix mass	Mass of appendix (finding)
Appendicectomy	Appendectomy (procedure)
Skin appendage	Skin appendage structure (body structure)
Eye appendages	Ocular adnexa structure (body structure)
Appenzell goat	Appenzell goat breed (organism)
Appendicolysis	Lysis of adhesions of appendix (procedure)
Appendicostomy	Fistulization of appendix (procedure)
Skin appendage	Entire skin appendage (body structure)
Appenzeller dog	Appenzeller dog breed (organism)
Appendix sample	Appendix sample (specimen)

## Concept Details

## Concept Details



## Summary

## Details

## Diagram

## Expression

## Refsets

## Members

## References

Stated

Inferred

## Parents

SNOMED CT Concept (SNOMED RT+CTV3)

Clinical finding  
(finding)

No attributes

SCTID: 404684003

404684003 | Clinical finding (finding)

|

Clinical finding (finding)  
Clinical finding

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## Concept Details

## Concept Details

Summary

Details

Diagram

Expression

Refsets

Members

References

Stated

Inferred

## Parents

- Operation on appendix (procedure)
- Partial excision of large intestine (procedure)

Parent  
concept(s)Appendectomy  
(procedure)

SCTID: 80146002

80146002 | Appendectomy  
(procedure) |Appendectomy  
Excision of appendix  
Appendicectomy  
Appendectomy (procedure)Procedure site - Direct →  
Appendix structure  
Method → Excision - action

Synonyms

## Children (8)

- Appendectomy with drainage (procedure)
- Emergency appendectomy (procedure)
  - Emergency excision of normal appendix (procedure)
  - Laparoscopic emergency appendectomy (procedure)
- Excision of appendiceal stump (procedure)
- Excision of ruptured appendix by open approach (procedure)
- Incidental appendectomy (procedure)
- Interval appendectomy (procedure)
- Laparoscopic appendectomy (procedure)
  - Laparoscopic appendectomy using robotic assistance (procedure)
  - Laparoscopic emergency appendectomy (procedure)
  - Laparoscopic interval appendectomy (procedure)

Concepts  
below  
parent  
(subtypes)



Taxonomy

Search

Favorites

Refset

Search

Options

Search Mode: Partial  
matching search mode ▾Status: Active components  
only ▾☐ Group by conceptFilter results by  
Language

english

2704

Filter results by Semantic  
Tag

procedure

898

disorder

506

physical object

294

body structure

290

finding

282

observable entity

115

situation

91

regime/therapy

82

qualifier value

76

substance

22

Type at least 3 characters ✓ Example: shou fra

cardiac

2704 matches found in 0.761 seconds.

Cardiac CT	Computed tomography of heart (procedure)
Cardiac MRI	Magnetic resonance imaging of heart (procedure)
Cardiac ITU	Cardiac intensive care unit (environment)
Cardiac bed	Cardiac bed (physical object)
Cardiac vein	Structure of cardiac vein (body structure)
Cardiac axis	Cardiac axis (observable entity)
Cardiac flow	Cardiac flow, function (observable entity)
Cardiac vein	Entire cardiac vein (body structure)
Cardiac base	Entire base of heart (body structure)
Cardiac apex	Structure of apex of heart (body structure)
Cardiac care	Cardiac care (regime/therapy)
Cardiac rate	Heart rate (observable entity)
Cardiac echo	Echocardiography (procedure)
Cardiac sound	Heart sound, function (observable entity)

Filter by  
hierarchy

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Taxonomy

Search

Favorites

Refset

Search



## Options

Search Mode: Partial  
matching search modeStatus: Active components  
only☐ Group by concept

procedure

Filter results by  
Language

english

898

Filter results by Module

SNOMED CT core  
module (core metadata  
concept) 755SNOMED CT United  
Kingdom clinical extension  
module (core metadata  
concept) 143

Filter results by Refset

Care planning activities  
simple reference set  
(foundation metadata  
concept) 892SNOMED RT identifier  
simple map (foundation

Type at least 3 characters Example: shou fra

cardiac

898 matches found in 1.063 seconds.

