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<th>20180731</th>
</tr>
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<tr>
<td>Document Version</td>
<td>1.0</td>
</tr>
<tr>
<td>Release Status</td>
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1 Introduction

1.1 Background
SNOMED CT terminology provides a common language that enables a consistent way of indexing, storing, retrieving, and aggregating clinical data across specialties and sites of care.
SNOMED International maintains the SNOMED CT technical design, the content architecture, the SNOMED CT content (includes the concepts table, the descriptions table, the relationships table, a history table, and ICD mappings), and related technical documentation.

1.2 Purpose
This document provides a summarized description of the content changes included in the July 2018 release of SNOMED Clinical Terms® (SCT) International Release.
It also includes technical notes detailing the known issues which have been identified. These are content or technical issues where the root cause is understood, and the fix has been discussed and agreed, but has yet to be implemented.
This document is available alongside the July 2018 International Edition release.

1.3 Scope
This document is written for the purpose described above and is not intended to provide details of the technical specifications for SNOMED CT or encompass every change made during the release.

1.4 Audience
The audience includes National Release Centers, WHO-FIC release centers, vendors of electronic health records, terminology developers and managers who wish to have an understanding of changes that have been incorporated into the July 2018 International Edition release.
2 Content Development Activity

2.1 Summary
Continuous quality improvement and enhancement of existing content is ongoing based on requests received via the Content Request System (CRS). A review of pre-coordination patterns has been undertaken to assist with the progression of CRS tickets that had been placed on hold. 35 patterns have had final decisions made and the corresponding CRS tickets progressed accordingly. Information on the pattern decisions may be found in the SNOMED CT Editorial Guide.

The July 2018 International Release has seen a continuation of the work driven by contributions from: Kaiser Permanente Convergent Medical Terminology (CMT), Global Medical Device Nomenclature Agency (GMDNA) and Orphanet to add new content to SNOMED CT.

Additionally a process of Quality Improvement and project-driven changes have resulted in new content additions and enhancements to existing content detailed below.

Reminder
Inactivation reason of LIMITED/WAS A will no longer be allowed for any content after the July 2018 release. The WAS A association refset will not be updated thereafter.

Background
In 2015, a proposal was made to inactivate 159083000 |WAS A (attribute)| relationship and stop updating the 900000000000528000|WAS A association reference set (foundation metadata concept)| at the Editorial Advisory Group.

Since these recommendations were made, a formal proposal for the technical approach to batch updating the terminology was created and a notice of the proposed inactivation sent to the Community of Practice.

The implementation of changes was postponed following feedback on utility for implementation and the potential impact to customers who were still using RF1.

The matter was discussed again at the meeting of the Editorial Advisory Group in Bratislava in October 2017. Since the requirements and potential issues can be addressed by deriving such information from the RF2 release format, the recommendation is to proceed the decision after the July 2018 release.

2.2 Content Quality Improvement

A total of 6494 new concepts were added

<table>
<thead>
<tr>
<th>SCT Statistics</th>
<th>New concept additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNOMED CT Concept (SNOMED RT+CTV3)</td>
<td>6494</td>
</tr>
<tr>
<td>Body structure (body structure)</td>
<td>357</td>
</tr>
<tr>
<td>Clinical finding (finding)</td>
<td>1203</td>
</tr>
<tr>
<td>Event (event)</td>
<td>2</td>
</tr>
<tr>
<td>Term</td>
<td>Count</td>
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<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Observable entity (observable entity)</td>
<td>60</td>
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<tr>
<td>Organism (organism)</td>
<td>182</td>
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<tr>
<td>Pharmaceutical / biologic product (product)</td>
<td>3053</td>
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<tr>
<td>Physical object (physical object)</td>
<td>88</td>
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<tr>
<td>Procedure (procedure)</td>
<td>659</td>
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<td>Qualifier value (qualifier value)</td>
<td>224</td>
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<tr>
<td>Record artifact (record artifact)</td>
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<td>SNOMED CT Model Component (metadata)</td>
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<td>Situation with explicit context (situation)</td>
<td>64</td>
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<tr>
<td>Social context (social concept)</td>
<td>27</td>
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<tr>
<td>Specimen (specimen)</td>
<td>2</td>
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<tr>
<td>Staging and scales (staging scale)</td>
<td>21</td>
</tr>
<tr>
<td>Substance (substance)</td>
<td>537</td>
</tr>
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</table>
A total of 32889 changes were made to existing content

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<thead>
<tr>
<th>SCT Improvement Statistics to Existing Concepts</th>
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<td>Total number of changes</td>
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<tr>
<td>Change to stated concept definition</td>
<td>20126</td>
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<tr>
<td>Change to inferred concept definition</td>
<td>27970</td>
</tr>
<tr>
<td>Change in concept definition status from Primitive to Sufficiently Defined</td>
<td>7997</td>
</tr>
<tr>
<td>Description change</td>
<td>10691</td>
</tr>
<tr>
<td>Inactivated concepts</td>
<td>6955</td>
</tr>
<tr>
<td>Inactivated descriptions</td>
<td>9256</td>
</tr>
<tr>
<td>Reactivated concepts</td>
<td>16</td>
</tr>
</tbody>
</table>
2.2.1 Anatomy

Advance Notice

Planned inactivation of 123005000 |Part of (attribute)| attribute and relationships in the January 2019 release

|Part of| relationships have only been included in the inferred relationship file. They are not actively maintained because they are additional relationships rather than defining relationships. The new anatomy concept model has introduced different kinds of ‘part of’ relationships, e.g. |All or part of|, |Constitutional part of|, |Lateral half of|, |Regional part of|, and |Systemic part of|. The modeling Advisory Group has recommended inactivation of 123005000 |Part of (attribute)| attribute and relationships in the January 2019 release. It will be replaced by a new attribute |Proper part of| to represent defining relationships where ‘part is not equal to whole’. The new anatomy model will be implemented in future releases when the required description logic enhancements are implemented.

New anatomy concepts: 357
- 333 new body structure concepts.
- 24 new morphologic abnormality concepts.
- 276 new lateralized body structure concepts.
- There are now over 5,600 lateralized concepts in SNOMED CT and over 300 concepts are new lateralized findings, disorders and procedures.

Updates have been made to 109 concepts to conform with the new editorial guidance on the naming convention for digits of hand and foot.
- Added 196 new descriptions.
- Inactivated 174 descriptions.

Updates have been made to concepts for skin and/or subcutaneous tissue to conform to the editorial guidance on the naming convention for conjunction and disjunction.
- Added 84 new descriptions.
- Inactivated 30 descriptions.

2.2.2 Clinical finding

New concepts for clinical findings and disorders: 1203

Work completed on the following Content Projects:
- IHTSDO-451 - Has definitional manifestation.
- IHTSDO-592 and IHTSDO-381 - Inactivate 91138005|Mental retardation (disorder)| and replace with 110359009|Intellectual disability (disorder)| with change to 281 descendant concepts.
- IHTSDO-955 - Remodel Talipes Valgus.

