

SNOMED CT Managed Service - US Edition Release Notes - March 2021



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1 Introduction

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. The SNOMED CT US Edition is a combination of the full January 2021 SNOMED CT International Edition and the US Extension of SNOMED CT.

The International Health Terminology Standards Development Organisation (IHTSDO®), trading as 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. The SNOMED CT US Edition is developed and maintained by the United States National Library of Medicine and is available to authorized Unified Medical Language System (UMLS) Metathesaurus Licensees. This material includes SNOMED CT which is used by permission of the IHTSDO. All rights reserved.

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1.1 Background

This document provides a summarized description of the content changes included in the [March 2021 release of the SNOMED Clinical Terms® US Edition](#).

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 as a web resource as well as alongside the March 2021 US Edition release (https://www.nlm.nih.gov/healthit/snomedct/us_edition.html).

1.2 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. These Release Notes should be used **in combination** with the [SNOMED CT January 2021 International Edition - SNOMED International Release notes](#).

2 Content Development Activity

2.1 Summary

The March 2021 SNOMED CT US Edition marks the seventh release with content authoring tooling and release production provided by SNOMED International Managed Service. Quality assurance of the release was completed by both NLM and SNOMED International. Additionally, in October 2017, NLM sunset the United States SNOMED CT Content Request System and migrated to the SNOMED International hosted and maintained US CRS (<https://us-request.ihtsdotools.org>).

2.1.1 March 2021 US Edition of SNOMED CT Statistics

These statistics include the active content from the January 2021 International Edition and the March 2021 US Edition.

Release	Concept Count	Description Count	Relationship Count
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International Edition of SNOMED CT	354448	1237861	1178592
US Edition of SNOMED CT	361461	1256798	1210109

These statistics include the content from the March 2021 US Extension.

Statistics for March 2021 US Extension of SNOMED CT	
	#total
Number of new active concepts	574
Number of new active descriptions	1408
Number of new active relationships	2853
Number of newly inactivated concepts	46
Total number of sufficiently defined concepts	3824
Total number of primitive concepts	3808

2.2 SNOMED CT derived products

2.2.1 SNOMED CT to ICD-10-CM map

The purpose of the SNOMED CT to ICD-10-CM map is to support semi-automated generation of ICD-10-CM codes from clinical data encoded in SNOMED CT for reimbursement and statistical purposes. All current pre-coordinated SNOMED CT concepts from the US Edition (US Extension + International release) within three hierarchies, (Clinical findings, Events, and Situations with Explicit Context) are potentially in scope for mapping to ICD-10-CM.

The SNOMED CT to ICD-10-CM map is released in RF2 format within the US Edition, as well as a standalone download (https://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html). The map is also available in a human readable format (tts_icd10cmHumanReadableMap_US1000124_YYYYMMDD.tsv) contained within a standalone download - SNOMED_CT_to_ICD-10-CM_Resources_YYYYMMDD.zip.

The SNOMED CT to ICD-10-CM map is released as Refset 6011000124106 | ICD-10-CM extended map reference set (foundation metadata concept). The map data are in the file xder2_iissccRefset_ExtendedMapSnapshot_US1000124_YYYYMMDD.txt, which is in the Map folder under Refset in the Snapshot Release Type folder.

PLEASE NOTE: Starting with the 2019 March SNOMED CT US Edition (20190301) release, the SNOMED CT to ICD-10-CM map refset data will be maintained as per the SNOMED CT RF2 specifications.

Additional map refset information can be found in the SNOMED CT to ICD-10-CM Release Notes (doc_icd10cmMapReleaseNotes_Current-en-US_US1000124_YYYYMMDD.pdf) found in the standalone download or online. Technical information (doc_icd10cmMapTechnicalSpecifications_Current-en-US_US1000124_YYYYMMDD.pdf) for the map can also be found in the standalone download.

On March 26, 2019, an updated version of the map (6011000124106 | ICD-10-CM complex map reference set (foundation metadata concept)) was released. This updated version included an appending of the previously released mapping refset data, originally pulled from the 20190301 release. The newly released version, which includes all of the previously released data, now includes 260,749 mapped records. This is now considered the baseline for the SNOMED CT to ICD-10-CM map.

2.2.2 Route of administration

The NLM maintained Route of administration reference set (442311000124105 | Route of administration reference set) is located in the file der2_Refset_Simple(Snapshot, Delta, Full)_US1000124_YYYYMMDD.txt, which is in the Content folder under Refset, in each of the three RF2 Release Type folders. The refset contains a set of terms related to the location of administration for clinical therapeutics. The purpose of the Route of Administration refset is to define a portion of which can be used in the Drug Listing section of [Structured Product Labeling \(SPL\)](#), or for documentation and encoding of clinical information regarding substance administrations. Only concepts that are subtypes of the concept 284009009 | Route of administration value (qualifier value) are included in the refset. Please note the 442311000124105 | Route of administration reference set has been in static status since 2014 September US Edition release (20140901).