Cardiac CT	Computed tomography of heart (procedure)
Cardiac MRI	Magnetic resonance imaging of heart (procedure)
Cardiac echo	Echocardiography (procedure)
Cardiac pacing	Cardiac pacing (procedure)
Cardiac US scan	Echocardiography (procedure)
Cardiac mapping	Cardiac mapping (procedure)
Cardiac markers	Cardiac markers (procedure)
Cardiac ablation	Cardiac ablation using fluoroscopy guidance (procedure)
Cardiac angiogram	Fluoroscopic angiography of heart (procedure)
Cardiac valvotomy	Cardiac valvotomy (procedure)
Cardiac stress MRI	Magnetic resonance imaging stress study of cardiac function (procedure)
Cardiac tomography	Cardiac tomography (procedure)
Teach cardiac care	Cardiac care education (procedure)
Cardiac assessment	Cardiac assessment (procedure)

Concept Details

Concept Details

Summary

Details

Diagram

Expression

Refsets

Members

## Parents

- Cardiac pacemaker procedure (procedure)
- Procedure by method (procedure)
- Procedure on heart (procedure)

Cardiac pacing (procedure) ☆

SCTID: 18590009

18590009 | Cardiac pacing (procedure) |

Cardiac pacing  
Electrical cardiac pacing  
Cardiac pacing (procedure)

Using device → Cardiac  
pacemaker, device  
Procedure site - Direct → Heart  
structure  
Method → Pacing - action

## Children (13)

- Atrial overdrive pacing (procedure)
- Atrioventricular sequential pacing (procedure)
- Bundle of His pacing (procedure)
- Cardiac resynchronisation therapy (procedure)
- Demand pacing (procedure)
- Induction of arrhythmia by electrical pacing (procedure)
- Intra-atrial pacing (procedure)
- Intraoperative cardiac pacing and mapping (procedure)
- Intraventricular pacing (procedure)
- Magnet induced pacing (procedure)
- Temporary transcutaneous pacing (procedure)
- Transcatheter cardiac pacing procedure (procedure)

# Methodology 1 – browsing through current terminology

---


## Things to consider:

- Your requirements might not yet be fully elaborated
- This method could mean you do not consider other ways of listing diagnoses/ procedures
- May be 'starter set' for pilot use
- May be time consuming


# Tips for searching SNOMED CT

---


Body structures are normally in the singular, e.g. eye not eyes



Most abbreviations are present (with their expanded form), e.g. PID - prolapsed intervertebral disc



Search for most unique words in string and add other search tokens to limit results, eg implantation of lumbar epidural catheter and there is (usually) no need to worry about word order