Work commenced on the following Content Projects:
- IHTSDO-703 - Inactivation of 'unilateral' concepts. Work on the inactivation of unilateral concepts and the creation of left and right replacement concepts continued this release. The focus areas were: Cleft lip, Femoral hernia, Inguinal hernia, Kidney disorder/procedure, Orchidectomy, Orchipexy, Lymphangiography, Vascular imaging procedures. In the areas of cleft lip and hernia additional modelling improvements were also made. Further work is still required to complete the inactivation of unilateral concepts.
• IHTSDO-614 - Rework hierarchy 441457006|Cyst (disorder)| work on this project continues.
• IHTSDO-393 Diabetes Complications - Work has begun on updating and modeling content relating to the diagnosis and management of patients with diabetes mellitus. Initial work relates to diabetic complications where the editorial guidance on combined disorders and complications is being applied. A small task and finish group consisting of representatives of the multidisciplinary care team will be reviewing existing content and advising on new content to ensure that SNOMED CT is fit for the purposes of supporting the electronic health care record for this group of patients.
• IHTSDO-114 - 183 out of 585 descendants of 128294001 |Chronic inflammatory disorder (disorder)| have been remodeled with stated relationship changed from Associated Morphology = Chronic inflammation (morphologic abnormality) to Associated morphology (attribute) = Chronic inflammatory morphology (morphologic abnormality), made Fully Defined, modeled to primitive parent, addition of Clinical course (attribute) = Chronic (qualifier value) and other relationships added or grouped as necessary. Stated children of inferred subtypes of 128294001 |Chronic inflammatory disorder (disorder)| have started to be addressed following the pattern above, and the remainder are now part of the QI work for inclusion in a future release. 249 inferred concepts require a stated relationship change from Associated Morphology = Chronic inflammation (morphologic abnormality) to Associated morphology (attribute) = Chronic inflammatory morphology (morphologic abnormality).

Other content quality improvements:

• For the January 2018 release the synonym of "occlusion" was inactivated from 26036001|Obstruction (morphologic abnormality) and added to 50173008|Complete obstruction (morphologic abnormality). 415582006|Stenosis (morphologic abnormality)| became a descendant of 25659002|Narrowed structure (morphologic abnormality). These changes resulted in a further 133 released concepts being reviewed and/or changed for the July 2018 release.
• Added a new sufficiently defined concept of 763597000|Hereditary ataxia (disorder)| resulting in changes to 40 concepts.
• Hierarchy review/remodel descendants of 248595008|Sputum (finding)| with changes to 59 concepts.
• Review/remodel "Progressive" disorders with changes to approximately 200 concepts. A new clinical course qualifier value has been created: 255314001|Progressive (qualifier value)| as a subtype of 90734009|Chronic (qualifier value)|. Can be used to fully define progressive disorders using 246454002|Occurrence (attribute)| = progressive (qualifier value).
• Review/remodel of "Acquired" disorders with changes to 697 concepts. A new period of life has been created: 767023003|Period of life beginning after birth and ending before death (qualifier value)|. This allows for a distinction to be made between acquired vs. congenital concepts and also permits existing ‘acquired’ concepts to be sufficiently defined.
• Addition of Bipolar disorder concepts which include the most recent episode information.
• 36 new concepts added for genetic diseases which were not part of the Orphanet project.
• Remodeling and re-termining of 110288007|Joint tenderness (finding)|. Redefined Joint tenderness as IS_ A Tenderness (finding) + finding site=joint structure and all of the specific joint tenderness concepts using the same pattern. Renamed all joint tender(ness) concepts as Tenderness of x joint (finding).
• Inactivated 202936005|Ganglion and cyst of synovium, tendon and bursa (disorder) and used an analogous approach to inactivate the descendants with new replacement concepts.
• Remodel 63491006|Intermittent claudication (finding)| hierarchy. Added due to 86341008|Vascular insufficiency (disorder)|. Removed parent of 22253000|Pain (finding)| and added parents of 427345006|Pain relief by rest (finding)| and 427344007|Pain provoked by exertion (finding)|.
• Review and remodel 11 viral disorder and related concepts.
• 45 new clinical finding/disorder concepts added for Dentistry.
• Inactivated out of scope |Allergy to X (disorder)| concepts, as identified by the Allergy/Hypersensitivity and Intolerance Clinical Reference Group.
• Review and remodel of 520 fracture of lower limb concepts using a proximal primitive parent and creating stated defining relationships for those which were previously inferred relationships.
• Intussusception disorder concepts were remodeled using the proximal primitive parent modeling approach with two relationship groups capturing the invagination and obstruction morphologic abnormalities of this disorder. The concept Intussusception (morphologic abnormality) was inactivated as a duplicate of Invagination (morphologic abnormality).

2.2.3 Convergent Medical Terminologies (CMT)

New CMT concepts: 215
These were added across 3 domains:

- CMT Cardiology
- CMT Hematology oncology
- CMT Musculoskeletal

### 2.2.4 Procedure Hierarchy

New concepts for procedure hierarchy: 659

Diagnostic imaging - 32 requests were received for new imaging procedure concepts with various imaging modalities.

Work completed on the following Content Projects:

- IHTSDO-688 - Improvement in the modelling of the Brachytherapy sub-hierarchy.

Other content quality improvements:

- Implemented changes related to 208 client requests mainly in the area of laboratory procedure and microbiology reporting. Changes are implemented in the following hierarchies: Organism (including creation of 133 new organism concepts), Specimen, Evaluation procedure, Finding, Substance, and Technique.
- Updated naming for Streptococcus pneumoniae serotypes by specifying the nomenclature system (Danish vs. American) which resulted in changes for 214 concepts (including addition, inactivation or change in description) in the following hierarchies: Organism, Substance, and Evaluation procedure.

### 2.2.5 Collaboration/Harmonization Projects

#### 2.2.5.1 Orphanet

As a result of collaboration with Orphanet ([http://www.orpha.net/consor/cgi-bin/index.php](http://www.orpha.net/consor/cgi-bin/index.php)) 473 new SNOMED CT concepts have been created to represent rare diseases in the disorder hierarchy.

#### 2.2.5.2 Global Medical Device Nomenclature Agency (GMDNA)

64 new SNOMED CT concepts created and mapped in the Physical object hierarchy to support the GMDN collaboration agreement.

### 2.2.6 Event

New concepts added: 2

Work commenced on the following Content Projects:

- IHTSDO-1071 - Vehicle accident (event) - Inactivation of over 200 transport accidents from Event hierarchy.

### 2.2.7 Qualifier Value

New concepts added: 224

Content quality improvements:
Several new concepts have been added for Pathological process (qualifier value) to support the upcoming revisions to the allergy model.

Replaced existing ambiguous top-level concept 258666001 |Unit (qualifier value)| with new 767524001 |Unit of measure (qualifier value)| concept. To support modeling of clinical drug concepts in the 763158003 |Medicinal product (product)| hierarchy, created new 767525000 |Unit (qualifier value)| concept as descendant of 259026009 |Miscellaneous unit (qualifier value)|.

308912000|Agencies and organizations (qualifier value)| and subtypes moved to a National extension, 66 concepts inactivated from the International release.

2.2.8 Organism

New organism concepts added: 182

Work commenced on the following Content Projects:

- IHTSDO-455 - Organism Life Cycles - The project was undertaken to clarify the meaning of organism concepts that are likely values for laboratory reports related to parasitic and certain other infections. Concept descriptions and definitions were edited for concepts such as 609326000 |Strongyloides stercoralis larval form (organism)|, previously placed as subtypes of both 421727006 |Phylum Nemata (organism)| and 278306005 |Life-cycle form (organism)|, so that their status as organisms was made clear. This project altered 320 concepts representing various taxonomic groups including phylum Nemata, class Cestoda, class Trematoda, protozoa, Fungi, yeasts and viruses. A limited number of concepts that could not be related to a specific organism (e.g. 278306005 |Life-cycle form|) were inactivated. In cases where a diagnosis is made by identifying an organism structure (e.g. 284688000 |Fungal hyphae|), the organism concept was inactivated and referred to a finding concept “404507002 |Hyphae of Kingdom Fungi detected| (finding).