The Route of Administration concepts are now maintained as a [value set](#) on the NLM Value Set Authority Center (VSAC) (<https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1018.98/expansion>). Users are required to have a UMLS account to access VSAC. If you don't have a UMLS account, you can request one here: <https://uts.nlm.nih.gov/license.html>

2.2.3 Transitive closure file

NLM provides a transitive closure script and generated transitive closure table within the SNOMED CT US Edition release. The transitive closure is the complete set of relationships between every concept and each of its super-type concepts (parents and ancestors). The transitive closure files can be used to support SQL queries when created and stored as a table in a relational database. If applied in a full release, it will contain the full history and allow for subsumption queries to be applied based on any release. The NLM transitive closure script provides a comprehensive view of all of the supertype ancestors of a concept derived by traversing all the 116680003 | is a | relationships between that concept and the root concept. The transitive closure table represents the transitive closure of the 116680003 | is a | relationships of all active concepts. NLM provides the transitive closure table in the US Edition release to provide support for easier implementation and a reference against which to check alternative algorithms.

As of the March 2020 release, the Transitive Closure script, `tls2_TransitiveClosure_US1000124_YYYYMMDD.pl`, and the Transitive Closure table `res2_TransitiveClosure_US1000124_YYYYMMDD.txt`, are located in a separate bundled zip file (`SnomedCT_TransitiveClosureResourcesRF2_PRODUCTION_YYYYMMDDT120000Z.zip`) on the [NLM US Edition page](#). For the table, the `superTypeid` is the id of the concept playing the supertype role, set to an Identifier of a concept. The `subTypeid` - Id of the concept playing the subtype role. Set to an Identifier of a concept.

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.

In addition to the Known Issues reported by the IHTSDO for SNOMED CT International Edition ([SNOMED CT January 2021 International Edition - SNOMED International Release notes](#)), the following are Known Issues for the SNOMED CT US Edition that have been identified and will be resolved in the next editing and production cycle:

Key	Summary	Description
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ISRS-827	RVF Assertion failure: 7c406d6c-7e30-4aa1-b99d-e00b4e2d52a5	<p>assertionUuid: "7c406d6c-7e30-4aa1-b99d-e00b4e2d52a5", assertionText: "There is an equivalent definition in the en-us and en-gb language when provided.", failureCount: 51, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "440271000124109", detail: "ConceptId=440271000124109 has definition in EN-US but no equivalent found for EN-GB"} {conceptId: "440291000124105", detail: "ConceptId=440291000124105 has definition in EN-US but no equivalent found for EN-GB"} {conceptId: "440301000124106", detail: "ConceptId=440301000124106 has definition in EN-US but no equivalent found for EN-GB"} <p>KNOWN ISSUE: The vast majority of the original 245 issues have now been resolved as part of the March 2021 US Edition release. The remaining 51 records have been thoroughly reviewed by the NLM and confirmed to require no further changes. These remaining records will therefore be whitelisted - see file attached to this ticket for final list of 51 whitelisted records.</p>
ISRS-954	RVF Assertion failure: eff30fb0-7856-11e1-b0c4-0800200c9a66	<p>assertionUuid: "eff30fb0-7856-11e1-b0c4-0800200c9a66", assertionText: "All language refset members inactivated in current snapshot must have been active in the previous release.", failureCount: 4, firstNInstances:</p> <ul style="list-style-type: none"> conceptId: "4230236010", detail: "Language Refset: id=88b3b15c-f415-4c53-8703-89c991ac4f2a is inactive but no active state found in previous release." conceptId: "4230235014", detail: "Language Refset: id=98f48d37-8185-42a6-8282-bd9c30a460fd is inactive but no active state found in previous release." conceptId: "4230235014", detail: "Language Refset: id=d88aa348-e06a-4172-bb5f-c1dfa7f30473 is inactive but no active state found in previous release." conceptId: "4230236010", detail: "Language Refset: id=0d547b9f-657a-417b-a124-8c4af912388b is inactive but no active state found in previous release." <p>KNOWN ISSUE: This is an International issue - SNOMED International content team confirmed that these are false positives, due to the records having been created and then versioned in November 2020, in preparation for the Jan 2021 release. However, they were then subsequently inactivated within the same release cycle, in order to fix errors in the new content - changes were therefore made to concepts that are brand new to this release and haven't been Published yet. These 4 records can therefore be safely temporarily whitelisted for this assertion, as they will not re-occur in the next cycle.</p>
ISRS-955	RVF Assertion failure: 03cf9850-7857-11e1-b0c4-0800200c9a66	<p>assertionUuid: "03cf9850-7857-11e1-b0c4-0800200c9a66", assertionText: "Preferred Term exists exactly once in each language refset for each concept.", failureCount: 15, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "312411000119100", detail: "Concept: id=312411000119100 has duplicate language refsets for description id=692871000124115"} {conceptId: "10816221000119100", detail: "Concept: id=10816221000119100 has duplicate language refsets for description id=677131000124119"} {conceptId: "10818061000119102", detail: "Concept: id=10818061000119102 has duplicate language refsets for description id=678211000124118"} {conceptId: "10818061000119102", detail: "Concept: id=10818061000119102 has duplicate language refsets for description id=678221000124114"} {conceptId: "10822531000119108", detail: "Concept: id=10822531000119108 has duplicate language refsets for description id=677211000124119"} {conceptId: "10823291000119101", detail: "Concept: id=10823291000119101 has duplicate language refsets for description id=678271000124110"} {conceptId: "10823291000119101", detail: "Concept: id=10823291000119101 has duplicate language refsets for description id=678281000124113"} {conceptId: "10823691000119104", detail: "Concept: id=10823691000119104 has duplicate language refsets for description id=678091000124115"} {conceptId: "10823691000119104", detail: "Concept: id=10823691000119104 has duplicate language refsets for description id=678101000124114"} {conceptId: "10830701000119107", detail: "Concept: id=10830701000119107 has duplicate language refsets for description id=678181000124117"} {conceptId: "10830701000119107", detail: "Concept: id=10830701000119107 has duplicate language refsets for description id=678191000124119"} {conceptId: "15668801000119105", detail: "Concept: id=15668801000119105 has duplicate language refsets for description id=716221000124110"} {conceptId: "15668921000119109", detail: "Concept: id=15668921000119109 has duplicate language refsets for description id=714461000124113"} {conceptId: "15669761000119105", detail: "Concept: id=15669761000119105 has duplicate language refsets for description id=712691000124113"} {conceptId: "15669801000119102", detail: "Concept: id=15669801000119102 has duplicate language refsets for description id=712711000124111"} <p>KNOWN ISSUE: The root cause of these failures is descriptions that have been promoted, and then the (now redundant) related Language Refset entries being inactivated. The RVF assertion needs to be refined to allow it to understand this sort of movement between modules - ticket raised to address this: INFRA-6320. In the meantime, the US NRC have confirmed that this issue should be whitelisted for the 15 concepts listed above.</p>