Always check the fully specified name

---

# Methodology 2: Create your subset list

Orthopaedic surgeon's  
classification of ankle OA



Original content		
Diagnosis/indication	Hierarchy	Subtypes?
<b>Deformity</b>		
Achilles Shortening	Clinical finding	No
Contracture in Foot and Ankle	Clinical finding	Yes
Talipes Calcaneovarus	Clinical finding	No
Valgus ankle/hindfoot Deformity	Clinical finding	No
Varus ankle/hindfoot Deformity	Clinical finding	Yes
Congenital Toe Deformity		
Acquired Toe Deformity	Clinical finding	Yes
<b>Degenerative Disease</b>		
Ankle Osteoarthritis - Primary	Clinical finding	No
Ankle Osteoarthritis - Secondary (Inflammatory)	Clinical finding	No
Ankle Osteoarthritis - Secondary (Post Infection)		
Ankle Osteoarthritis - Secondary (Post Trauma)	Clinical finding	No
Ankle Inflammatory Arthropathy		
Ankle Osteophytes		
Subtalar Joint Osteoarthritis - Primary	Clinical finding	No
Subtalar Joint Osteoarthritis - Secondary (Inflammatory)	Clinical finding	No
Subtalar Joint Osteoarthritis - Secondary (Post Infection)		
Subtalar Joint Osteoarthritis - Secondary (Post Trauma)	Clinical finding	No
Subtalar Joint Inflammatory Arthropathy	Clinical finding	Yes
Talonavicular Joint Osteoarthritis - Primary	Clinical finding	No
Talonavicular Joint Osteoarthritis - Secondary (Inflammatory)	Clinical finding	No
Talonavicular Joint Osteoarthritis - Secondary (Post Infection)		
Talonavicular Joint Osteoarthritis - Secondary (Post Trauma)	Clinical finding	No
Talonavicular Joint Inflammatory Arthropathy		
Calcaneocuboid Osteoarthritis - Primary	Clinical finding	No
Calcaneocuboid Osteoarthritis - Secondary (Inflammatory)	Clinical finding	No
Calcaneocuboid Osteoarthritis - Secondary (Post Infection)		
Calcaneocuboid Osteoarthritis - Secondary (Post Trauma)	Clinical finding	No
Calcaneocuboid Joint Inflammatory Arthropathy		
Midfoot Joint Osteoarthritis - Primary	Clinical finding	No
Midfoot Joint Osteoarthritis - Secondary (Inflammatory)	Clinical finding	No
Midfoot Joint Osteoarthritis - Secondary (Post Infection)		

# Same concept in SNOMED

⌵ Osteoarthropathy	Disorder of skeletal system (disorder)
⌵ OA - Osteoarthritis	Osteoarthritis (disorder)
⌵ OA - Osteoarthrosis	Osteoarthritis (disorder)
● Spinal osteoarthritis	Spondylosis without myelopathy (disorder)
⌵ Osteoarthritis of hip	Osteoarthritis of hip (disorder)
⌵ Osteoarthritis of knee	Osteoarthritis of knee (disorder)
⌵ Osteoarthrosis of hand	Degenerative joint disease of hand (disorder)
● Erosive osteoarthrosis	Erosive osteoarthrosis (disorder)
⌵ Chronic osteoarthritis	Chronic osteoarthritis (disorder)
● Endemic osteoarthritis	Endemic osteoarthritis (disorder)
● Primary osteoarthritis	Idiopathic osteoarthritis (disorder)
⌵ Osteoarthritis of ankle	Osteoarthritis of ankle (disorder)
⌵ Thoracic osteoarthritis	Thoracic spondylosis (disorder)
⌵ Osteoarthritis of spine	Spondylosis (disorder)
⌵ Osteoarthritis of wrist	Osteoarthritis of wrist (disorder)
● Cervical osteoarthritis	Cervical spondylosis (disorder)

### Concept Details

Summary Details Diagram Expression Refsets Members References

Stated Inferred

#### Parents

- ⌵ Degenerative joint disease of ankle AND/OR foot (disorder)
- ⌵ Disorder of ankle joint (disorder)

⌵ Osteoarthritis of ankle (disorder) ☆

SCTID: 239874001

239874001 | Osteoarthritis of ankle (disorder) |

- OA - Osteoarthritis of ankle
- Osteoarthritis of ankle
- Osteoarthritis of ankle (disorder)
- Degenerative joint disease of ankle

Finding site → Ankle joint structure

Associated morphology → Degeneration

#### Children (2)

- Primary osteoarthritis of ankle (disorder)
- ⌵ Secondary osteoarthritis of ankle (disorder)
  - ⌵ Osteoarthritis of ankle secondary to inflammatory arthritis (disorder)
  - ⌵ Osteoarthritis of ankle secondary to trauma (disorder)