Other content quality improvements:

- Updated naming for Streptococcus pneumoniae serotypes by specifying the nomenclature system (Danish vs. American) which resulted in changes for 214 concepts (including addition, inactivation or change in description) in the following hierarchies: Organism, Substance, and Evaluation procedure.

2.2.9 Pharmaceutical / biologic product

The following changes will be included in the 2018-July International Release.

<p>| New hierarchies | 766940004 | Role (role) and subhierarchy 766941000 | Therapeutic role (role) created with additional subtypes to be added in future releases |
|-----------------|---------------------------------|---------------------------------------------------------------------------------|
| New semantic tags| (role)                           |                                                                                 |</p>
<table>
<thead>
<tr>
<th>New attribute types</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 766953001</td>
</tr>
<tr>
<td>• 766954007</td>
</tr>
<tr>
<td>• 766952006</td>
</tr>
<tr>
<td>• 763032000</td>
</tr>
<tr>
<td>• 766939001</td>
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<table>
<thead>
<tr>
<th>Grouper concepts representing disposition, intended site, and/or structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Grouper concepts representing disposition, intended site, and/or structure sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n550).</td>
</tr>
<tr>
<td>New high level grouper concepts created as an incremental improvement with additional subtypes to be added in future releases:</td>
</tr>
<tr>
<td>• 766779001</td>
</tr>
<tr>
<td>• 763760008</td>
</tr>
<tr>
<td>• 767102007</td>
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<thead>
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<th>Product role concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Concepts representing product role relocated as stated descendants of 763087004</td>
</tr>
<tr>
<td>• For further details see <a href="#">Briefing Note Use of Additional Axiom Functionality and Remodeling Product Role</a></td>
</tr>
</tbody>
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<thead>
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<th>Medicinal product (MP) concepts</th>
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</thead>
<tbody>
<tr>
<td>• <strong>MP-containing</strong> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n 3750). Includes the following attributes:</td>
</tr>
<tr>
<td>• Has active ingredient (n4650)</td>
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</table>

<table>
<thead>
<tr>
<th>Medicinal product form (MPF) concepts</th>
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</thead>
<tbody>
<tr>
<td>• <strong>MPF-containing</strong> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n2100). Includes the following attributes:</td>
</tr>
<tr>
<td>• Has active ingredient (n2400)</td>
</tr>
<tr>
<td>• Has manufactured dose form (n2150)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical drug (CD) concepts</th>
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</thead>
<tbody>
<tr>
<td>• <strong>CD-containing precisely</strong> concepts sufficiently defined by modeling to proximal primitive concept, adding defining attributes, and updating descriptions per editorial guidelines (n 4850). Includes the following attributes:</td>
</tr>
<tr>
<td>• Count of base of active ingredient (n4850)</td>
</tr>
<tr>
<td>• Has basis of strength substance (n5600)</td>
</tr>
<tr>
<td>• Has concentration strength denominator unit (n1450)</td>
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<td>• Has concentration strength denominator value (n1450)</td>
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<td>• Has concentration strength numerator value (n1450)</td>
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<td>• Has manufactured dose form (n4850)</td>
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<td>• Has precise active ingredient (n5550)</td>
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<tr>
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</tr>
<tr>
<td>• Has presentation strength numerator value (n4750)</td>
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</table>

<table>
<thead>
<tr>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Notification for Briefing Notes, Editorial Guidelines, and other documentation updates are posted on the project group website as they become available; see <a href="#">Drug Model Working Group - Directory</a> for details</td>
</tr>
</tbody>
</table>
2.2.10 Veterinary Extension

15 concepts were moved to the Veterinary Extension.

2.2.11 Situation with Explicit Context

New concepts added : 64

143 concepts using the pattern ‘OFFERED’ or ‘NOT OFFERED’ were inactivated.

Addition of new concepts for transplant donor and recipient Epstein Barr virus status.

Work continuing on the following Content Projects:

- IHTSDO-703 - Inactivation of 'unilateral' concepts. Work on the inactivation of unilateral concepts and the creation of left and right replacement concepts continued this release.

2.2.12 Social Context

26 new concepts were added as a subtype of 14679004|Occupation (occupation)|.

2.2.13 Assessment Scale

Review of 11 of assessment scale concepts for duplicates or correctness.

Addition of 96 assessment scale, observable entity and procedure concepts to support use of assessment scales.

2.2.14 Substances

The following changes will be included in the 2018-July International Release.

| Disposition groupers | • Disposition Groupers had been updated, modeled and fully defined in Jan2018 release. Just under 50 additional Disposition concepts have been created in the July 2018 data.  
| | • Existing Disposition groupers for substances have been remodeled in the July 2018 data.  
| | • Additional Disposition Groupers for substances have been created. A total of approx. 300 Disposition grouper substances.  
| | • A new substance top level concept of “Substance categorized by disposition (substance)” has been created to allow substances with dispositions to be modeled as proximal primitive.  
| | • Disposition (disposition)  
| | • New concepts created (n 250)  
| Structural groupers | • Structural Groupers have been retained as primitive concepts.  
| | • Additional Structural Groupers have been created. Approximately 20  
| Chemical element groupers | • Inactivated and recreated to avoid the use of AND/OR and provide consistent modeling. |
### Combined groupers
- Combined Groupers (Structure + Disposition) be have been remodeled in the July 2018 data

### Is modification of attribute
- The "Is modification" attribute has been implemented resulting in a to flattening of the substances hierarchy.

### Role groupers
- Role Groupers in the substances hierarchy have been reviewed. In the region of 100 substance Role grouper concepts have been inactivated and others replaced. This work is ongoing. The retention of some role based groupers in the substances hierarchy means that some substances are not classifying correctly.

### General content updates
- Radiopharmaceutical concepts have been remodelled and the terms updated to provide consistent representation of these concepts.
- Dietary subhierarchy. To remove context of use from the substance concepts 80 substances inactivated. In some instances replacement concepts have been created without " – dietary" tag. The concept “Dietary substance (substance)" has been inactivated and replaced with a new concept "Edible substance (substance)"
- Overall 447 new concepts added to the substances hierarchy. Just over 460 substance concepts have been inactivated in the release.

### Documentation
- Notification for Briefing Notes, Editorial Guidelines, and other documentation updates are posted on the project group website as they become available; see Project Status Substance Hierarchy for details

---

**Other content quality improvements:**

- Inactivation of 417881006|Radiopharmaceutical agent (substance)| which was a primitive concept with three stated subtypes and not a substance but a role of a substance. After the inactivation, there was a hierarchy review starting at 33638001|Isotope (substance)| involving approximately 850 concepts.
- Creation of new terming document, use of INN terming where possible. Alignment of content with new terming
- Removal of caret "^^" for superscript
- For example:
  - Before = 24511001|Technetium Tc^99m^ succimer (substance)
  - After = 24511001|Technetium (99m-Tc) succimer (substance)
- Substances were moved under more specific supertypes where possible. Removal of formatting carets
- Identified nuclear medicine procedures using a “substance grouper” as an attribute value but refer to a specific substance in the FSN. Remodeled with a specific substance approximately 93 concepts
- Concept 371572003|Nuclear medicine procedure (procedure)| has been sufficiently defined. A hierarchy review has been started to review terming, use of correct radioisotopes, and inactivation of concepts containing additional context outside of the actual procedure.