ISRS-961	RVF Assertion failure: 7c406d6c-7e30-4aa1-b99d-e00b4e2d52a5	<p>assertionUuid: "7c406d6c-7e30-4aa1-b99d-e00b4e2d52a5", assertionText: "There is an equivalent definition in the en-us and en-gb language when provided.", failureCount: 51, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "440271000124109", detail: "ConceptId=440271000124109 has definition in EN-US but no equivalent found for EN-GB"} {conceptId: "440291000124105", detail: "ConceptId=440291000124105 has definition in EN-US but no equivalent found for EN-GB"} {conceptId: "440301000124106", detail: "ConceptId=440301000124106 has definition in EN-US but no equivalent found for EN-GB"} <p>KNOWN ISSUE: The vast majority of the original 245 issues have now been resolved as part of the March 2021 US Edition release. The remaining 51 records have been thoroughly reviewed by the NLM and confirmed to require no further changes. These remaining records will therefore be whitelisted - see file attached to this ticket for final list of 51 whitelisted records.</p>
ISRS-963	DROOLS assertion failure: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."	<p>assertionText: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships.", failureCount: 823, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "403702001", detail: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."} {conceptId: "272634000", detail: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."} {conceptId: "275786006", detail: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."} <p>KNOWN ISSUE: This is an International Issue - the SNOMED International Content team confirmed that these legacy modelling issues will be resolved by the QI project (using template based editing) in future editing cycles. These failures will therefore be temporarily whitelisted, with no action required for this release cycle.</p>
ISRS-964	DROOLS Assertion failure: Active Concept should not have duplicate axioms	<p>testType: "DROOL_RULES", assertionText: "Active Concept should not have duplicate axioms.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "1231000119100", conceptFsn: "History of aortic valve replacement (situation)", detail: "Active Concept should not have duplicate axioms."} <p>KNOWN ISSUE: The initial fix for this duplicate axiom resulted in a far more serious unwanted impact to the inferred relationship file (see https://jira.ihtsdotools.org/browse/ISRS-976 for details). The US NRC therefore confirmed that they wanted to revert this change for the March 2021 release, leaving the duplicate axiom in the US Edition for now. The issue will be properly resolved as part of the next editing cycle, with the aim to publish the corrected content in the September 2021 US Edition release package.</p>
ISRS-972	RVF Assertion failure: eead9964-67ce-11e7-b7e7-3c15c2c6e32e	<p>testType: "SQL", assertionUuid: "eead9964-67ce-11e7-b7e7-3c15c2c6e32e", assertionText: "There is only one active member per description per dialect in the language refset snapshot file.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "456701000124107", detail: "Description: id=771581000124111: has multiple active language refset members for a given dialect."}, <p>KNOWN ISSUE: The US NRC have reviewed the final state of the concept, and confirmed that it is valid, and so this failure is a false positive and no action is required.</p>
ISRS-977	RVF Assertion failure: 6252da0e-fa44-4e9e-8497-6bea38379e07	<p>testType: "MRCM", assertionUuid: "6252da0e-fa44-4e9e-8497-6bea38379e07", assertionText: "The attribute value of 363589002 [Associated procedure (attribute)] must conform to the MRCM attribute group cardinality [0..1]", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "125411000119107", conceptFsn: "History of mechanical aortic valve replacement (situation)", detail: "The MRCM attribute group cardinality is [0..1] for 363589002 [Associated procedure (attribute)] but found more than 1"} <p>KNOWN ISSUE: This is another part of the same issue with the modelling of donated content, that has already been carried over in ISRS-964 and ISRS-976. The US NRC have therefore decided to mark this as a Known Issue, to be resolved in future editing cycles.</p>

8 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 for this March 2021 US Edition. These can be issues found during the Pre-Production or Production phases of the testing of the current release, which were resolved before the final deployment of the final production release. Finally these can be issues which were reported or found during the testing phase, but which have been closed without any action taken.

In addition to the Resolved Issues reported by the IHTSDO for SNOMED CT International Edition ([SNOMED CT January 2021 International Edition - SNOMED International Release notes](#)), the following Resolved Issues for the SNOMED CT March 2021 US Edition:

Key	Summary	Description	Resolved
ISRS-845	MRCM issues: 04a6c94d-879d-44ea-bc39-6207bc92b2b6	<p>17 concepts have been found to have in group cardinality issues. The <i>Finding site</i> attribute must only be used once in a group.</p> <p>The modeling of the first 14 concepts could be simplified to fix the issue by removing the less specific finding site. This should have no effect on the classification results.</p> <ol style="list-style-type: none"> 11309761000119104 Pathological fracture of left patella (disorder) 15733641000119102 Chronic partial detachment of retina of bilateral eyes (disorder) 679321000119105 Mucopurulent conjunctivitis of bilateral eyes (disorder) 349271000119106 Conjunctival hemorrhage of bilateral eyes (disorder) 15736881000119101 Cataract of lens capsule of bilateral eyes (disorder) 15637831000119108 Bilateral ganglion cyst of wrists (disorder) 15981911000119105 Chronic bilateral maxillary sinusitis (disorder) 1.5736E+16 Infiltrate of cornea of bilateral eyes (disorder) 15710881000119109 Macroaneurysm of retina of bilateral eyes (disorder) 346451000119107 Ulcer of cornea of bilateral eyes (disorder) 15669561000119103 Congenital absence of right upper limb (disorder) 15734561000119102 Old retinal detachment of bilateral eyes (disorder) 15736241000119107 Edema of cornea of bilateral eyes (disorder) 10837861000119103 Open fracture of right calcaneus (disorder) <p>The last 3 concepts were reviewed carefully, as modeling changes were required.</p> <ol style="list-style-type: none"> 15740361000119103 Exophthalmos of bilateral eyes (disorder) 431911000124102 Gnathic osteosarcoma (disorder) 15732241000119108 Trichiasis of right eyelid (disorder) <p>RESOLUTION: Resolved in time for the March 2021 US Edition release.</p>	2021-Mar-02
ISRS-872	DROOLS assertion failure: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."	<p>testType: "DROOL_RULES", assertionText: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships.", failureCount: 42, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "285041000119107", detail: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."} {conceptId: "435211000124107", detail: "An axiom marked as defined must have one or more defining relationship, i.e., not is-a type relationships."} <p>RESOLUTION: Resolved in time for the March 2021 US Edition release.</p>	2021-Mar-02
ISRS-949	RVF Assertion failure: 8e70ea3e-c4dd-4ae3-8b75-0f0567e42f71	<p>assertionUuid: "8e70ea3e-c4dd-4ae3-8b75-0f0567e42f71", assertionText: "Active extended IFA rule maps reference active concepts and terms", queryInMilliseconds: 11646, failureCount: 70, firstNInstances: [</p> <ul style="list-style-type: none"> { conceptId: "298090009", detail: "ExtendedMap: id=89baece8-30c7-5349-bc81-3d66825bc982 : IFA rule references an inactive concept" } { conceptId: "15986311000119103", detail: "ExtendedMap: id=8fea83e4-5642-5fe3-aa33-b32b86c6ed5d : IFA rule references an inactive concept" } { conceptId: "15986271000119103", detail: "ExtendedMap: id=9033d189-c532-523a-9e75-6a5020cd8a19 : IFA rule references an inactive concept" } <p>RESOLUTION: Resolved in time for the March 2021 US Edition release.</p>	2021-Mar-02
ISRS-950	RVF Assertion failure: 1a4e40a9-cf14-4703-b206-9f2fbeb56c7f	<p>assertionUuid: "1a4e40a9-cf14-4703-b206-9f2fbeb56c7f", assertionText: "All active Refset records are valid.", queryInMilliseconds: 11141, failureCount: 44, firstNInstances: [</p>	2021-Mar-02

- [illegible]

- { conceptId: "305211000119105", detail: "Reference component id:305211000119105 for refset id: 6011000124106 in extended map refset must be valid." }
- { conceptId: "11813901000119103", detail: "Reference component id:11813901000119103 for refset id: 6011000124106 in extended map refset must be valid." }
- { conceptId: "12242471000119107", detail: "Reference component id:12242471000119107 for refset id: 6011000124106 in extended map refset must be valid." }

RESOLUTION: Resolved in time for the March 2021 US Edition release.

ISRS-951	RVF Assertion failure: 805ab37c-33fa-45aa-876b-f86365a828c8	<p>assertionUuid: "805ab37c-33fa-45aa-876b-f86365a828c8", assertionText: "Case-sensitive terms that share initial words also share caseSignificanceId value.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> • {conceptId: "871803007", detail: "DESC: conceptId=871803007:has terms not sharing case-sensitivity."} <p>RESOLUTION: This is an International Edition concept - the SNOMED CT Content Team confirmed that this is a false positive and this concept therefore requires no action to be taken.</p>	2021-Feb-08
ISRS-952	RVF Assertion failure: d9f8a8d6-2c02-11e7-b0e7-3c15c2c6e32e	<p>"assertionUuid": "d9f8a8d6-2c02-11e7-b0e7-3c15c2c6e32e", "assertionText": "The FSN term should be unique in active content when case sensitivity is ignored.", "queryInMilliseconds": 36892, "failureCount": 1, "firstNInstances":</p> <ul style="list-style-type: none"> • conceptId: "459231000124102", • detail: "FSN=Sequential Organ Failure Assessment score (assessment scale) concept=459231000124102: FSN term is not unique in description snapshot when case is ignored" <p>RESOLUTION: Resolved in time for the March 2021 US Edition release.</p>	2021-Mar-02
ISRS-953	RVF Assertion failure: e658fb00-7e9a-11e1-b0c4-0800200c9a66	<p>assertionUuid: "e658fb00-7e9a-11e1-b0c4-0800200c9a66", assertionText: "Descriptions in a language refset are unique for a given concept.", queryInMilliseconds: 4921, failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> • {conceptId: "456701000124107", detail: "CONCEPT: id=456701000124107: Concept has duplicate terms within a single language refset."} <p>RESOLUTION: Duplicate language refset member (1daed233-dddf-40ac-bf42-8789230c26ad) inactivated in time for the March 2021 US Edition release.</p>	2021-Mar-02
ISRS-956	RVF Assertion failure: 041dcf55-4c9c-4dd4-baa7-584eb0e53d5a	<p>assertionUuid: "041dcf55-4c9c-4dd4-baa7-584eb0e53d5a", assertionText: "Concept should not have any duplicated historical association indicators.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> • {conceptId: "1111000119100", detail: "MEMBER: id=d581e921-ab26-5818-9ffc-935a10864383 in historical association refset member has a duplicated indicator with MEMBER id= 281c9d28-a40b-59ab-a3bf-0c823bd5b599"} <p>RESOLUTION: This is a permanent whitelisted issue in the US Edition - and can be ignored permanently for all future US releases, as per ISRS-332</p>	2021-Feb-08
ISRS-957	RVF Assertion failure: 04a6c94d-879d-44ea-bc39-6207bc92b2b6	<p>assertionUuid: "04a6c94d-879d-44ea-bc39-6207bc92b2b6", assertionText: "The attribute value of 363698007 [Finding site (attribute)] must conform to the MRCM attribute group cardinality [0..1]", failureCount: 3, firstNInstances: [</p> <ul style="list-style-type: none"> • {conceptId: "890353006", conceptFsn: "Congenital vertical talus deformity of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 363698007 [Finding site (attribute)] but found more than 1"} • {conceptId: "897573000", conceptFsn: "Talipes calcaneovarus of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 363698007 [Finding site (attribute)] but found more than 1"} • {conceptId: "897575007", conceptFsn: "Talipes equinovarus of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 363698007 [Finding site (attribute)] but found more than 1"} <p>RESOLUTION: Issue resolved in time for the March 2021 US Edition Release.</p>	2021-Mar-02

ISRS-958	RVF Assertion failure: 2b193a88-8dab-4d19-b995-b556ed59398d	<p>assertionUuid: "2b193a88-8dab-4d19-b995-b556ed59398d", assertionText: "New inactive states follow active states in the DESCRIPTION snapshot.", failureCount: 5, firstNInstances:</p> <ul style="list-style-type: none"> conceptId: "1017214008", detail: "DESCRIPTION: id=4230235014 is inactive but no active state found in the previous snapshot." conceptId: "1017214008", detail: "DESCRIPTION: id=4230236010 is inactive but no active state found in the previous snapshot." conceptId: "22851000119107", detail: "DESCRIPTION: id=182731000119111 should not have a new inactive state as it was inactive previously." conceptId: "68551000119102", detail: "DESCRIPTION: id=548331000119113 should not have a new inactive state as it was inactive previously." conceptId: "68571000119106", detail: "DESCRIPTION: id=548491000119115 should not have a new inactive state as it was inactive previously." <p>RESOLUTION: First two records are Known Issues from the International Edition that will resolve themselves as part of the next cycle. The remaining three US specific records have now been fixed in time for the March 2021 US Edition release.</p>	2021-Feb-15
ISRS-959	RVF Assertion failure: 2ddc9a28-150d-47a4-9b0e-7dbff2efdd72	<p>assertionUuid: "2ddc9a28-150d-47a4-9b0e-7dbff2efdd72", assertionText: "There is a 1:1 relationship between the id and the key values in the ASSOCIATION REFSET snapshot file.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "1111000119100", detail: "ReferencedComponentId:1111000119100 targetComponentId: 52298009 and refsetId:90000000000527005 are duplicated in the association refset snapshot file."} <p>RESOLUTION: This is a permanent whitelisted issue in the US Edition - and can be ignored permanently for all future US releases, as per ISRS-332</p>	2021-Feb-08
ISRS-960	RVF Assertion failure: 5c6b6bc0-79b9-11e1-b0c4-0800200c9a66	<p>testCategory: "release-type-validation", testType: "SQL", assertionUuid: "5c6b6bc0-79b9-11e1-b0c4-0800200c9a66", assertionText: "All relationships inactivated in current release must have been active in the previous release.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "1119349007", detail: "Relationship: id=13466013021 is inactive but no active state found in previous release."} <p>RESOLUTION: This is an International concept - SNOMED International Content Team confirmed that the concept 1119349007 [Vaccine product containing only Severe acute respiratory syndrome coronavirus 2 messenger ribonucleic acid (medicinal product)] was added new for the January 2021 release with an effective time 20210131. However the relationship IS_A 763158003 [Medicinal product (product)] has been inactivated in the latest Vaccines work, and so it has effectively been created and inactivated within the same 20210131 release cycle (and was never active in a previous release). This is therefore an expected status and doesn't suggest any underlying issue with the content - no action is required.</p>	2021-Feb-08
ISRS-962	DROOLS Assertion failure: Active concepts must have at least one IS A relationship	<p>testType: "DROOL_RULES", assertionText: "Active concepts must have at least one IS A relationship.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "138875005", conceptFsn: "SNOMED CT Concept (SNOMED RT+CTV3)", detail: "Active concepts must have at least one IS A relationship."} <p>RESOLUTION: SNOMED International Content Team confirmed that as this is the root concept (138875005 [SNOMED CT Concept (SNOMED RT+CTV3)]) it is the only exception to this rule, and will therefore never have an IS_A relationship. This one concept just needs to be MANUALLY WHITELISTED in all future validation runs (as per ISRS-647).</p>	2021-Feb-08
ISRS-965	DROOLS Assertion failure: A concept must have one Preferred Synonym in the US-EN dialect	<p>testType: "DROOL_RULES", assertionText: "A concept must have one Preferred Synonym in the US-EN dialect.", failureCount: 2, firstNInstances: [</p> <ul style="list-style-type: none"> conceptId: "459231000124102", conceptFsn: "Sequential organ failure assessment score (assessment scale)", detail: "A concept must have one Preferred Synonym in the US-EN dialect." conceptId: "462321000124107", conceptFsn: "Vaccine product containing only low dose acellular Bordetella pertussis and Clostridium tetani and low dose Corynebacterium diphtheriae antigens (medicinal product)", detail: "A concept must have one Preferred Synonym in the US-EN dialect." <p>RESOLUTION: Resolved in time for the March 2021 US Edition release.</p>	2021-Mar-02

ISRS-966	DROOLS Assertion failure: An active concept should have one active preferred FSN in the US-EN dialect.	testType: "DROOL_RULES", assertionText: "An active concept should have one active preferred FSN in the US-EN dialect.", failureCount: 1, firstNInstances: [<ul style="list-style-type: none"> { conceptId: "459231000124102", conceptFsn: "Sequential organ failure assessment score (assessment scale)", detail: "An active concept should have one active preferred FSN in the US-EN dialect." } 	2021-Mar-02
RESOLUTION: Resolved in time for the March 2021 US Edition release.			
ISRS-967	MRCM issues: 3aecd7e7-57f4-464c-9a17-d1126c837836	assertionUuid: "3aecd7e7-57f4-464c-9a17-d1126c837836", assertionText: "The attribute value of 363701004 Direct substance (attribute) must conform to the MRCM attribute group cardinality [0..1]", failureCount: 36, firstNInstances: [<ul style="list-style-type: none"> {conceptId: "437431000124108", conceptFsn: "Increased zinc diet (regime/therapy)", detail: "The MRCM attribute group cardinality is [0..1] for 363701004 Direct substance (attribute) but found more than 1"} {conceptId: "437231000124109", conceptFsn: "Sodium modified diet (regime/therapy)", detail: "The MRCM attribute group cardinality is [0..1] for 363701004 Direct substance (attribute) but found more than 1"} {conceptId: "437301000124109", conceptFsn: "Decreased copper diet (regime/therapy)", detail: "The MRCM attribute group cardinality is [0..1] for 363701004 Direct substance (attribute) but found more than 1"} 	2021-Mar-02
RESOLUTION: Resolved in time for the March 2021 US Edition release.			
ISRS-968	MRCM issues: 3e984ab7-c9e6-4919-bd3a-0c2cd3e205a6	assertionUuid: "3e984ab7-c9e6-4919-bd3a-0c2cd3e205a6", assertionText: "The attribute value of 116676008 Associated morphology (attribute) must conform to the MRCM attribute group cardinality [0..1]", failureCount: 6, firstNInstances: [<ul style="list-style-type: none"> {conceptId: "890353006", conceptFsn: "Congenital vertical talus deformity of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} {conceptId: "16018791000119100", conceptFsn: "Congenital deformity of bilateral fingers (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} {conceptId: "890416004", conceptFsn: "Congenital clinodactyly of bilateral fingers (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} {conceptId: "897573000", conceptFsn: "Talipes calcaneovarus of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} {conceptId: "897575007", conceptFsn: "Talipes equinovarus of bilateral ankles and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} {conceptId: "897577004", conceptFsn: "Symbrachydactyly of bilateral hands and feet (disorder)", detail: "The MRCM attribute group cardinality is [0..1] for 116676008 Associated morphology (attribute) but found more than 1"} 	2021-Mar-02
RESOLUTION: Resolved in time for the March 2021 US Edition release.			
ISRS-969	MRCM issues: 5db62b65-c29f-4e28-8061-b31683d581e4	assertionUuid: "5db62b65-c29f-4e28-8061-b31683d581e4", assertionText: "The attribute value of 410675002 Route of administration (attribute) must conform to the MRCM attribute domain range << 284009009 Route of administration value (qualifier value) ", failureCount: 2, firstNInstances: [<ul style="list-style-type: none"> {conceptId: "456301000124106", conceptFsn: "Dorsogluteal intramuscular injection (procedure)", detail: "Attribute 410675002 Route of administration (attribute) has value which is not conformed to the MRCM attribute domain range << 284009009 Route of administration value (qualifier value) "} {conceptId: "456291000124105", conceptFsn: "Ventrogluteal intramuscular injection (procedure)", detail: "Attribute 410675002 Route of administration (attribute) has value which is not conformed to the MRCM attribute domain range << 284009009 Route of administration value (qualifier value) "} 	2021-Mar-02
RESOLUTION: Resolved in time for the March 2021 US Edition release.			
ISRS-973	RVF Assertion failure: 3ab84230-7d08-11e1-b0c4-0800200c9a66	testType: "SQL", assertionUuid: "3ab84230-7d08-11e1-b0c4-0800200c9a66", assertionText: "All concepts have at least one inferred is-a relationship.", failureCount: 1, firstNInstances: [<ul style="list-style-type: none"> {conceptId: "1231000119100", detail: "CONCEPT: id=1231000119100: Concept does not have an inferred is-a relationship."} 	2021-Mar-02
RESOLUTION: Resolved in time for the March 2021 US Edition release.			

ISRS-974	RVF Assertion failure: 44916964-5b78-4842-81d8-e8293ee93bea	<p>testType: "SQL", assertionUuid: "44916964-5b78-4842-81d8-e8293ee93bea", assertionText: "There must be actual changes made to previously published inferred relationships in order for them to appear in the current delta.", failureCount: 1, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "437481000124109", detail: "Inferred relationship: id=11574482022 is in the detla file, but no actual changes made since the previous release."} <p>RESOLUTION: This is a result of the necessary MRCM fixes that the US NRC implemented in the Pre-Production stage, and so they have confirmed that this failure is a false positive and no action is required.</p>	2021-Mar-02
ISRS-975	RVF Assertion failure: 5c6b6bc0-79b9-11e1-b0c4-0800200c9a66	<p>assertionUuid: "5c6b6bc0-79b9-11e1-b0c4-0800200c9a66", assertionText: "All relationships inactivated in current release must have been active in the previous release.", queryInMilliseconds: 76042, failureCount: 2, firstNInstances: [</p> <ul style="list-style-type: none"> {conceptId: "437481000124109",detail: "Relationship: id=11574482022 should not have a new inactive state as it was inactive previously."} {conceptId: "1119349007",detail: "Relationship: id=13466013021 is inactive but no active state found in previous release."} <p>RESOLUTION: The International concept has already been whitelisted in ISRS-960. The US concept is a result of the necessary MRCM fixes that the US NRC implemented in the Pre-Production stage, and so they have confirmed that this failure is a false positive and no action is required.</p>	2021-Mar-02
ISRS-976	Unexpected modelling status of 1231000119100	<p>In the latest Pre-Prod release of the March 2021 US Edition, this concept appears to now only have one remaining active isa relationship, to one of its descendants:</p> <ul style="list-style-type: none"> 53391000119100 History of tissue graft aortic valve replacement (situation) <p>It no longer has any active isa relationships to any concepts higher up in the hierarchy, where it used to be a child of:</p> <ul style="list-style-type: none"> 161674009 History of artificial organ or tissue (situation) 161625008 History of cardiac surgery (situation) <p>Further investigation advised...</p> <p>RESOLUTION: This was found to be an unintended impact from the fixes in ISRS-964. As the impact was agreed to be worse than the original problem (a duplicate axiom), the fixes were reverted in order to resolve the modelling for concept 1231000119100. This issue has therefore been resolved in time for the March 2021 US Edition release.</p>	2021-Feb-26

22 issues

3.3 Technical Updates

In addition to the Technical Updates reported in the [SNOMED CT January 2021 International Edition - SNOMED International Release notes](#), the following technical updates pertain to the US Edition:

3.3.1 Previous Changes made in the March 2020 US Edition

As reported in [March 2020](#), to continue to align with the SNOMED CT International Edition, the following changes have been implemented in the March 2020 US Edition. These changes will allow for the continued efforts towards having a zip file including only data with additional supplemental documentation and artifacts available separately.

3.3.1.1 Deprecation of the Resources folder

This aligns with the SNOMED CT International Edition release package which no longer includes a Resources folder.

3.3.1.2 Removal of Transitive Closure resources from the US Edition release zip file

The Transitive Closure resources will be made available alongside the US Edition of SNOMED CT as a bundled zip download - `SnomedCT_TransitiveClosureResourcesRF2_PRODUCTION_YYYYMMDDT120000Z.zip`. The following resources will be updated and bundled together and made available with each new US Edition release:

`res2_TransitiveClosure_US1000124_YYYYMMDD.txt`

`tls2_TransitiveClosure_US1000124_YYYYMMDD.pl`

Any questions or comments regarding these upcoming changes can be sent to [NLM Customer Support](https://support.nlm.nih.gov/) - <https://support.nlm.nih.gov/>

3.3.2 Previous Changes made in the September 2019 US Edition

3.3.2.1 File changes in the September 2019 US Edition

As reported in [March 2019](#), to continue to align with the SNOMED CT International Edition, the following changes have been implemented in the September 2019 US Edition. These changes will allow for the continued efforts towards having a zip file including only data with additional supplemental documentation and artifacts available separately.

3.3.2.2 Deprecation of the Documentation folder

This aligns with the SNOMED CT International Edition release package which no longer includes a Documentation file.

3.3.2.3 Deprecation of the doc_lcd10MapTechnicalGuideExemplars_[date].xlsx file

This follows the decision by SNOMED International, first announced with the July 2018 International Edition (see [3.3.4 - Deprecation of the Technical Guide Exemplars document from the International Edition package](#)). Going forward the file will be available from SNOMED International (<http://snomed.org/lcd10map>).

3.3.2.4 Removal of SNOMED CT to ICD-10-CM documentation and resources from the US Edition release zip file

The SNOMED CT to ICD-10-CM documentation and resources will be made available alongside the US Edition of SNOMED CT as a bundled download - SNOMED_CT_to_ICD-10-CM_Resources_20190901.zip. The following resources will be updated and bundled together and made available with each new US Edition release:

doc_lcd10cmMapReleaseNotes_Current-en-US_US1000124_20190901.pdf (will be available as an online resources and in the download)

doc_lcd10cmMapTechnicalGuideExemplars_Current-en-US_US1000124_20190901.xlsx

doc_lcd10cmMapTechnicalSpecifications_Current-en-US_US1000124_20190901.pdf (will be available as an online resource and in the download)

tls_lcd10cmHumanReadableMap_US1000124_20190901.tsv

Any questions or comments regarding these upcoming changes can be sent to NLM Customer Support: <https://support.nlm.nih.gov/>.

3.3.2.5 Combination of two new refsets - OWLAxiom and OWLOntology

The US Edition is following the International Edition with the changes to the Stated Relationships and two new OWL refsets.

Please see section "6.3.3. Combination of two new refsets - OWLAxiom and OWLOntology" in the [SNOMED CT July 2019 International Edition - Release notes](#) for full details of the reason behind the introduction of these new refsets. After the September 2018 Demonstration release, it was agreed to combine these two files into one "OWL Expression" file, which now contains both OWL Axiom + OWL Ontology refsets in the same file, in each section of the International Release package (Full, Snapshot and Delta):

- sct2_sRefset_OWLExpressionFull_INT_20190731.txt
- sct2_sRefset_OWLExpressionSnapshot_INT_20190731.txt
- sct2_sRefset_OWLExpressionDelta_INT_20190731.txt

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.

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

In the September 2019 release:

- The International Edition and US Edition packages will include both inactive Stated Relationships plus a *complete* OWL file (combined) from July 2019 (International content) and September 2019 (US Extension content) effectiveTime onwards (ie) with NO history of OWL records that weren't included in the January 2019 International Edition and March 2019 US Edition package (as opposed to the *optional* package).
- A separate *optional* package containing an OWL (combined) Delta file, identifying which of the concepts have had modelling changes in relation to the optional package detailed in [section 3.3.3 of the International Release notes](#) ("Optional "on demand" package in addition to the January 2019 International edition").
- No support for Stated Relationships will be provided from this point onwards, however we will continue to include the inactivated Stated Relationships in future International Edition packages, until it is decided that this is no longer required.

- Anyone who isn't yet ready to move forward with OWL will therefore remain on the March 2019 US Edition until they are ready to update to OWL with the September 2019 version onwards.
- 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/1tqNEA6S4fEF4fgj15OPabYA2E0VTz8epxvRRwcZKizQ/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/1dt0r0aetwpmHOfT9wt0EVukVLRvVjXYUn_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/sfFbMMioA_4

3.3.3 RF2 package format

Similar to the International Edition, the US Edition will follow the technical specifications for RF2 packaging 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 could therefore potentially contain data in future releases.

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.

3.4 Feedback and suggestions

We welcome questions, comments or suggestions to improve the quality, accuracy and usability of the SNOMED CT US Edition. Please send feedback to NLM Customer Support <https://support.nlm.nih.gov/>.

Approvals

Final Version	Date	Approver	Comments
1.0		Terance Shird	
1.0		Rory Davidson	
1.0		Nick McGraw	25 Feb 2021

Draft Amendment History

Version	Date	Editor	Comments
0.1	04 Feb 2021	Andrew Atkinson	Initial draft created
1.0	25 Feb 2021	Nick McGraw	Final Production updates