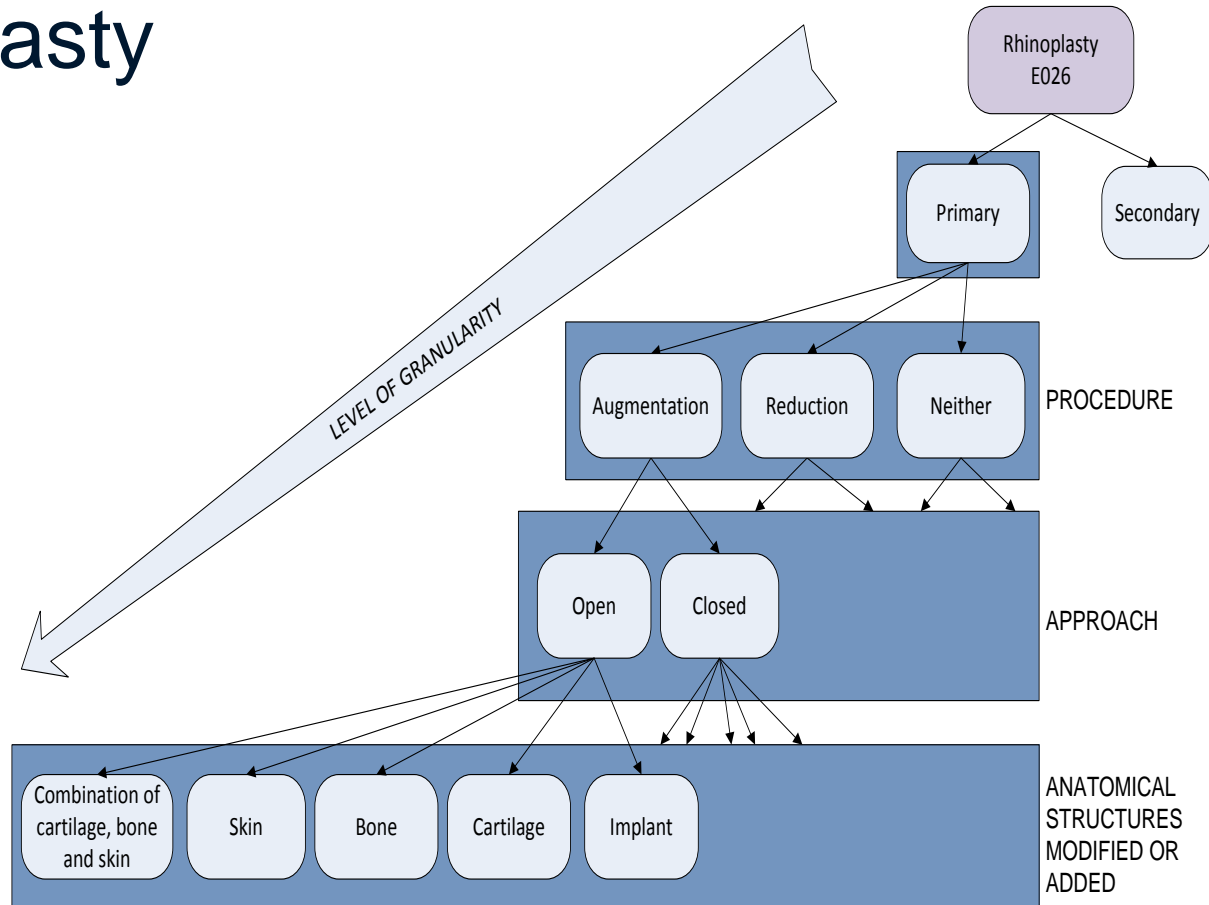
# Methodology 2: Create your subset list

---

- Requirements are well understood and articulated
- Methodology might be to harvest existing records for frequently occurring content
- Can define concepts within prescribed subset that meets your clinical needs
- May have formal editorial oversight

# Methodology 3: compositional approach

## Rhinoplasty





# Methodology 3: cont

---

- Possible concepts from diagram:
  - Primary augmentation rhinoplasty via an open approach with bone modification
  - Primary reduction rhinoplasty via a closed approach and cartilage modification
- You can decide the level of granularity required