**Release plans, Substance hierarchy**

For further details on the planned changes in this area, please refer to the Substances project.

*Please note, you may have to register for Confluence user account in order to access this project and the relevant links above.*

---

### 2.3. Internal Quality Improvement
2.3.1 Logic Profile Enhancements

The first release of the OWL reference sets

As an essential part of SNOMED CT Logic Profile Enhancements, two OWL refsets have been developed to represent logic definitions following the international standard of OWL 2 Web Ontology Language.

The OWL Ontology reference set includes essential metadata information about an ontology, such as, namespaces, ontology URI and ontology version URI.

The OWL Axiom reference set includes only property axioms, such as property chains, transitive properties, and reflexive properties, that cannot be fully represented by the RF2 stated and inferred relationship files. The limited scope of the first release is a response to the Community of Practice Consultation happened early this year, which allows sufficient time for users to develop and update their tooling and systems.

The content from the OWL reference sets must be included for all applications that utilise the description logic (DL) reasoning services to ensure correct inferences. These property axioms are required for classification by DL reasoners to support the drug, substance, and anatomy projects and other clinical content depend on them. Extensions can update the refsets by following the OWL reference sets specification.

Following the recommendation from the Modeling Advisory Group, the full representation of all logical definitions and other key DL features, such as additional axioms and GCIs (General Concept Inclusion), will be included in the OWL axiom refset in the January 2019 release. A reference implementation by SNOMED International was demonstrated at the April business meeting. All software systems implemented DL reasoning services need to be updated to use the OWL axiom refset that is the only source of truth for logic definitions from 2019.

Updates to the RF2 relationship files

There are no changes to the stated relationship file for the July 2018 release. However, the stated relationship file must be used in conjunction with the OWL refsets for the DL reasoning services.

In the January 2019 release, the stated relationship file will be replaced by the OWL axiom refset that includes all logical definitions and other features specified in the SNOMED CT logic profile specification. The stated relationship file will NOT be included in the international release; however, it may still be available on request to support migration to the OWL axiom refset.

The inferred relationship file will maintain the same format and structure, though it is no longer containing all necessary and sufficient conditions. The inferred relationship file is represented in Necessary Normal Form for distribution of relationships. It is a collection of all the necessary conditions and represents a subset of the full semantics from the 2018 July release and onwards. Most users will benefit from the improvements in the inferred relationships without requiring changes to their existing systems.

A set of documentations has been developed to support the Logic Profile Enhancements.

- SNOMED DL Profile Enhancements - https://docs.google.com/document/d/1tqNEA6S4fEF4fQg15OPabYA2E0VTz8epxvRRwczKizQ/edit?usp=sharing
- SNOMED CT Logic Profile Specification - http://snomed.org/lps
- SNOMED CT OWL Guide (OWL Refsets specification) - http://snomed.org//owl
- Necessary Normal Form for Inferred Relationships - https://docs.google.com/document/d/1dt0r0aetwpwhOQiT9wt0EViukVLKrVJXYUn_vq-QhIM/edit?usp=sharing
- Snomed OWL Toolkit - https://github.com/IHTSDO/snomed-owl-toolkit
- Classifying SNOMED CT using the Snomed OWL Toolkit - https://youtu.be/-91egY9mJqA
- Creating an OWL file containing SNOMED CT - https://youtu.be/sfFbMMloA_4

2.3.2 Machine Readable Concept Model (MRCM)

14 new MRCM rules and 10 updates to the existing MRCM in the MRCM refsets and authoring platform.

- New MRCM for new attribute 738774007 [Is modification of]
- New MRCM for new attribute 762951001 [Has ingredient]
- New MRCM for new attribute 762949000 [Has precise active ingredient]
- New MRCM for new attribute 411116001 [Has manufactured dose form]
2.4 SNOMED CT derived products

2.4.1 ICD-10 map

The SNOMED CT to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (© World Health organisation 1994) 2016 Version map (SNOMED CT to ICD-10 Map) is included in the SNOMED CT International release as a Baseline. The SNOMED CT to ICD-10 Map was created to support the epidemiological, statistical and administrative reporting needs of SNOMED International member countries and WHO Collaborating Centres.

The SNOMED CT to ICD-10 Map is released in Release Format 2 (RF2) only. It is located in the file der2_isssscRefset_ExtendedMapFull_INT_20180731.txt, which is in the Map folder under Refset, in each of the three RF2 Release Type folders.

The SNOMED CT to ICD-10 Map is released as Refset 447562003 [ICD-10 complex map reference set (foundation metadata concept)].

2.4.1.1 Content development activity summary

The map is a directed set of relationships from SNOMED CT source concepts to ICD-10 target classification codes. The SNOMED CT source domains for the MAP are limited to subtypes of 404684003 [clinical finding], 272379006 [event] and 243796009 [situation with explicit context]. The target classification codes are ICD-10 2016 release.

2.4.1.2 Mapped content for July 2018

The map provided for the July 2018 release has been updated, and now represents a complete map from SNOMED CT International release to ICD-10 2016 version.

- 1278 new concepts added
We would welcome feedback on any issues that users of the map may detect when using the map. Issues should be submitted via mapping@snomed.org

2.4.1.3 Technical Guide Exemplars

The Technical Guide Exemplars document has now been moved from the International Edition release package to a Confluence page. This page can be found as part of the ICD-10 Mapping Technical Guide (see Appendix B), which is hosted here: http://snomed.org/icd10map

2.4.2 ICD-O Map

There are 5 updates for the ICD-O Morphological abnormality map in July 2018 release.

2.4.3 SNOMED CT to OWL conversion and classification

The repository containing the toolkit enabling simple SNOMED CT to OWL conversion and classification can be found here, including documentation on its use: https://github.com/IHTSDO/snomed-owl-toolkit

Please contact SNOMED International at support@snomed.org if you would like to provide any feedback on ways to extend and improve the new toolkit.
3 Technical notes

3.1 Known Issues

Known Issues are content or technical issues where the root cause is understood, and the resolution has been discussed and agreed but has yet to be implemented. This can be due to a number of reasons, from lack of capacity within the current editing cycle, to the risk of impact to the stability of SNOMED CT if the fix were to be deployed at that stage in the Product lifecycle.

For the Snomed CT July 2018 International edition, the following Known Issues were identified, and agreed to be resolved in the next editing cycle (to be published in July 2018):

<table>
<thead>
<tr>
<th>Key</th>
<th>Summary</th>
<th>Description</th>
</tr>
</thead>
</table>
| ISRS-323 | CaseSignificance changes to be implemented for July 2018 International Edition | A small percentage of the records updated for the caseSignificance changes have been identified as not having yet been resolved. Due to their relatively low impact we are proposing to retain these as Known Issues for the current release, and resolve them as part of future editing cycles.  
  KNOWN ISSUE: The SNOMED International Content Team have confirmed that deferring these fixes to later editing cycles is the correct approach. Some of the issues have now been fixed, but others will therefore be fixed in future editing cycles. |
| ISRS-391 | Descriptions in unexpected modules                                      | The following description is in the core module, whilst the related components are in the model component module:  
  3636048013   EDQM simple map reference set module  
  (stated relationship is also on core, inferred is on model component...)  
  There are also 155 inactive descriptions that may be in the wrong module.  
  KNOWN ISSUE: As these are historical issues, the SNOMED International Content Team have confirmed that the safest course of action is to resolve them in the next editing cycle, ready for release in the January 2019 International release. |
| ISRS-392 | Stated relationships with unexpected modules                            | There are 90 stated relationships on the core module for model component concepts. They are, however, on the model component module in DNF, so the classifier must be implementing rules for correct module assignment.  
  KNOWN ISSUE: The SNOMED International Content team have conducted initial investigations and confirmed that the identified issues are historical, and therefore need to be investigated in greater depth and resolved (where necessary) in time for the January 2019 International release. |

3 issues
3.2 Resolved Issues

Resolved issues are Known Issues which were not fixed as part of the previous release lifecycle, but which have now been resolved in the latest release - in this case the July 2018 International Edition. They can also be issues found during the Alpha and Beta testing of the current release, which were resolved before the final deployment of the associated Member release. Finally they can be issues which were reported or found during the testing phase, but which have been closed without any action taken.

The Resolved Issues for the Snomed CT July 2018 International edition can be found here:

<table>
<thead>
<tr>
<th>Key</th>
<th>Summary</th>
<th>Description</th>
<th>Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISRS-316</td>
<td>Track changes for ISRS-302</td>
<td>Ticket opened to track the merge of the changes for <strong>ISRS-302</strong> back into Main... RESOLUTION: Case significance changed for all relevant records. Rules to be continually refined going forward to prevent future issues of a similar nature.</td>
<td>2018-May-02</td>
</tr>
<tr>
<td>ISRS-321</td>
<td>July 2018 release - check and/or inactivate duplicate preferred terms on release content</td>
<td>A query was run using the following criteria: Duplicate descriptions which are active, have an active concept, are preferred in the US and where the concepts have the same semantic tag in the FSN. 41 instances of duplicate preferred terms were found. <a href="https://docs.google.com/spreadsheets/d/1J6lN5CyoIkdu68iUuOeBZ9k570pcc1Nc72s2pDaXq4/">Link</a> RESOLUTION: SNOMED CT Content Team found and fixed several PT issues as a result for the report. Alpha release spot checked and no new issues found, so ticket can be closed.</td>
<td>2018-May-31</td>
</tr>
<tr>
<td>ISRS-324</td>
<td>Clinical finding 404664003 only approved defining attributes used - planned for July 2018 International Edition</td>
<td>There are 3308 instance of <a href="https://docs.snomed.org/documents/information-resource-definition">363705008</a> (Has definitional manifestation) being used. -- &quot;ATF-1463&quot; -- indicates this attribute was deprecated. 90 new instances have been added for this release. There are 6 relationships using <a href="https://docs.snomed.org/documents/information-resource-definition">726639004</a> (Temporally related to). It may be valid, but I can't find any information about this attribute. RESOLUTION: All concepts modelled with <a href="https://docs.snomed.org/documents/information-resource-definition">363705008</a> (Has definitional manifestation (attribute)) had this attribute inactivated for the July 2018 release.</td>
<td>2018-Jul-31</td>
</tr>
</tbody>
</table>
| ISRS-327 | Minor issues in the MRCM Domain file - planned for resolution in July 2018 International Edition | Minor issues have been identified in the MRCM Domain file, as follows:  
- **4c97efc0-bff8-4afc-b3f1-d60862074973** (Administration of substance via specific route) + 7ca9ecf-74ce-4938-9b9d-48db53e2904 (Disease) + 529e4ef1-4e07-4866-89a7-072bba2046 (Event)   - The attribute [During AND/OR after] was mistakenly included in the domainTemplateForPrecoordination and domainTemplateForPostcoordination. RESOLUTION: The July 2018 International Edition includes updates to the MRCM Domain reference set file to resolve the above issues. SNOMED International content team has therefore confirmed no further action required. | 2018-Jun-06       |
| ISRS-362 | Association Reference records                | UKTC logged the following potential issue:  
9000000000000527005 | SAME AS association reference set (foundation metadata concept) 
dar2_cRefset_AssociationFull_INT_20180131.txt - contains the following active rows (added in July 2017) where the referencedConceptId is a descriptionId and the target is a conceptId: 
8b46ba55-94dd-41d4-b730-b567a11199d4 20170731 1 9000000000002007008 90000000000527005 505551013 83330001 
09619b6-a4df-4224-b96a-1d6639b14af 20170731 1 9000000000002007008 90000000000527005 138210017 83330001 
The referenced component and the target should be the same class of component for all but the REFERS TO refset. RESOLUTION: AttributeValue records updated in time for the July 2018 International Edition. | 2018-Jul-31       |
| ISRS-368 | July 2018 tracker for ISRS-298               | July 2018 tracker for ISRS-298, so that we can track it without losing the logging of the Known Issue in January 2018 Release Notes. RESOLUTION: All attribute value pairs have been inactivated.                                                                                                             | 2018-Jul-31       |
| ISRS-369 | July 2018 tracker for ISRS-319               | July 2018 tracker for ISRS-319, so that we can track it without losing the logging of the Known Issue in January 2018 Release Notes. RESOLUTION: All attribute value pairs have been inactivated.                                                                                                             | 2018-Jul-31       |
| ISRS-370 | RVF Assertion failure: 89ceaf00-79b9-11e1-b0c4-0800200c9e6 | RVF Assertion failure: 89ceaf00-79b9-11e1-b0c4-0800200c9e6, assertionUuid: "89ceaf00-79b9-11e1-b0c4-0800200c9e6", assertionText: "All stated relationships inactivated in current release must have been active in the previous release.", failureCount: 121, |
ISRS-371  RVF Assertion failure: 9f84d9a0-79b9-11e1-b0c4-0800200c9a66  testCategory: "file-centric-validation"  assertionUuid: "9f84d9a0-79b9-11e1-b0c4-0800200c9a66",  assertionText: "All source ids found in the Stated Relationship snapshot file exist in the Concept snapshot file.",  failureCount: 1,  RESOLUTION: Resolved in time for the July 2018 International Edition.  2018-May-04

ISRS-372  RVF Assertion failure: c3249e80-84f0-11e1-b0c4-0800200c9a66  testCategory: "component-centric-validation"  assertionUuid: "c3249e80-84f0-11e1-b0c4-0800200c9a66",  assertionText: "Terms that contain en-us specific words are in the en-us language refset.",  failureCount: 23,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.  2018-May-02

ISRS-373  RVF Assertion failure: cab60a2f-4239-4933-91d6-dc910a8ac08b  testCategory: "release-type-validation"  assertionUuid: "cab60a2f-4239-4933-91d6-dc910a8ac08b",  assertionText: "There must be actual changes made to previously published stated relationships in order for them to appear in the current delta.",  failureCount: 1,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.  2018-May-02

ISRS-374  RVF Assertion failure: ccf5340-84f0-11e1-b0c4-0800200c9a66  testCategory: "component-centric-validation,INT"  assertionUuid: "ccf5340-84f0-11e1-b0c4-0800200c9a66",  assertionText: "Terms that contain en-gb specific words are in the en-gb language refset.",  failureCount: 26,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.  2018-May-02

ISRS-375  RVF Assertion failure: dd3d0406-7481-444a-b6fc-7db49039  testCategory: "component-centric-validation"  assertionUuid: "dd3d0406-7481-444a-b6fc-7db49039",  assertionText: "The first letter of the FSN should be capitalized.",  failureCount: 23,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.  2018-May-02

ISRS-376  RVF Assertion failure: 62945e60-7cd6-11e7-8b36-3c15c2c6e32e  testCategory: "release-type-validation"  assertionUuid: "62945e60-7cd6-11e7-8b36-3c15c2c6e32e",  assertionText: "Previously published historical association components should not be modified.",  failureCount: 167,  RESOLUTION: Resolved in time for the July 2018 International Edition.  2018-Jul-31

ISRS-377  RVF Assertion failure: 0f30f8b-7856-11e1-b0c4-0800200c9a60  testCategory: "file-centric-validation"  assertionUuid: "0f30f8b-7856-11e1-b0c4-0800200c9a60",  assertionText: "Reference componentId and valueId pair is unique in the ASSOCIATION REFSET snapshot file.",  failureCount: 68,  RESOLUTION: Resolved in time for the July 2018 International Edition.  2018-Jul-31


ISRS-379  RVF Assertion failure: 2aa0bea1-b1ea-4543-b277-b4392a6f964d  testCategory: "release-type-validation"  assertionUuid: "2aa0bea1-b1ea-4543-b277-b4392a6f964d",  assertionText: "New inactive states follow active states in the ATTRIBUTEVALUE snapshot.",  failureCount: 1,  RESOLUTION: SNOMED International Content team confirmed that this is a warning only (that has been whitelisted), and so no further action is required.  2018-May-02

ISRS-380  RVF Assertion failure: 2ddc3a29-150d-474a-b0e6-7dbf28a9d72  testCategory: "file-centric-validation"  assertionUuid: "2ddc3a29-150d-474a-b0e6-7dbf28a9d72",  assertionText: "There is a 1:1 relationship between the id and the key values in the ASSOCIATION REFSET snapshot file.",  2018-Jul-31
failureCount: 2,

<table>
<thead>
<tr>
<th>ISRS-381</th>
<th>RVF Assertion failure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>testCategory: &quot;release-type-validation&quot;</td>
<td></td>
</tr>
<tr>
<td>assertionUuid: &quot;5f1a51a3-6200-4463-8799-d75998165278&quot;</td>
<td></td>
</tr>
<tr>
<td>assertionText: &quot;New inactive states follow active states in the CONCEPT snapshot.&quot;</td>
<td></td>
</tr>
<tr>
<td>failureCount: 51</td>
<td></td>
</tr>
<tr>
<td>RESOLUTION: Fixed in time for the July 2018 Alpha Release.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISRS-382</th>
<th>Complete the traceability analysis for the TermServer export</th>
</tr>
</thead>
<tbody>
<tr>
<td>The traceability analysis for the TermServer export needs to be completed, to ensure that everything is being exported as expected with no data missing.</td>
<td></td>
</tr>
<tr>
<td>RESOLUTION: analysis complete and successful, no changes required.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| ISRS-384 | DROOLS assertion failure: Active concept parents should not belong to more than one top-level hierarchy. |</p>
<table>
<thead>
<tr>
<th>conceptId</th>
<th>componentId</th>
<th>message</th>
<th>severity</th>
<th>ignorePublishedCheck</th>
</tr>
</thead>
<tbody>
<tr>
<td>126162007</td>
<td>126162007</td>
<td>Active concept parents should not belong to more than one top-level hierarchy.</td>
<td>ERROR</td>
<td>TRUE</td>
</tr>
<tr>
<td>767549002</td>
<td>767549002</td>
<td>Active concept parents should not belong to more than one top-level hierarchy.</td>
<td>ERROR</td>
<td>TRUE</td>
</tr>
</tbody>
</table>

<p>| ISRS-385 | DROOLS assertion failure: An active concept must not have two relationships with the same type, target and group. The duplicate can be an inactive relationship that should be reactivated, or an unreleased new relationship that should be deleted. |</p>
<table>
<thead>
<tr>
<th>conceptId</th>
<th>componentId</th>
<th>relationship</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>238703005</td>
<td>9373495029</td>
<td>4298611021.</td>
<td>Confirmed issue</td>
</tr>
<tr>
<td>414662006</td>
<td>9373490025</td>
<td>4329149028.</td>
<td>Confirmed issue</td>
</tr>
<tr>
<td>314780006</td>
<td>9373478021</td>
<td>4338120028.</td>
<td>Confirmed issue</td>
</tr>
<tr>
<td>208008</td>
<td>9373475024</td>
<td>4346910023.</td>
<td>Confirmed issue</td>
</tr>
<tr>
<td>24285001</td>
<td>9373511023</td>
<td>4358219021.</td>
<td>Confirmed issue</td>
</tr>
<tr>
<td>89478006</td>
<td>9373501027</td>
<td>4376360262.</td>
<td>The rest need checking</td>
</tr>
<tr>
<td>404159002</td>
<td>9373493020</td>
<td>4421114025.</td>
<td></td>
</tr>
<tr>
<td>45795007</td>
<td>9373494025</td>
<td>4435797028.</td>
<td></td>
</tr>
<tr>
<td>78631004</td>
<td>9373498027</td>
<td>4441348029.</td>
<td></td>
</tr>
<tr>
<td>91268007</td>
<td>9373503029</td>
<td>4441342024.</td>
<td></td>
</tr>
<tr>
<td>64268004</td>
<td>4450490525</td>
<td>4450497024.</td>
<td></td>
</tr>
<tr>
<td>51174006</td>
<td>9373473028</td>
<td>4480377021.</td>
<td></td>
</tr>
<tr>
<td>23909006</td>
<td>9373506021</td>
<td>4483110206.</td>
<td></td>
</tr>
<tr>
<td>246928001</td>
<td>9373508022</td>
<td>4496708022.</td>
<td></td>
</tr>
<tr>
<td>11256005</td>
<td>9373509025</td>
<td>4500650207.</td>
<td></td>
</tr>
<tr>
<td>428876001</td>
<td>9373500026</td>
<td>4515620025.</td>
<td></td>
</tr>
<tr>
<td>403515007</td>
<td>9373493020</td>
<td>4520971028.</td>
<td></td>
</tr>
<tr>
<td>10846009</td>
<td>6979918024</td>
<td>4568360206.</td>
<td></td>
</tr>
<tr>
<td>108452005</td>
<td>6979919027</td>
<td>4570444024.</td>
<td></td>
</tr>
</tbody>
</table>

RESOLUTION: All issues fixed in time for the first Alpha release being published, and so all issues resolved in time for the July 2018 International Edition.

Also see the spreadsheet here: https://docs.google.com/spreadsheets/d/1IVRHnSuY_JnhyNc2HpDZeFn66pRZ6U1kTdl-7gFYCI/edit#gid=0
failureCount: 3, firstNInstances: [{conceptId: 425630003}, detail: "Inferred relationship: id=3187444026 is in the delta file, but no actual changes made since the previous release."], [{conceptId: 425630003}, detail: "Inferred relationship: id=3192499027 is in the delta file, but no actual changes made since the previous release."], [{conceptId: 425630003}, detail: "Inferred relationship: id=3574321020 is in the delta file, but no actual changes made since the previous release."]

RESOLUTION: SNOMED International Content Team confirmed that these are warnings only, and can therefore be closed down with no action required.

assertionUuid: "c82246b1-a137-40c5-8653-554c9ce82c6b"

assertionText: "Active preferred terms for active concepts are unique in the same hierarchy",

failureCount: 10,
firstNInstances: [{conceptId: 26239002}, detail: "Preferred term=Football is duplicated in hierarchy (physical object)", {conceptId: 413494002}, detail: "Preferred term=Football is duplicated in hierarchy (physical object)", {conceptId: 46625003}, detail: "Preferred term=Suppository is duplicated in hierarchy (physical object)", {conceptId: 706493001}, detail: "Preferred term=Suppository is duplicated in hierarchy (physical object)", {conceptId: 228181005}, detail: "Preferred term=Suspenders is duplicated in hierarchy (physical object)", {conceptId: 415686002}, detail: "Preferred term=Suspenders is duplicated in hierarchy (physical object)", {conceptId: 258682000}, detail: "Preferred term=g is duplicated in hierarchy (qualifier value)", {conceptId: 422112002}, detail: "Preferred term=g is duplicated in hierarchy (qualifier value)", {conceptId: 282120005}, detail: "Preferred term=gal is duplicated in hierarchy (qualifier value)", {conceptId: 422049005}, detail: "Preferred term=gal is duplicated in hierarchy (qualifier value)"]

RESOLUTION: The SNOMED International Content team have investigated these potential duplicates and confirmed that they are all valid terms. These potential issues have therefore been whitelisted, and can be safely ignored with no action currently required.

id effectiveTime active moduleId sourceId destinationId relationshipGroup typeId characteristicTypeId modifierId 1 253305008 255399007 2 246454002 900000000000011006 900000000000451002

RESOLUTION: Relationship now present in the inferred file for the July 2018 Member Release:
4986530021 20150131 1 900000000000207008 253305008 255399007 2 246454002 900000000000011006 900000000000451002


SNOMED International technical team to fix in SRS-575

RESOLUTION: Fixed and deployed to Production, and verified successfully using July 2018 Member Release package on 29th June 2018

id conceptId term 3656246013 437411000124102 Increase in sodium content of the diet compared to the assessed baseline intake of sodium for the individual.
3656247016 437291000124108 Increase in copper content of the diet compared to the assessed baseline intake of copper for the individual.
3656248014 437391000124102 Increase in potassium content of the diet compared to the assessed baseline intake of potassium for the individual.
Any cranial somatic dysfunction resulting in abnormal dural membrane tensions.

An arch formed by the medial margin of the cartilages of false ribs and one true rib (seventh rib to the tenth rib).

Foods and liquids that are transparent and liquid at body temperature. (Source: Nutrition Care Manual, Academy of Nutrition and Dietetics 2013).

Increase or decrease in biotin content of the diet. Treatment for conditions resulting from inadequate or excessive biotin intake. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

Increase or decrease in niacin content of the diet. Treatment for prevention of pellagra. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

Increase or decrease in pantothenic acid content of the diet. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

Increase or decrease in riboflavin content of the diet. (Source: Dietary Reference Intakes: Vitamins; USDA Food and Nutrition Center).

Replace normal consistency foods with those that are blended, whipped or mashed to a "pudding-like" texture. Treatment for chewing and swallowing problems. (Source: Nutrition Care Manual, Academy of Nutrition and Dietetics 2013).

RESOLUTION: Synonyms inactivated with a status of erroneous and replaced with a new definition.

The descriptions (attached) were found to have unexpected case sensitivity. Most aren't sentence case, but tagged as case insensitive.

The last three descriptions are case insensitive, but include an uppercase character mid term. The first two, could be argued to be sentence case:

1,2-Dimethoxybenzene
5-Hydroxytryptamine-3-receptor antagonist product
But "Dopamine receptor D2 antagonist product" – seems more significant...

RESOLUTION: SNOMED International content team confirmed only one change required: 766793008 |Product containing dopamine receptor D2 antagonist (product)| Description 3666450017 changed from ci to cl.

The descriptions (attached) were found to have unexpected case sensitivity. Most aren't sentence case, but tagged as case insensitive.

The last three descriptions are case insensitive, but include an uppercase character mid term. The first two, could be argued to be sentence case:

1,2-Dimethoxybenzene
5-Hydroxytryptamine-3-receptor antagonist product
But "Dopamine receptor D2 antagonist product" – seems more significant...

RESOLUTION: SNOMED International content team confirmed only one change required: 766793008 |Product containing dopamine receptor D2 antagonist (product)| Description 3666450017 changed from ci to cl.

The last three descriptions are case insensitive, but include an uppercase character mid term. The first two, could be argued to be sentence case:

1,2-Dimethoxybenzene
5-Hydroxytryptamine-3-receptor antagonist product
But "Dopamine receptor D2 antagonist product" – seems more significant...

RESOLUTION: SNOMED International content team confirmed only one change required: 766793008 |Product containing dopamine receptor D2 antagonist (product)| Description 3666450017 changed from ci to cl.

The descriptions (attached) were found to have unexpected case sensitivity. Most aren't sentence case, but tagged as case insensitive.

The last three descriptions are case insensitive, but include an uppercase character mid term. The first two, could be argued to be sentence case:

1,2-Dimethoxybenzene
5-Hydroxytryptamine-3-receptor antagonist product
But "Dopamine receptor D2 antagonist product" – seems more significant...

RESOLUTION: SNOMED International content team confirmed only one change required: 766793008 |Product containing dopamine receptor D2 antagonist (product)| Description 3666450017 changed from ci to cl.
**ISRS-406** Born inactive records created as a result of Alpha feedback fixes

There are 11 born inactive synonyms, plus 22 related born inactive language refsets records. (see attached files for details)

**RESOLUTION:** All born inactive records removed in time for the July 2018 International Edition

*2018-Jun-29*

**ISRS-407** MRCCM Validation report results

The MRCCM validation report was run against the final version of the July 2018 Beta release - for both Stated only + Stated and Inferred reports. The former was clean, the latter highlighted a couple of potential issues. Unable to embed resource: stated-inferred.zip of type application/zip

**RESOLUTION:** The SNOMED International content team confirmed that the decision made back in November 2017 (whereby only new inferred issues will be resolved immediately, with historical issues such as these being fixed asap in future release cycles) still stands, and therefore no action is required for the July 2018 International Edition.

*2018-Jun-13*

**ISRS-408** Unexpected ICD-10 Map records in Delta file

13 concepts were deleted (rather than inactivated) during the last editing cycle, as they had only been created within the same cycle. This action was correct as otherwise the inactivations would have caused unwanted born inactive records. The map files therefore need to be updated accordingly in order to remove the records from the ICD-10 map files:

- 763757001
- 763756005
- 763732006
- 763731004
- 763730003
- 763729008
- 763496006
- 763497002
- 763495005
- 763494009
- 763107000
- 763060003
- 765003000

**RESOLUTION:** 19 records were actually removed from the updated ICD-10 map Delta, post-Beta release. This includes the 13 expected removals (above), plus 6 additional removals as a results of other issues found in the validation of the files. This means that the final Member and Production release packages will not contain the following 19 records that existed in the Alpha/Beta release packages:

| id effectiveTime active moduleId refsetId referencedComponentId mapGroup mapPriority mapRule mapAdvice mapTarget correlationId mapCategoryId |
|------------------|------------|------|--------|------------------|--------------|--------|---------|----------|-------------|-----------------|------------------|
| 792c7a14-e7e4-5625-9079-a323d4c0117d 20180731 1 449080006 447562003 763495005 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 |
| a035c5e1-9775-5c54-97dc-3d50ac69b290 20180731 1 449080006 447562003 765003000 1 1 TRUE MAP SOURCE CONCEPT CANNOT BE CLASSIFIED WITH AVAILABLE DATA 447561005 447637006 |
| 974b8c63-81f7-5e9a-9079-123456789012 20180731 1 449080006 447562003 763497002 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 |
| 441306b3-d5b0-545c-8499-a5a027c65d34 20180731 1 449080006 447562003 763732006 1 1 TRUE ALWAYS Q35.9 Q35.9 447561005 447637006 |
| 5b9e979b-b8b2-5d8f-b463-37379d98e767 20180731 1 449080006 447562003 763496006 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 |
| 3112f09b-9eae-5964-a0fc-8dcf5b4d4cb2 20180731 1 449080006 447562003 763757001 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 |
| 97ec3e0f-865a-5aba-8c76-123456789012 20180731 1 449080006 447562003 763731004 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006 |
| 2018-Jul-31 |

**ISRS-411** Trailing spaces in MRCCM file records

In the course of reviewing some reports of trailing spaces in Descriptions (which turned out to be non-issues), we found a couple of examples in the MRCCMAttributeRange snapshot file, where trailing spaces are evident in the attributeRule field (though the second record is dubious as the spaces are between the parentheses):

**RESOLUTION:** 19 records were actually removed from the updated ICD-10 map Delta, post-Beta release. This includes the 13 expected removals (above), plus 6 additional removals as a results of other issues found in the validation of the files. This means that the final Member and Production release packages will not contain the following 19 records that existed in the Alpha/Beta release packages:

id effectiveTime active moduleId refsetId referencedComponentId mapGroup mapPriority mapRule mapAdvice mapTarget correlationId mapCategoryId

d1f0d390-8f4e-5e0a-d20b-2438f8e266a 20180731 1 449080006 447562003 763495005 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006

d5af879b-b8b2-5d8f-b463-37379d98e767 20180731 1 449080006 447562003 763496006 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006

c0919d1-1175-5942-a4b2-51aa612d5d34 20180731 1 449080006 447562003 763757001 1 1 TRUE ALWAYS Q37.9 Q37.9 447561005 447637006

*2018-Jul-31*
3.3 Technical updates

3.3.1 RF2 package format

For future reference, the RF2 package convention dictates that it contains all relevant files, regardless of whether or not there is content to be included in each particular release. Therefore, the package contains a mixture of files which contain both header rows and content data, and also files that are intentionally left blank (including only a header record). The reason that these files are not removed from the package is to draw a clear distinction between:

1. Files that have been deprecated (and therefore removed from the package completely), due to the content no longer being relevant to RF2 in this or future releases, and
2. Files that just happen to contain no data in this particular release (and are therefore included in the package but left blank, with only a header record), but are still relevant to RF2, and
This allows users to easily distinguish between files that have purposefully been removed or not, as otherwise if files in option 2 above were left out of the package it could be interpreted as an error, rather than an intentional lack of content in that release.

3.3.2 Introduction of two new refsets - OWLAxiom and OWLOntology

Please see section “2.3.1 Logic Profile Enhancements” above for full details of the reason behind the introduction of these new refsets. The technical implication is that two new files will be included in each section of the International Release package (Full, Snapshot and Delta):

- sct2_sRefset_OWLOntologyFull_INT_20180731.txt
- sct2_sRefset_OWLAxiomFull_INT_20180731.txt
- sct2_sRefset_OWLOntologySnapshot_INT_20180731.txt
- sct2_sRefset_OWLAxiomSnapshot_INT_20180731.txt
- sct2_sRefset_OWLOntologyDelta_INT_20180731.txt
- sct2_sRefset_OWLAxiomDelta_INT_20180731.txt

The naming convention was decided upon in order to best describe the content of each refset file. It was thought to be misleading to include 'stated' at the start of the file names because the OWL Ontology Refset contains only metadata for an ontology, which is always the same no matter whether the ontology contains axioms before or after classification. In addition, the word 'stated' is redundant to 'axiom'. Finally, the 'sct2' filetype is utilised to indicate that the axioms are not a derivative product.

The decision was taken to place the files in the "Terminology" folder in the release package (as opposed to the "Refset" folder), because these files are designed to eventually replace the Stated relationship files, and therefore contain core content which needs to be included in the Terminology folder.

3.3.3 Replacement of OWL conversion script with a link to the open source directory

In January 2017 the original OWL conversion script (a.k.a. the "Spackman OWL script") was removed from the International Edition package, and has since been published as a separate artefact alongside each Release.

Because this script does not recognize the two new OWL refsets (see section 3.3.2 of these Release Notes), the Terminology Release Advisory Group has determined that the script should no longer be distributed.

Going forward, Release Notes will now include a link to the new open source OWL conversion toolkit that can be found in the following repository (including documentation on its use):

https://github.com/IHTSDO/snomed-owl-toolkit

Please contact SNOMED International at support@snomed.org if you would like to provide any feedback on ways to extend and improve the new toolkit.

3.3.4 Deprecation of the Technical Guide Exemplars document from the International Edition release package

The Terminology Release Advisory Group has confirmed that there should be no impact from removing this almost entirely static document from the International Edition release package, and hosting it instead in a Confluence Page. From the July 2018 International release then, we will deprecate this file (doc_lcd10MapTechnicalGuideExemplars_[date].xlsx) from the Release package, and instead provide a link in the Release Notes to the new Confluence Page. Please see section 2.4.1.3 above for the relevant link.

3.3.5 Early visibility of impending change in the January 2019 International edition

Please see the following page for details of all upcoming changes planned for January 2019 and beyond: Early Visibility - Planned changes to upcoming SNOMED International Release packages
3.3.6 IMPORTANT CHANGE in the January 2019 International Edition

Replacement of the Stated Relationship files with the new OWL Axiom refset files

In the January 2019 release, the stated relationship file will be replaced by the OWL Axiom refset files, that will include all logical definitions and other features specified in the SNOMED CT logic profile specification. The stated relationship file will NOT be included in the international release; however, it may still be available on request to support migration to the OWL Axiom refset.

The inferred relationship file will maintain the same format and structure, though it will no longer contain all necessary and sufficient conditions. The inferred relationship file is represented in Necessary Normal Form for distribution of relationships. It is a collection of all the necessary conditions and represents a subset of the full semantics from the 2018 July release and onwards. Most users will benefit from the improvements in the inferred relationships without requiring changes to their existing systems.

A set of documentations has been developed to support the Logic Profile Enhancements.

- SNOMED DL Profile Enhancements - https://docs.google.com/document/d/1tqNEA6S4fEF4Ftgj15OPabYA2E0VTz8epxvRRwczzKizQ/edit?usp=sharing
- SNOMED CT Logic Profile Specification - http://snomed.org/lps
- SNOMED CT OWL Guide (OWL Refsets specification) - http://snomed.org/owl
- Necessary Normal Form for Inferred Relationships - https://docs.google.com/document/d/1dt0r0aetwpwmHOifT9wt0EVukVLrVjXYUn_vq-QhI/edit?usp=sharing
- Snomed OWL Toolkit - https://github.com/IHTSDO/snomed-owl-toolkit
- Classifying SNOMED CT using the Snomed OWL Toolkit - https://youtu.be/-91egY9mJqA
- Creating an OWL file containing SNOMED CT - https://youtu.be/sFbMMioA_4

3.3.7 Document links

All links provide information that is correct and current at the time of this Release. Updated versions may be available at a later date, but if so these will need to be requested from the relevant SNOMED International teams.

NOTE: To access any of the links in the pdf document, please visit the Release Notes online here: