COVID-19 Data Coding
using SNOMED CT

v0.3 DRAFT FOR COMMUNITY REVIEW

This PDF document was generated from the web version on the publication date shown above. Any changes made to the web pages since that date will not appear in the PDF. See the web version of this document for recent updates.

SNOMED International — Leading healthcare terminology, worldwide

Table of Contents

As part of the global effort to manage and contain the COVID-19 public health emergency, SNOMED International is doing their part to support care teams and researchers in their efforts to address its containment. SNOMED International has published a set of coronavirus related concepts in its January 2020 SNOMED CT International Edition, with updated descriptions and SNOMED CT to ICD-10 maps in the interim March 2020 International Edition release. SNOMED International will also be making this SNOMED CT Coronavirus Content available as part of the Global Patient Set (GPS) in the next release in September 2020. In the meantime, this content is available and can be used under the same open license as the GPS, the Creative Commons Attribution 4.0 International License.

This guide shows how SNOMED CT can be used to record, communicate and integrate clinical data related to COVID-19, for the purposes of healthcare service delivery, pandemic surveillance, international collaboration and retrospective data analysis. This guide provides practical examples of SNOMED CT subsets that can be used to code a variety of COVID-19 related data elements, such as symptoms, risk factors and test results. A set of computable SNOMED CT subset artefacts also accompanies this guide.

Web browsable version: http://snomed.org/cv19

SNOMED CT Document Library: http://snomed.org/doc

1. Introduction

Background

On March 11, 2020, the World Health Organization formally characterized coronavirus, COVID-19, as a global pandemic and health systems globally are continuing their efforts to manage the outbreak. Coronavirus disease COVID-19 is an infectious disease caused by a newly discovered coronavirus.

As part of the global effort to manage and contain this global public health emergency, SNOMED International is doing their part to support care teams and researchers in their efforts to address its containment. SNOMED International took swift action by publishing a set of coronavirus related concepts in the January 31st 2020 International Edition of SNOMED CT, with updated descriptions and SNOMED CT to ICD-10 maps in the interim March 2020 International Edition release. This SNOMED CT COVID-19 Related Content will appear as part of the Global Patient Set (GPS) in the next release in September 2020. In the meantime, this content is available and can be used under the same open license as the GPS, the Creative Commons Attribution 4.0 International License.

Purpose

As the global terminology for health, SNOMED CT can serve as a common language for recording, sharing, integrating and analyzing COVID-19 related data. This guide shows how SNOMED CT can be used for these data purposes. It provides practical examples of SNOMED CT subsets that can be used to code a variety of COVID-19 related data elements. A set of computable SNOMED CT subset artefacts also accompanies this guide.

For more information on performing data analytics using SNOMED CT please refer to Data Analytics with SNOMED CT. Additional guidance can be found in the SNOMED CT Document Library.
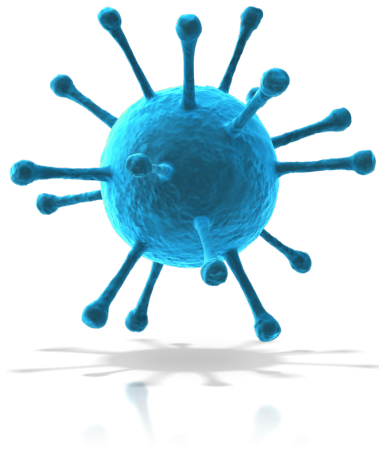
Scope

The scope of this document has been guided by the collective needs and experiences of our SNOMED International Members.

The primary focus of the guide is to provide example SNOMED CT subsets for data elements covering the following key areas:

- Provider and facility details - e.g. healthcare profession, site of care, personal protective equipment
- Patient demographics - e.g. biological sex, foreign travel history, living arrangements
- Clinical assessment - e.g. symptoms, diagnosis, complications
- Tests and procedures - e.g. specimen, laboratory test results
- Treatment and education - e.g. vaccination, therapy

These subsets provide examples of SNOMED CT concepts that may be used to code data elements in national reporting requirements, as part of a healthcare data standard (e.g. a HL7 FHIR profile or openEHR archetype), or a newly developed information model (data set). Before they can be used in a production system, these subsets should be carefully reviewed and updated to ensure that they fully meet the requirements of the intended use case.

The example subsets included in this guide use concepts that are in (or are planned to be added to) the SNOMED CT International Edition. This provides a foundation for international collaboration and research on COVID-19. Some examples of SNOMED CT extension concepts, added in National Editions of SNOMED CT, are also provided for a number of data elements. Please note that all concepts referenced in this guide should be used only in implementations where the relevant Edition is deployed.

Audience

The primary audience of this guide is the SNOMED National Release Centers (NRCs), who themselves may be required to provide national or regional guidance to their local implementations during or after the COVID-19 pandemic.

Acknowledgments

This guide has been developed in collaboration with our SNOMED National Release Centers (NRCs) and other Member representatives. We would like to thank you all for sharing your knowledge and experience to collectively help in the development of this COVID-19 guide.

References

The following references were used in the development of this guide.

- Caution on Kidney Dysfunctions of COVID-19 Patients
- Coronavirus Disease 2019 (COVID-19), *Centers for Disease Control and Prevention, U.S.*
- Coronavirus Disease (COVID-19) Pandemic, *World Health Organization*
- Coronavirus: what are asymptomatic and mild COVID-19?, *Patient.info*
- Coronavirus: what are moderate, severe and critical COVID-19?, *Patient.info*
- COVID-19 and the Cardiovascular System
- COVID-19 Dataset Specification, Feidhmeannacht na Seirbhise Slainte, Health Service Executive, Ireland.
- COVID-19: Gastrointestinal Manifestations and Potential Fecal-Oral Transmission
- COVID-19 Hospitalisation in England Surveillance System (CHESS) Daily Reporting, *NHS, UK*
- COVID-19 Response Home, *HL7 International*
- Dysregulation of Immune Response in Patients with COVID-19 in Wuhan, China
- Emergency use ICD codes for COVID-19 disease outbreak, World Health Organization
- Global Research on Coronavirus Disease (COVID-19), World Health Organization
- Guidance document on appropriate management of suspect/confirmed cases of COVID-19 - Types of Covid-19 dedicated facilities, Ministry of Health and Family Welfare (MoHFW), Govt. of India
- HISO 10082:2020 *Community Based Assessment Data Standard*, Wellington: Ministry of Health 2020, New Zealand
- Interoperability for COVID-19 Novel Coronavirus Pandemic, The Office of the National Coordinator for Health Information Technology, U.S.
- Logica Implementation Guide: Covid-19 - Terminology Value Sets, U.S.
- Neurological Manifestations of Hospitalized Patients with COVID-19 in Wuhan, China: A Retrospective Case Series Study
- Novel Coronavirus (COVID-19) Case Record Form, Global COVID-19 Clinical Platform, World Health Organization
- openEHR Clinical Knowledge Manager (COVID-19 incubator)
- Revised National Clinical Management Guidelines for COVID-19, Ministry of Health and Family Welfare (MoHFW), Govt. of India
- Rhabdomyolysis as Potential Late Complication Associated with COVID-19
- SARS Coronavirus 2, Regenstrief Institute

- **SNOMED CT Coronavirus Content**, SNOMED International
- **Solidarity Clinical Trials for COVID-19 Treatment**, World Health Organization
- **Standard Operating Procedure (SOP) for transporting a suspect/confirmed case of COVID-19**, Ministry of Health and Family Welfare (MoHFW), Govt of India.

1.1 How to Use this Guide

Overview

Any SNOMED CT subset used to code COVID-19 data should be designed based on its purpose and the context in which it will be used.

To make the process of planning and designing your SNOMED CT subsets more efficient and internationally consistent, we recommend the following three steps.

Identify data elements and existing subsets   Download subsets   Review and adapt subsets
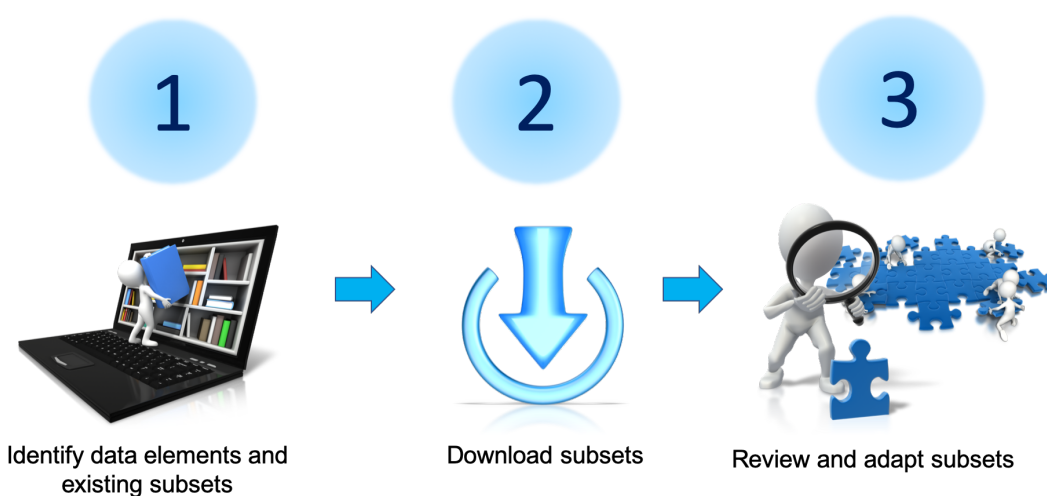
These three steps are explained in more detail below.

Step 1 - Identify Data Elements

The first step is to identify the data elements that may require SNOMED CT coding. These data elements may already be defined in national reporting requirements [1] [2] [3], as part of a healthcare data standard you are using (e.g. a HL7 FHIR profile [4] or openEHR archetypes [5]), or you may be developing a new information model (or data set) for this purpose. Your requirements for coded content will depend on your specific use case and the data items in your information model. In addition, different countries, regions, and hospitals may apply different clinical techniques or practices, which can also result in differing coding requirements. Therefore, deciding which subsets to implement requires clarification of the scope of content needed, by answering questions such as:

- What will your SNOMED CT subsets be used for?
    - Will they be used to capture new data in a clinical information system to support frontline service delivery?
    - Will they be used for disease surveillance?
    - Will they be used to integrate data from various sources?
    - Will they be used for international collaboration?
    - Will they be used for retrospective analysis of data?
- Which data elements are required for your use case?
    - What coded data needs to be collected to support clinical care?
    - What coded data needs to be collected to provide disease surveillance?
    - What coded data needs to be shared between or integrated from different sources?
    - What coded data is required for international collaboration?
    - What coded data may be needed for retrospective data analysis?

- What existing subsets are available for the data elements of interest?
  - Where these subsets designed based on the same or compatible requirements?

Answering these questions will help in understanding which of the existing subsets are relevant for your context. It may also help to identify potential content gaps in the subsets, or extraneous concepts which are not required for your specific scenario. Please note that the questions above are provided for inspiration only. Additional questions specific to your use case are likely to be needed.

Step 2 - Download Subsets

The second step is to download any available existing subsets that are associated with your required data elements.

The example COVID-19 subsets in this guide can be downloaded from Appendix A - Example Subsets.

Subset Naming Convention

The example COVID-19 subsets provided by SNOMED International have been named using the following convention.

> ⓘ **Subset Naming Convention Templates**
>
> - SNOMED CT COVID-19 subsets: **CV19-<category>-<subset>**
> - SNOMED CT COVID-19 subsets including subtypes of members: **CV19-<category>-<subset>-withSubtypes**

The table below shows some examples of subsets named using this convention.

Examples of Named Subset		
Category	**Subset**	**Name**
Provider and Facility Details (PFD)	Site of care subset	CV19-PFD-SiteOfCare
Patient Demographics (PAT)	Marital status subset	CV19-PAT-MaritalStatus
	Marital status subset including subtypes	CV19-PAT-MaritalStatus-withSubtypes
Clinical Assessment (ASS)	Symptoms subset	CV19-ASS-Symptoms
	Symptoms subset including subtypes	CV19-ASS-Symptoms-withSubtypes

Subset Categories

The international SNOMED CT subsets have been organized into a number of categories, based on groupings of data elements that are likely to be recorded together. The five categories identified are:

- Provider and Facility Details (PFD)
- Patient Demographics (PAT)
- Clinical Assessment (ASS)
- Tests and Investigations (INV)
- Prevention, Treatment, and Education (PTE)

Please follow the links above for information on the specific subsets within each category.

Subset Types

Some of the international subsets have been developed intensionally, while others have been developed extensionally. Please refer to the Practical Guide to Reference Sets, section 2.1.1. Subset Definitions for information on the difference between intensionally and extensionally defined subsets.

For each extensionally-defined subset, where the members have subtypes, we provide two versions:

1. One subset which includes only the listed members. This version supports use cases (e.g. reporting, data integration) that require more abstract concepts.
2. One subset which includes the members listed **and** all the subtypes of each of these members. This version supports use cases that may require more specific values (e.g. data collection where more clinical detail is required).
   ▪ Please note that this second type of subset is automatically generated from the corresponding subset with listed members. No manual curation has been performed, and therefore these subsets may contain concepts that are not relevant for the context of use.

Step 3 - Review and Adapt

The third step is to carefully review each international subset, and adapt it to meet your specific requirements. The subsets provided represent a collection of concepts that have been contributed from a range of SNOMED International Members. It is therefore important to review each subset member to:

1. Remove any concepts that are not required for your use case
2. Add any concepts missing from the subset that may be required for your specific use case
   ▪ Please note, if the concept you require is not included in the SNOMED CT Edition you are using, please follow the content request processes in each country. For more information, refer to the relevant SNOMED International Member page.
   ▪ SNOMED International National Release Centers and other authorized users may request additions or changes to the SNOMED CT International Edition via the SNOMED CT Content Request Service. For more information, refer to the CRS User Guide or contact info@snomed.org.
3. Remove any concepts that are **not** included in the SNOMED CT versioned edition being used. This may involve
   ▪ Checking the effective time of each international concept to ensure that it is less than or equal to the International Version used by your local SNOMED CT edition
   ▪ Checking that any extension concepts are published in the SNOMED CT edition you are using
4. Ensure that your subset aligns with best practice principles for subset creation.
   ▪ For example, this may involve checking that all members of the subset belong to a single hierarchy (in most cases), and that no two members subsumesubsume each other (in most cases).
   ▪ For more information, please watch our e-learning presentation on this topic - Subset Creation Principles.

Unpublished Content

Please note that the subsets in this guide may include some unpublished content that is planned for a future SNOMED CT edition. This content should not be used until it has been officially published, as we cannot guarantee that the identifiers or terms will not change. For this reason, these unpublished concepts are not included in the downloadable versions of the subsets. Unpublished concepts are included in this guide to assist with planning (e.g. planning of national extensions).

Unpublished content is shown in this guide using grey, italic font on a pink background, as shown in the example below.

308906005	Secondary bacterial pneumonia (disorder)	Secondary bacterial pneumonia	20160131	-
75570004	Viral pneumonia (disorder)	Viral pneumonia	20130731	Yes
138389411000119105	*Acute bronchitis caused by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Acute bronchitis caused by SARS-CoV-2*	*20200731*	Yes
674814021000119106	*Acute respiratory distress syndrome caused by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Acute respiratory distress syndrome caused by SARS-CoV-2*	*20200731*	Yes

Unpublished concepts

Extension Content

In response to an immediate need for COVID-19-specific concepts, various Member countries have developed concepts within their national SNOMED CT Extensions. Some of these extension concepts are documented in this guide, for the interest of other Members, see 4. Extension Content for COVID-19. Please note, however, that extension concepts should only be used when the module in which they are published is included in the implemented SNOMED CT Edition. SNOMED CT extension concepts are not included in the subsets downloadable from the Reference Set tool.

Feedback

SNOMED International welcomes comments on this guide and suggestions for new or updated content. Please use the *Feedback* button at the bottom of each page to send us your feedback.

Footnotes

1

"Coronavirus Disease 2019 (COVID-19)" , *Centers for Disease Control and Prevention,* https://www.cdc.gov/ coronavirus/2019-ncov/php/reporting-pui.html

2

"COVID-19 Hospitalisation in England Surveillance System (CHESS) Daily Reporting,NHS - https:// www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/phe-letter-to-trusts-re-daily-covid-19- hospital-surveillance-11-march-2020.pdf

3

HISO 10082:2020 *Community Based Assessment Data Standard*, Wellington: Ministry of Health 2020, New Zealand

4

Logica Implementation Guide: Covid-19 - Terminology Value Sets, U.S.

5

openEHR Clinical Knowledge Manager (COVID-19 incubator)

2. Coding COVID-19 Related Data

The collection of coded COVID-19 related data can be critical for frontline service delivery, pandemic surveillance, and retrospective data analysis.

The following table lists a collection of data elements for which SNOMED CT can be used to capture COVID-19 related data.

Data Group	Data Element
Provider and facility details (section 2.1)	• Healthcare profession • Site of care • Health management finding • Personal protective equipment
Patient demographics (section 2.2)	• Biological sex • Gender identity • Marital status • Nationality • Ethnic group • Racial group • Occupation • Travel history • Residential location type • Next of kin relationship • Living arrangements • Care and support circumstances
Clinical assessment (section 2.3)	• Symptoms • Severity • Clinical measurements • Clinical examination findings • Diagnosis and certainty • Secondary conditions and complications • Potential risk factors • Comorbidities • Exposure event • Covid-19 and viral co-infections
Tests and Investigations (section 2.4)	• Specimen • Laboratory tests • Substances and virus • Laboratory test results • Other investigations

Data Group	Data Element
Prevention, treatment and education (section 2.5)	• Prevention • Education • Medication • Administrative procedures • Therapeutic procedures • Treatment findings • Treatment equipment

Note
The SNOMED CT subsets are provided as a guide only, and may need to be constrained or extended to meet local requirements.

2.1 Provider and Facility Details

Information about the healthcare providers and facilities involved with the investigation, treatment, and care of patients with suspected or confirmed COVID-19 are usually recorded in electronic health records. The monitoring of medical equipment availability at healthcare facilities, such as Personal Protective Equipment (PPE) and respiratory devices, is also of utmost importance during the COVID-19 pandemic. Relevant details, which can be recorded using SNOMED CT include:

- Healthcare profession
- Site of care
- Health management finding
- Personal protective equipment

These data elements are described below, with example SNOMED CT subsets for each.

2.1.1 Healthcare Profession

The healthcare profession is the occupation or qualification of the healthcare provider who is involved in the investigation, treatment, care or education of the patient - for example 224547003 |Intensive therapy nurse (occupation)| or 76899008 |Infectious disease specialist (occupation)| .

CV19-PFD-HealthcareProfession

Intensional Definition:
< 223366009 |Healthcare professional (occupation)|

2.1.2 Site of Care

The site of care refers to the location of the specific investigation, treatment or care setting - for example 22232009 |Hospital (environment)| , 309904001 |Intensive care unit (environment)| , or 702917005 |Respiratory disease clinic (environment)| .

CV19-PFD-SiteOfCare

Intensional Definition:
< 43741000 |Site of care (environment)|
OR < 224884006 |Location within hospital premises (environment)|
OR < 440654001 |Inpatient environment (environment)|
OR < 440655000 |Outpatient environment (environment)|
OR < 272497004 |Residential environment (environment)|

Please refer to 2.1.1 Extension Concepts - Provider and Facility Details for a list of known extension concepts.

2.1.3 Health Management Finding

Health management finding includes concepts that describe the circumstances which affect whether the planned patient outcomes are attained, that different areas within a health organization are running appropriately, that tasks are correctly defined and assessed and that resources are used efficiently. -for example 305456005 |Under care of own general practitioner (finding)| , 706877002 |Problem with high complexity of treatment regime (finding)| or 129837009 |Ineffective protection (finding)| .

CV19-PFD-HealthManagementFinding

Intensional Definition:
< 129843006 |Health management finding (finding)|

2.1.4 Personal Protective Equipment

Personal protective equipment is protective clothing, or other garments or equipment designed to protect the wearer's body from injury or infection - for example 409528009 |Surgical face mask (physical object)| and 255716002 |Latex rubber gloves (physical object)|

CV19-PFD-PersonalProtectiveEquipment

Intensional Definition:
<< 409526008 |Personal protective equipment (physical object)|
OR << 6919005 |Protective clothing material, device (physical object)|
OR << 706724001 |Face shield (physical object)|
OR << 261382003 |Mask (physical object)|
OR << 52291003 |Glove, device (physical object)|
OR << 15922004 |Gown, device (physical object)|
OR << 706154004 |Shoe cover (physical object)|
OR << 465982004 |Surgical hood (physical object)|

2.2 Patient Demographics

General demographic characteristics are important to record for each patient being investigated or treated for COVID-19. Relevant patient demographics, which can be recorded using SNOMED CT includes:

- Biological sex
- Gender identity

- Marital or partnership status
- Nationality
- Ethnic group
- Racial group
- Occupation
- Travel history
- Residential location type
- Next of kin relationship
- Living arrangements
- Care and support circumstances

These data elements are described below, with example SNOMED CT subsets for each.

2.2.1 Sex and Gender

Multiple types of sex and/or gender are recorded in clinical practice, including biological sex and gender identity. [1]

SNOMED CT supports the distinction between biological sex (e.g. 248152002 |Female (finding)|) and gender identity (e.g. 703118005 |Feminine gender (finding)|), as shown in the two subset definitions below.

CV19-PAT-BiologicalSex
Intensional Definition: < 429019009 |Finding related to biological sex (finding)| MINUS << 302081005 |Finding of sex of baby (finding)|

CV19-PAT-GenderIdentity
Intensional Definition: < 365873007 |Gender finding (finding)|

2.2.2 Marital or Partnership Status

The marital or partnership status of a patient describes their legal, civil or personal relationship with their significant other, for example 87915002 |Married (finding)|.

CV19-PAT-MaritalOrPartnershipStatus
Intensional Definition: < 365581002 |Finding of marital or partnership status (finding)|

2.2.3 Nationality

Nationality refers to a particular legal relationship between an individual person and a *sovereign state*. The nationality of a patient may refer to the nation in which they were born, have citizenship, or have other legal ties - for example 223610001 |Jordan (geographic location)| or 223625001 |New Zealand (geographic location)|.

CV19-PAT-Nationality
Intensional Definition: < 223369002 |Country (geographic location)|

2.2.4 Ethnic Group

The ethnic group (or ethnicity) of a patient is the social or cultural group with whom they identify - for example, 33897005 |Chinese (ethnic group)| or 735001008 |Scandinavian (ethnic group)| .

CV19-PAT-EthnicGroup

Intensional Definition:
< 372148003 |Ethnic group (ethnic group)|

2.2.5 Racial Group

The racial group (or race) of a patient is the group (or groups) with whom they share inherited physical characteristics - for example, 414408004 |Hispanic (racial group)| or 413773004 |Caucasian (racial group)| .

CV19-PAT-RacialGroup

Intensional Definition:
< 415229000 |Racial group (racial group)|

2.2.6 Occupation

Occupation is the patient's job or profession - for example, 158942005 |Residential child care worker (occupation)| or 308223007 |Hairdresser (occupation)|.

CV19-PAT-Occupation

Intensional Definition:
< 14679004 |Occupation (occupation)|

2.2.7 Travel History

The travel history of a patient is a record of their past visits to locations both inside and outside their country of residence. This may include a list of the specific countries and/or regions that they have travelled to (e.g. 223498002 |Africa (geographic location)| or 223585008 |South east Asian country (geographic location)|), or a descriptive travel history finding (e.g. 161090005 |Travel abroad for business (finding)|).

CV19-PAT-TravelHistory

Intensional Definition:

< 223496003 |Geographical and/or political region of the world (geographic location)|
 OR < 365457007 |Foreign travel history finding (finding)|
 OR < 420008001 |Travel (event)|

Please refer to 2.2.1 Extension Concepts - Patient Demographics for a list of known extension concepts.

2.2.8 Residential Location Type

The residential location type is the type of place in which the patient is currently living, or was living prior to admission to hospital - for example, 257564005 |Apartment (environment)| or 257670006 |Private house (environment)|.

CV19-PAT-ResidentialLocationType

Intensional Definition:
< 272497004 |Residential environment (environment)|

2.2.9 Next of Kin Relationship

The next of kin relationship is the relationship that the patient has with their closest living relative (as chosen by the patient) - for example 444053001 |Husband of subject (person)| or 444301002 |Mother of subject (person)|.

CV19-PAT-NextOfKinRelationship

Intensional Definition:
< 444148008 |Person in family of subject (person)|

2.2.10 Living Arrangements

The living arrangements of the patient describes the familial and non-familial relationships of a person to all the other people with whom they usually reside - for example 105529008 |Lives alone (finding)| or 224133007 |Lives with family (finding)|.

CV19-PAT-LivingArrangements
Intensional Definition: < 365481000 |Finding of household composition (finding)|

2.2.11 Care and Support Circumstances

The care and support circumstances of the patient describe how and by whom they are looked after when living at their usual place of residence - for example 427454004 |Cared for by neighbors (finding)| or 301887005 |Needs assistance at home (finding)|.

CV19-PAT-CareAndSupportCircumstances
Intensional Definition: < 365483002 |Finding related to care and support circumstances and networks (finding)|

Footnotes

|1
https://confluence.hl7.org/display/VOC/The+Gender+Harmony+Project

2.3 Clinical Assessment

The first step in delivering comprehensive care is to undertake a clinical assessment. Clinical assessment data which can be recorded using SNOMED CT includes:

- Symptoms
- Severity
- Clinical Measurements
- Clinical Examination Findings
- Diagnosis and Certainty
- Clinical History
- Secondary Conditions and Complications
- Potential Risk Factors
- Comorbidities
- Exposure Event
- Covid-19 and Viral Co-Infections

These data elements are described below, with example SNOMED CT subsets for each. For each subset member, we also indicate whether this concept is included in SNOMED International's Global Patient Set (GPS), which is available to be used internationally under the Creative Commons Attribution 4.0 International License.

2.3.1 Symptoms

Symptoms represent physical or mental features which are regarded as an indication of a condition or disease, particularly those features that are apparent to the patient. This SNOMED CT subset of COVID-19 symptoms has been developed based on a range of literature, including relevant articles found in Pubmed [1], research performed by Kings College London [2], and a review of COVID-19 data collection forms (e.g. [3]). Please note that this subset includes the concept 84387000 |Asymptomatic (finding)|, which can be used to represent the absence of symptoms.

CV19-ASS-Symptoms				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
21522001	Abdominal pain (finding)	Abdominal pain	20050131	Yes
84387000	Asymptomatic (finding)	Asymptomatic	20020131	Yes
131148009	Bleeding (finding)	Bleeding	20050131	Yes
29857009	Chest pain (finding)	Chest pain	20040731	Yes
43724002	Chill (finding)	Chill	20020131	Yes
9826008	Conjunctivitis (disorder)	Conjunctivitis	20040731	Yes
49727002	Cough (finding)	Cough	20020131	Yes
62315008	Diarrhea (finding)	Diarrhea	20020131	Yes
3006004	Disturbance of consciousness (finding)	Disturbance of consciousness	20020131	-
267036007	Dyspnea (finding)	Dyspnea	20020131	Yes
271807003	Eruption of skin (disorder)	Eruption	20020731	Yes
84229001	Fatigue (finding)	Fatigue	20020131	Yes
103001002	Feeling feverish (finding)	Feeling feverish	20020131	Yes
386661006	Fever (finding)	Fever	20030131	Yes
25064002	Headache (finding)	Headache	20100131	Yes
66857006	Hemoptysis (finding)	Hemoptysis	20020131	Yes

248567008	Indrawing of ribs during respiration (finding)	Indrawing of ribs during respiration	20020131	-
57676002	Joint pain (finding)	Joint pain	20020131	Yes
79890006	Loss of appetite (finding)	Loss of appetite	20020131	Yes
44169009	Loss of sense of smell (finding)	Loss of sense of smell	20200131	Yes
36955009	Loss of taste (finding)	Loss of taste	20020131	Yes
30746006	Lymphadenopathy (disorder)	Lymphadenopathy	20020131	Yes
367391008	Malaise (finding)	Malaise	20020131	Yes
68962001	Muscle pain (finding)	Muscle pain	20020131	Yes
68235000	Nasal congestion (finding)	Nasal congestion	20020131	Yes
64531003	Nasal discharge (finding)	Nasal discharge	20020131	Yes
422587007	Nausea (finding)	Nausea	20070131	Yes
162397003	Pain in throat (finding)	Pain in throat	20020131	Yes
38880002	Rigor (finding)	Rigor	20020131	Yes
91175000	Seizure (finding)	Seizure	20020131	Yes
46742003	Skin ulcer (disorder)	Skin ulcer	20020131	Yes
282145008	Unable to walk (finding)	Unable to walk	20080731	-
422400008	Vomiting (disorder)	Vomiting	20180731	Yes
56018004	Wheezing (finding)	Wheezing	20020131	Yes

2.3.2 Severity

Severity represents the quality of the condition - for example, 24484000 |Severe (severity modifier) (qualifier value)| . Severity may be recorded for each symptom, or as a general statement of their disease state [4].

CV19-ASS-Severity				
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time	In GPS
255604002	Mild (qualifier value)	Mild	20020131	Yes
6736007	Moderate (severity modifier) (qualifier value)	Moderate	20020131	Yes
24484000	Severe (severity modifier) (qualifier value)	Severe	20020131	Yes
442452003	Life threatening severity (qualifier value)	Life threatening severity	20090731	Yes

2.3.3 Clinical Measurements

Clinical measurements involve the performance of physiological tests to diagnose and refine therapeutic management of an already established disease. The following clinical measurements can be used in the assessment of a COVID-19 patient.

CV19-ASS-ClinicalMeasurements				
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time	In GPS
386725007	Body temperature (observable entity)	Body temperature	20170131	Yes
75367002	Blood pressure (observable entity)	Blood pressure	20170131	Yes
364075005	Heart rate (observable entity)	Heart rate	20170131	Yes
431314004	Peripheral oxygen saturation (observable entity)	Peripheral oxygen saturation	20080731	Yes
86290005	Respiratory rate (observable entity)	Respiratory rate	20170131	Yes

2.3.4 Clinical Examination Findings

Clinical examination findings are the result of measuring, questioning, evaluating, or otherwise examining a patient in healthcare. The following clinical findings are positive or negative indications that signs are present in a COVID-19 patient.

CV19-ASS-ClinicalExaminationFindings				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
288848001	Able to breathe (finding)	Able to breathe	20080731	Yes
371632003	Coma (disorder)	Coma	20020731	Yes
193894004	Conjunctival hyperemia (finding)	Conjunctival hyperemia	20100131	Yes
443371007	Decreased level of consciousness (finding)	Decreased level of consciousness	20100131	-
126664009	Exudative pharyngitis (disorder)	Exudative pharyngitis	20020131	Yes
442646005	Imaging of lung abnormal (finding)	Imaging of lung abnormal	20090731	Yes
419045004	Loss of consciousness (finding)	Loss of consciousness	20060131	Yes
274710003	Lung field abnormal (finding)	Lung field abnormal	20020131	Yes
91175000	Seizure (finding)	Seizure	20020131	Yes
271823003	Tachypnea (finding)	Tachypnea	20020131	Yes
288849009	Unable to breathe (finding)	Unable to breathe	20080731	Yes

Please refer to 2.3.1 Extension Concepts - Clinical Assessment for a list of known extension concepts.

2.3.5 Diagnosis and Certainty

A diagnosis is the identification of the nature of the illness, based on an examination of the symptoms, observations, measurements, test results and other investigation results. The following subset includes a range of diagnoses directly related to COVID-19.

CV19-ASS-Diagnosis				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
840539006	Disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	COVID-19	20200131	Yes
840544004	Suspected disease caused by severe acute respiratory coronavirus 2 (situation)	Suspected COVID-19	20200131	Yes
189486241000119100	*Asymptomatic severe acute respiratory syndrome coronavirus 2 infection (finding)*	*Asymptomatic SARS-CoV-2*	*20200731*	*-*
688232241000119100	*Disease caused by severe acute respiratory syndrome coronavirus 2 absent (situation)*	*Disease caused by severe acute respiratory syndrome coronavirus 2 absent*	*20200731*	*-*

Please refer to 2.3.1 Extension Concepts - Clinical Assessment for a list of known COVID-19 diagnosis extension concepts.

To represent the certainty of a positive COVID-19 diagnosis, the following subset may be used in conjunction with a diagnosis of 840539006 |COVID-19|.

CV19-ASS-DiagnosisPresentCertainty				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
410605003	Confirmed present (qualifier value)	Confirmed present	20040731	Yes
410592001	Probably present (qualifier value)	Probably present	20040731	Yes
415684004	Suspected (qualifier value)	Suspected	20050131	Yes

To represent the certainty of the absence of COVID-19, the following subset may be used in conjunction with a diagnosis of 688232241000119100 |Disease caused by severe acute respiratory syndrome coronavirus 2 absent (situation)| (to be published 20200731).

CV19-ASS-DiagnosisAbsentCertainty				
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time	In GPS
410594000	Definitely NOT present (qualifier value)	Definitely NOT present	20040731	Yes
410593006	Probably NOT present (qualifier value)	Probably NOT present	20040731	Yes

2.3.6 Clinical History

The clinical history concepts are used to record information gained by a physician by asking specific questions, either of the patient or of other people who know the person and can give suitable information, with the aim of obtaining information useful in formulating a diagnosis and providing medical care to the patient.

CV19-ASS-ClinicalHistory				
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time	In GPS
292508471000119105	History of disease caused by severe acute respiratory syndrome coronavirus 2 (situation)	History of SARS-CoV-2	20200731	-

2.3.7 Secondary Conditions and Complications

A secondary condition is any additional health condition that occurs as a result of the natural progression or expected outcome of the primary condition. A complication is "a disorder caused by another disorder, procedure or event, which is not a natural progression or expected outcome of its cause [5].

The following subset includes SNOMED CT clinical findings that may be recorded as either secondary conditions or complications [6]. Clinical judgement is required to determine whether these conditions are expected outcomes or unexpected complications of COVID-19.

CV19-ASS-SecondaryConditionsAndComplications				
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time	In GPS
373895009	Acute respiratory distress (finding)	Acute respiratory distress	20020731	Yes
67782005	Acute respiratory distress syndrome (disorder)	Acute respiratory distress syndrome	20020131	Yes
62914000	Cerebrovascular disease (disorder)	Cerebrovascular disease	20020131	Yes
710027002	Cytokine-associated toxicity (disorder)	Cytokine release syndrome	20150731	Yes
3006004	Disturbance of consciousness (finding)	Disturbance of consciousness	20020131	Yes
56265001	Heart disease (disorder)	Heart disease	20020131	Yes
419099009	Dead (finding)	Dead	20060131	Yes
25374005	Gastroenteritis (disorder)	Gastroenteritis	20020131	Yes
90708001	Kidney disease (disorder)	Kidney disease	20020731	Yes
302846007	Rhabdomyoma (disorder)	Rhabdomyoma	20040731	Yes
308906005	Secondary bacterial pneumonia (disorder)	Secondary bacterial pneumonia	20160131	Yes
76571007	Septic shock (disorder)	Septic shock	20050131	Yes
429340002	Traumatic injury of skeletal muscle (disorder)	Traumatic injury of skeletal muscle	20080131	Yes
75570004	Viral pneumonia (disorder)	Viral pneumonia	20130731	Yes

CV19-ASS-SecondaryConditionsAndComplications			
138389411000119105	Acute bronchitis caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Acute bronchitis caused by SARS-CoV-2	20200731	-
870590002	Acute hypoxemic respiratory failure due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Acute hypoxemic respiratory failure due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
870589006	Acute kidney injury due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Acute kidney injury due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
674814021000119106	Acute respiratory distress syndrome due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Acute respiratory distress syndrome due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
119731000146105	Cardiomyopathy due to disease caused by Severe acute respiratory syndrome virus 2 (disorder)	Cardiomyopathy due to disease caused by Severe acute respiratory syndrome virus 2	20200731	-
119741000146102	Conjunctivitis due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Conjunctivitis due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
119981000146107	Dyspnea caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Dyspnea caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
1240561000000108	Encephalopathy due to disease caused by Severe acute respiratory syndrome virus 2 (disorder)	Encephalopathy due to disease caused by Severe acute respiratory syndrome virus 2	20200731	-
119751000146104	Fever caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Fever caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
1240541000000107	Infection of upper respiratory tract caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Infection of upper respiratory tract caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
880529761000119102	Lower respiratory infection caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Lower respiratory infection caused by SARS-CoV-2	20200731	-
866151004	Lymphocytopenia due to Severe acute respiratory syndrome coronavirus 2 (disorder)	Lymphocytopenia due to Severe acute respiratory syndrome coronavirus 2	20200731	-
1240531000000103	Myocarditis due to disease caused by Severe acute respiratory syndrome virus 2 (disorder)	Myocarditis due to disease caused by Severe acute respiratory syndrome virus 2	20200731	-
1240521000000100	Otitis media due to disease caused by Severe acute respiratory syndrome virus 2 (disorder)	Otitis media due to disease caused by Severe acute respiratory syndrome virus 2	20200731	-
882784691000119100	Pneumonia caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Pneumonia caused by SARS-CoV-2	20200731	-
870591003	Rhabdomyolysis due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Rhabdomyolysis due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
870588003	Sepsis due to disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)	Sepsis due to disease caused by Severe acute respiratory syndrome coronavirus 2	20200731	-
866152006	Thrombocytopenia due to Severe acute respiratory syndrome coronavirus 2 (disorder)	Thrombocytopenia due to Severe acute respiratory syndrome coronavirus 2	20200731	-

Please refer to 2.3.1 Extension Concepts - Clinical Assessment for a list of known extension concepts.

2.3.8 Potential Risk Factors

Potential risk factors are the patient conditions which may influence the course or outcomes of the COVID-19 disease. The following clinical findings may be recorded as potential risk factors[3] [7] [8].

CV19-ASS-RiskFactors				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
78648007	At risk for infection (finding)	At risk for infection	20020131	Yes
27624003	Chronic disease (disorder)	Chronic disease	20020131	-
49601007	Disorder of cardiovascular system (disorder)	Disorder of cardiovascular system	20020131	Yes
414029004	Disorder of immune function (disorder)	Disorder of immune function	20190131	-
235856003	Disorder of liver (disorder)	Disorder of liver	20020131	Yes
118940003	Disorder of nervous system (disorder)	Disorder of nervous system	20020131	Yes
50043002	Disorder of respiratory system (disorder)	Disorder of respiratory system	20020131	Yes
8517006	Ex-smoker (finding)	Ex-smoker	20020131	Yes
80141007	Hemoglobinopathy (disorder)	Hemoglobinopathy	20020131	Yes
107921000119107	History of immune disorder (situation)	History of immune disorder	20150731	-
90708001	Kidney disease (disorder)	Kidney disease	20020731	Yes
363346000	Malignant neoplastic disease (disorder)	Malignant neoplastic disease	20020131	Yes
75934005	Metabolic disease (disorder)	Metabolic disease	20020131	Yes
414825006	Neoplasm of hematopoietic cell type (disorder)	Neoplasm of hematopoietic cell type	20050131	-
414915002	Obese (finding)	Obese	20050131	Yes
370388006	Patient immunocompromised (finding)	Patient immunocompromised	20020731	Yes
370391006	Patient immunosuppressed (finding)	Patient immunosuppressed	20020731	-
77386006	Pregnant (finding)	Pregnant	20020131	Yes
77176002	Smoker (finding)	Smoker	20020131	Yes

Similarly, procedures performed on the patient within a clinically relevant timeframe may also influence the course or outcomes of the COVID-19 disease. The following procedures may be recorded as potential risk factors[8].

CV19-ASS-ProcedureRiskFactors				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
367336001	Chemotherapy (procedure)	Chemotherapy	20020131	Yes
788751009	Corticosteroid and corticosteroid derivative therapy (procedure)	Corticosteroid and corticosteroid derivative therapy	20200131	-
234336002	Hemopoietic stem cell transplant (procedure)	Hemopoietic stem cell transplant	20050131	Yes
86553008	Immunosuppressive therapy (procedure)	Immunosuppressive therapy	20020131	Yes
76334006	Immunotherapy (procedure)	Immunological therapy	20020131	-
108290001	Radiation oncology AND/OR radiotherapy (procedure)	Radiation oncology AND/OR radiotherapy	20020131	Yes
312235007	Radiolabeled antibody therapy (procedure)	Radiolabeled antibody therapy	20020131	-
265764009	Renal dialysis (procedure)	Renal dialysis	20020131	Yes
313039003	Solid organ transplant (procedure)	Solid organ transplant	20060731	-

2.3.9 Comorbidities

Comorbidities are additional medical conditions of concern. The following SNOMED CT subset can be used to record comorbidities.

CV19-ASS-Comorbidities
Intensional Definition:
Intensional Definition: < 64572001 |Disease (disorder)|

2.3.10 Exposure

An exposure event is when an individual comes into close contact with an infected person's contaminated droplets, carried in the air or on contaminated hands, surfaces or other objects. The subset below includes SNOMED CT events for recording exposure to COVID-19.

CV19-ASS-ExposureEvent				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
840546002	Exposure to severe acute respiratory syndrome coronavirus 2 (event)	Exposure to SARS-CoV-2	20200131	Yes

An exposure finding is the result of an observation or evaluation that relates to the patient's exposure to an infection. The subset below includes SNOMED CT findings relating to COVID-19 exposure.

CV19-ASS-ExposureFinding				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
870577009	*At increased risk of exposure to severe acute respiratory syndrome coronavirus 2 (finding)*	*At increased risk of exposure to severe acute respiratory syndrome coronavirus 2*	*20200731*	*-*

Please refer to 2.3.1 Extension Concepts - Clinical Assessment for a list of known extension concepts.

2.3.11 Covid-19 and Viral Co-Infections

The following organism should be used when recording the organism causing COVID-19 infections.

CV19-ASS-Organism				
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**	**In GPS**
840533007	Severe acute respiratory syndrome coronavirus 2 (organism)	SARS-CoV-2	20200131	Yes

The following organisms can be used to record the cause of related viral co-infections.

CV19-ASS-ViralCoInfections
Definition:
Intensional Definition: << 49872002 |Virus (organism)| MINUS 840533007 |Severe acute respiratory syndrome coronavirus 2 (organism)|

Footnotes

1

Articles found using the Pubmed query "https://pubmed.ncbi.nlm.nih.gov/?term=covid+19&filter=pubt.review"

2

COVID Symptom Tracker Research Updates

3

COVID-19 Case Reporting Forms, including:

COVID-19 Case Report Form, CDC, US

Novel Coronavirus (COVID-19) Case Record Form, Global COVID-19 Clinical Platform, World Health Organization

COVID-19 Hospitalisation in England Surveillance System (CHESS) Daily Reporting, NHS, UK

4

Coronavirus: what are asymptomatic and mild COVID-19?, Patient.info

Coronavirus: what are moderate, severe and critical COVID-19?, Patient.info

5

SNOMED CT Editorial Guide, SNOMED International

6

Clinical papers, including:

COVID-19: Gastrointestinal Manifestations and Potential Fecal-Oral Transmission

COVID-19 and the Cardiovascular System

Caution on Kidney Dysfunctions of COVID-19 Patients

Rhabdomyolysis as Potential Late Complication Associated with COVID-19

Neurological Manifestations of Hospitalized Patients with COVID-19 in Wuhan, China: A Retrospective Case Series Study

Dysregulation of Immune Response in Patients with COVID-19 in Wuhan, China

7

CHESS Daily Reporting, NHS, UK

8

COVID-19 - High Risk Shielded Patient List Identification Methodology - Clinical Inclusion Criteria, NHS, UK

2.4 Tests and Investigations

Laboratory testing for COVID-19 and the associated SARS-CoV-2 virus includes methods that detect the presence of the virus and antibodies produced in response to infection, in specimen samples taken from potentially infected individuals. Test and investigation data which can be recorded using SNOMED CT includes:

- Specimen
- Laboratory Tests
- Substances and Virus
- Laboratory Test Results
- Other Investigations

These data elements are described below, with example SNOMED CT subsets for each.
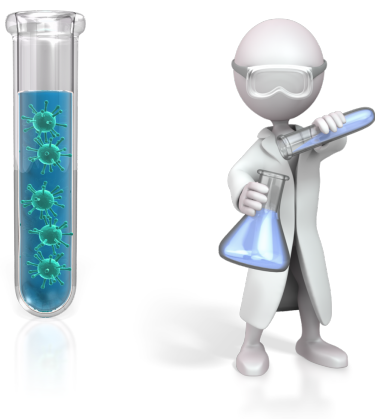
2.4.1 Specimen

Specimens are samples of substances taken from an individual for testing - for example 258500001 | Nasopharyngeal swab (specimen)| or 119339001 |Stool specimen (specimen)|. The following specimens may be relevant to COVID-19 testing in one or more countries affected by the virus.

CV19-INV-Specimen			
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**
697989009	Anterior nares swab (specimen)	Anterior nares swab	20140131
119297000	Blood specimen (specimen)	Blood specimen	20040731
258607008	Bronchoalveolar lavage fluid sample (specimen)	Bronchoalveolar lavage fluid sample	20080731
258606004	Lower respiratory sample (specimen)	Lower respiratory sample	20080731
258500001	Nasopharyngeal swab (specimen)	Nasopharyngeal swab	20080731
258411007	Nasopharyngeal aspirate (specimen)	Nasopharyngeal aspirate	20080731
258412000	Oropharyngeal aspirate (specimen)	Oropharyngeal aspirate	20080731
418564007	Pleural fluid specimen (specimen)	Pleural fluid specimen	20080731
122610009	Specimen from lung obtained by biopsy (specimen)	Specimen from lung obtained by biopsy	20080731
445447003	Specimen from trachea obtained by aspiration (specimen)	Specimen from trachea obtained by aspiration	20100731
119334006	Sputum specimen (specimen)	Sputum specimen	20080731
119339001	Stool specimen (specimen)	Stool specimen	20030731
472901003	Swab from nasal sinus (specimen)	Swab from nasal sinus	20130131
258529004	Throat swab (specimen)	Throat swab	20080731
122877000	Upper respiratory fluid specimen obtained by tracheal aspiration (specimen)	Upper respiratory fluid specimen obtained by tracheal aspiration	20040731
309164002	Upper respiratory swab sample (specimen)	Upper respiratory swab sample	20080731
122575003	Urine specimen (specimen)	Urine specimen	20080731
461911000124106	*Swab specimen from oropharynx (specimen)*	*Oropharyngeal swab*	*20200731*

2.4.2 Laboratory Tests

Laboratory tests can be performed to detect the presence of the COVID-19 virus and antibodies produced in response to this virus. The following SNOMED CT concepts can be used to record laboratory tests that may be performed during the investigation process.

CV19-INV-LaboratoryTests			
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**
444077007	Analysis using reverse transcriptase polymerase chain reaction technique (procedure)	Analysis using reverse transcriptase PCR	20100131
76978006	Enzyme-linked immunosorbent assay (procedure)	Enzyme-linked immunosorbent assay	20080731
30662005	Fluorescent immunoassay (procedure)	Fluorescent immunoassay	20020131
414464004	Immunoassay method (procedure)	Immunoassay method	20050131
122435008	Measurement of viral antibody (procedure)	Measurement of viral antibody	20100131

CV19-INV-LaboratoryTests			
9718006	Polymerase chain reaction analysis (procedure)	Polymerase chain reaction analysis	20080731
122433001	Viral antigen assay (procedure)	Viral antigen assay	20050131
118147004	Viral nucleic acid assay (procedure)	Viral nucleic acid assay	20020131
88667002	Viral serologic study (procedure)	Viral serologic study	20150131
1445431000168101	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 (observable entity)*	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2*	*20200731*
1454581000168100	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in bronchoalveolar lavage fluid (observable entity)*	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in bronchoalveolar lavage fluid*	*20200731*
1454411000168105	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in nasopharyngeal swab (observable entity)*	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in nasopharyngeal swab*	*20200731*
1454491000168101	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in oropharyngeal swab (observable entity)*	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in oropharyngeal swab*	*20200731*
1454561000168109	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in sputum (observable entity)*	*Detection of nucleic acid of severe acute respiratory syndrome coronavirus 2 in sputum*	*20200731*
1240511000000106	*Detection of severe acute respiratory syndrome coronavirus 2 using polymerase chain reaction (observable entity)*	*Detection of severe acute respiratory syndrome coronavirus 2 using polymerase chain reaction*	*20200731*
1240461000000109	*Measurement of severe acute respiratory syndrome coronavirus 2 antibody (observable entity)*	*Measurement of severe acute respiratory syndrome coronavirus 2 antibody*	*20200731*
1240471000000102	*Measurement of severe acute respiratory syndrome coronavirus 2 antigen (observable entity)*	*Measurement of severe acute respiratory syndrome coronavirus 2 antigen*	*20200731*

Please refer to 2.4.1 Extension Concepts - Tests and Procedures for a list of known extension concepts.

2.4.3 Substances and Virus

Please refer to 2.4.1 Extension Concepts - Tests and Procedures for a list of known extension concepts. An antibody is a protective protein produced by the immune system in response to the presence of a foreign substance, called an antigen. The following antibody/antigen and virus organism concepts can be used to record the focus of a COVID-19 investigation.

CV19-INV-SubstancesAndVirus			
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**
840535000	Antibody to severe acute respiratory syndrome coronavirus 2 (substance)	Antibody to SARS-CoV-2	20200131
840536004	Antigen of severe acute respiratory syndrome coronavirus 2 (substance)	Antigen of SARS-CoV-2	20200131
840533007	Severe acute respiratory syndrome coronavirus 2 (organism)	SARS-CoV-2	20200131
870361009	*Immunoglobulin G antibody to severe acute respiratory syndrome coronavirus 2 (substance)*	*SARS-CoV-2 IgG*	*20200731*
870362002	*Immunoglobulin M antibody to severe acute respiratory syndrome coronavirus 2 (substance)*	*SARS-CoV-2 IgM*	*20200731*

CV19-INV-SubstancesAndVirus			
1240411000000107	*Ribonucleic acid of Severe acute respiratory syndrome coronavirus 2 (substance)*	*Severe acute respiratory syndrome coronavirus 2 RNA*	*20200731*

2.4.4 Laboratory Test Results

Laboratory test results are used to specify whether the Laboratory test focus was detected or not detected following the conducted laboratory test. The following qualifier values may be used for this purpose.

CV19-INV-LabTestResults			
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**
260373001	Detected (qualifier value)	Detected	20020131
419984006	Inconclusive (qualifier value)	Inconclusive	20060131
260415000	Not detected (qualifier value)	Not detected	20020131
125154007	Specimen unsatisfactory for evaluation (finding)	Specimen unsatisfactory for evaluation	20020131
1240581000000104	*Severe acute respiratory syndrome coronavirus 2 detected (finding)*	*Severe acute respiratory syndrome coronavirus 2 detected*	*20200731*
1240591000000102	*Severe acute respiratory syndrome coronavirus 2 not detected (finding)*	*Severe acute respiratory syndrome coronavirus 2 not detected*	*20200731*

Please refer to 2.4.1 Extension Concepts - Tests and Procedures for a list of known extension concepts.

2.4.5 Other Investigations

Other investigative procedures - e.g. 719410009 |Consultation via video conference (procedure)| and 386472008 | Telephone consultation (procedure)| and 243791004 |Viral screening (procedure)| - may be performed to assess a COVID-19 patient. The following subset represents procedures that can be performed during the clinical assessment process.

CV19-INV-InvestigationProcedures
Intensional Definition:
< 386053000 |Evaluation procedure (procedure)| OR < 308335008 |Patient encounter procedure (procedure)| OR < 17636008 |Specimen collection (procedure)|

The following subset represents a collection of findings with context that may be related to these investigations and captured using SNOMED CT - for example 269944001 |Nasal swab taken (situation)| or 168331006 |Blood sent for virology (situation)|.

CV19-INV-InvestigationFindings
Intensional Definition:
< 313333008 |Sample obtained (situation)| OR < 168123008 |Sample sent for examination (situation)|

Please refer to 2.4.1 Extension Concepts - Tests and Procedures for a list of known extension concepts.


Footnotes

1

https://thenativeantigencompany.com/why-we-need-antigen-and-antibody-tests-for-covid-19/

2.5 Prevention, Treatment and Education

Preventing the potential spread of COVID-19 can involve a range of precautions, such as isolation and the wearing of personal protective equipment, and education to patients, healthcare workers and the broader community. Once COVID-19 is diagnosed, various treatments may be considered, together with education for the patient and their families/caregivers.

- Prevention
- Education
- Medication
- Administrative Procedures
- Therapeutic Procedures
- Treatment Findings
- Treatment Equipment

These data elements are described below, with example SNOMED CT subsets where applicable.
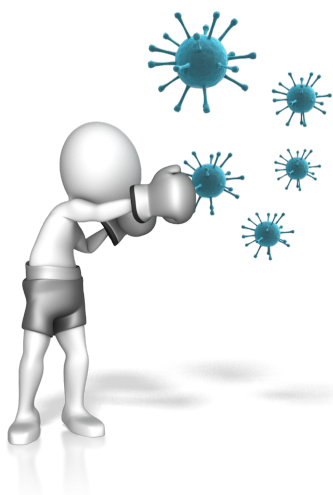
2.5.1 Prevention

Precautionary measures, such as 840534001 |SARS-CoV-2 vaccination|, 225368008 |Contact tracing|, and 170499009 |Isolation of infection contact (procedure)| are extremely important in the fight against infectious diseases such as COVID-19. The following preventative measures can be recorded using SNOMED CT.

CV19-PTE-PreventionProcedures			
Concept id	**Fully Specified Name**	**en-US Preferred Term**	**Effective Time**
409524006	Airborne precautions (procedure)	Airborne precautions	20040731
225368008	Contact tracing (procedure)	Contact tracing	20020131
409529001	Contact precautions (procedure)	Contact precautions	20040731
409525007	Respiratory secretion precautions (procedure)	Respiratory secretion precautions	20040731

CV19-PTE-PreventionProcedures			
77248004	Infection control procedure (procedure)	Infection control procedur	20020131
361235007	Isolation of infected patient (procedure)	Isolation of infected patient	20020131
170499009	Isolation of infection contact (procedure)	Isolation of infection contact	20020131
170500000	Isolation of infection carrier (procedure)	Isolation of infection carrier	20020131
840534001	Severe acute respiratory syndrome coronavirus 2 vaccination (procedure)	SARS-CoV-2 vaccination	20200309

2.5.2 Education

Education is an important aspect of preventing and managing COVID-19 infection. The following SNOMED CT concepts may be used to record this data.

CV19-PTE-Education			
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time
698608004	Hand washing education (procedure)	Hand washing education	20140131
385820004	Infection control education (procedure)	Infection control education	20100731
868263005	*Education about infectious disease (procedure)*	*Education about infectious disease*	*20200731*

Please refer to 2.5.1 Extension Concepts - Treatment and Education for a list of known extension concepts.

2.5.3 Medication

A number of countries are trialling the use of medication to treat COVID-19. Many of these medications can be found in the 373873005 |Pharmaceutical / biologic product (product)| hierarchy of SNOMED CT. However until there is sufficient evidence, the WHO is cautioning against associations recommending or administering these unproven treatments to patients with COVID-19 or people self-medicating with them[1]. For this reason, we have not included a medication subset at this time.

2.5.4 Administrative Procedures

Patients with severe symptoms or complications may require admission to hospital, or other administrative procedures. The following administrative procedures may be recorded using SNOMED CT.

CV19-PTE-AdministrativeProcedures			
Concept id	Fully Specified Name	en-US Preferred Term	Effective Time
183452005	Emergency hospital admission (procedure)	Emergency hospital admission	20020131
305376003	Admission to infectious diseases department (procedure)	Admission to infectious diseases department	20020131
305351004	Admission to intensive care unit (procedure)	Admission to intensive care unit	20020131
305360007	Admission to respiratory medicine department (procedure)	Admission to respiratory medicine department	20020131
32485007	Hospital admission (procedure)	Hospital admission	20020131
417005	Hospital re-admission (procedure)	Hospital re-admission	20020131

2.5.5 Therapeutic Procedures

Patients suffering from severe COVID-19 symptoms or complications may require a range of therapeutic procedures, many of them involving supportive care to help them breathe. The following therapeutic procedures may be recorded using SNOMED CT.

CV19-PTE-TherapeuticProcedures

Concept id	Fully Specified Name	en-US Preferred Term	Effective Time
40617009	Artificial respiration (procedure)	Artificial respiration	20020131
233573008	Extracorporeal membrane oxygenation (procedure)	Extracorporeal membrane oxygenation	20020131
447996002	Intubation of respiratory tract (procedure)	Intubation of respiratory tract	20110731
243141005	Mechanically assisted spontaneous ventilation (procedure)	Mechanically assisted spontaneous ventilation	20020131
428311008	Noninvasive ventilation (procedure)	Noninvasive ventilation	20080131
371908008	Oxygen administration by mask (procedure)	Oxygen administration by mask	20020731
371907003	Oxygen administration by nasal cannula (procedure)	Oxygen administration by nasal cannula	20020731
11140008	Respiratory assist, manual (procedure)	Respiratory assist, manual	20020131
829831000000100	*Insertion of fiducial marker into lung using computed tomography guidance (procedure)*	*Insertion of fiducial marker into lung using computed tomography guidance*	*20200731*

2.5.6 Treatment Findings

Clinical findings relating to the treatment required or used by a patient may be captured in a health record. The following treatment findings may be recorded using SNOMED CT.

CV19-PTE-TreatmentFindings

Concept id	Fully Specified Name	en-US Preferred Term	Effective Time
79031000119101	Dependence on respirator (finding)	Dependence on respirator	20150731
931000119107	Dependence on supplemental oxygen (finding)	Dependence on supplemental oxygen	20120731
444932008	Dependence on ventilator (finding)	Dependence on ventilator	20100731
763326004	Difficult mask ventilation (finding)	Difficult mask ventilation	20180731
419991009	Endotracheal tube present (finding)	Endotracheal tube present	20060131
405496006	Inability to ventilate patients lungs mechanically (finding)	Inability to ventilate patients lungs mechanically	20040131
22803001	Normal respiratory function (finding)	Normal respiratory function	20020131
718085007	Unable to intubate and unable to ventilate (finding)	Cannot intubate cannot ventilate	20160731
128258000	Ventilation finding (finding)	Ventilation finding	20020131
371825009	*Patient on oxygen (finding)*	*Patient on oxygen*	*20020731*
371820004	*Patient ventilated (finding)*	*Patient ventilated*	*20020731*

2.5.7 Treatment Equipment

Respiratory equipment includes those medical devices used to support breathing and respiratory function - for example

706173000 |Intensive-care ventilator (physical object)| , and 464328001 |Thoracic cannula (physical object)| .

CV19-PTE-TreatmentEquipment

Intensional Definition:
< 277973009 |Respiratory equipment (physical object)|
OR < 336589003 |Oxygen equipment (physical object)|
OR < 334943003 |Respiratory appliances (physical object)|
OR < 304077006 |Respiratory system device (physical object)|
OR < 706167001 |Anesthesia and respiratory device (physical object)|

Footnotes

1
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments

3. Mapping to ICD-10

The following map members from SNOMED CT to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (© World Health organisation 1994) 2016 Version are published (or will be published) in the SNOMED CT International Edition. These maps use ICD-10 codes identified in the WHO's Emergency use ICD codes for COVID-19 disease outbreak update [1].

SNOMED CT		ICD-10			
SNOMED CT Id	SNOMED CT Fully Specified Name	ICD-10 Code	ICD-10 Term	Map Advice	Effective Time
~~840539006~~ [2]	~~Disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)~~	~~U07.1~~	~~COVID-19, virus identified~~	~~POSSIBLE REQUIREMENT FOR ADDITIONAL CODE TO FULLY DESCRIBE DISEASE OR CONDITION~~	~~2020030 9~~
840546002	Exposure to Severe acute respiratory syndrome coronavirus 2 (event)	Z20.8	Contact with and exposure to other communicable diseases		2020030 9
1240581000 000104	*Severe acute respiratory syndrome coronavirus 2 detected (finding)*	*U07.1*	*COVID-19, virus identified*		*2020073 1*
840539006 [2]	*Disease caused by Severe acute respiratory syndrome coronavirus 2 (disorder)*	*U07.2*	*COVID-19, virus not identified COVID-19, NOS*	*POSSIBLE REQUIREMENT FOR ADDITIONAL CODE TO FULLY DESCRIBE DISEASE OR CONDITION	MAPPED FOLLOWING WHO GUIDANCE*	*2020073 1*

Footnotes

[1]
http://www9.who.int/classifications/icd/covid19/en/
[2]

Please note that the map from 840539006 |Disease caused by Severe acute respiratory syndrome coronavirus 2| to "U07.1" will be replaced with a map from 840539006 |Disease caused by Severe acute respiratory syndrome coronavirus 2| to "U07.2" in the July international release, in accordance with WHO guidance.

Appendix A - Example Subsets

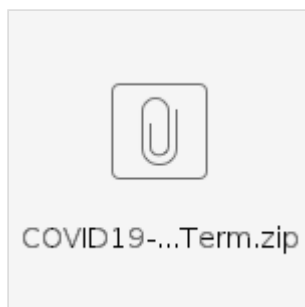The example SNOMED CT subsets included in this guide are available to download below in two formats:

- RF2 - This format uses the standard Simple Reference Set structure (except with the refsetId replaced with an alphanumeric identifier). Please download this format if you plan to upload the subsets into a terminology server. Please note that each refsetId should be replaced with a valid numeric identifier prior to upload.
- RF2+Terms - This format adds the US-english preferred term to each member of the subset. Please download this format if you plan to open the subsets directly (e.g. in a text editor or spreadsheet tool) for review.

Please read the important note below before downloading these subset files.

SNOMED CT Example COVID-19 Subsets (RF2):

COVID19-..._RF2.zip

SNOMED CT Example COVID-19 Subsets (RF2+Terms):

COVID19-...Term.zip

ⓘ **Important Note**

SNOMED International has created the SNOMED CT subsets in this guide to provide examples of SNOMED CT concepts that may be used to code a variety of COVID-19 related data elements.

These subsets have been guided by the collective needs and experiences of our SNOMED International Members, and may therefore contain concepts that are not appropriate for use in all countries, regions and use cases. Furthermore, they do not contain all SNOMED CT concepts required by every country, region and use case. As explained in 1.1 How to Use this Guide, these subsets should not be used in a production system without careful review and update to ensure that each subset fully meets the requirements of the intended use case. SNOMED International has provided these example subsets in good faith, and accepts no responsibility for how they are used. SNOMED International makes no guarantee that these subsets will be maintained moving forward after new releases of the SNOMED CT International Edition are published.

SNOMED International welcomes comments and suggestions about these subsets. Please use the Feedback button at the bottom of this page to send us your feedback.

Appendix B - Example Extension Content

The following pages include examples of COVID-19 extension content provided by a range of SNOMED International Members.

B.1 Extension Concepts - Provider and Facility Details

This page includes examples of SNOMED CT extension content for the subsets listed in 2.1 Provider and Facility Details.

Please note: This extension content should only be used in clinical systems that implement the relevant SNOMED CT Edition.

B.1.1 Healthcare Profession

No known extension concepts for this data element have been published for the COVID-19 use case.

B.1.2 Site of Care

The following extensions concepts have been published for this COVID-19 data element.

CV19-PRF-SiteOfCare			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
1454661000168105	COVID-19 Clinic and Testing Center (environment)	COVID-19 Clinic and Testing Centre	AU 20200331

B.1.3 Health Management Finding

No known extension concepts for this data element have been published for the COVID-19 use case.

B.1.4 Personal Protective Equipment

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2 Extension Concepts - Patient Demographics

This page includes examples of SNOMED CT extension content for the subsets listed in 2.2 Patient Demographics.

Please note: This extension content should only be used in clinical systems that implement the relevant SNOMED CT Edition.

B.2.1 Sex and Gender

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.2 Marital Status

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.3 Ethnic Group

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.4 Racial Group

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.5 Occupation

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.6 Foreign Travel History

The following extensions concepts for this data element have been created for the COVID-19 use case.

CV19-PAT-ForeignTravelHistory			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
1454671000168104	History of recent travel to high risk COVID-19 region (finding)	Recent travel to high risk COVID-19 region	AU 20200331

B.2.7 Residential Location Type

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.8 Next of Kin Relationship

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.9 Living Arrangements

No known extension concepts for this data element have been published for the COVID-19 use case.

B.2.10 Care and Support Circumstances

No known extension concepts for this data element have been published for the COVID-19 use case.

B.3 Extension Concepts - Clinical Assessment

This page includes examples of SNOMED CT extension content for the subsets listed in 2.3 Clinical Assessment.

Please note: This extension content should only be used in clinical systems that implement the relevant SNOMED CT Edition.

B.3.1 Symptoms

The following extension concepts have been created for this COVID-19 data element.

CV19-ASS-Symptoms			
Concept id	Fully Specified Name	National Preferred Term	Edition
64751000052105	*Loss of sense of smell and/or taste (finding)*	*nedsatt smak- och/eller luktsinne*	*SE 20200531*

B.3.2 Severity

No known extension concepts have been published for this COVID-19 data element.

However, the following related extension concepts have been published.

Severity procedures and observable entities			
Concept id	Fully Specified Name	National Preferred Term	Edition
1300681000000102	Assessment using coronavirus disease 19 severity scale (procedure)	Assessment using COVID-19 severity scale	UK 20200401
1300631000000101	Coronavirus disease 19 severity score (observable entity)	COVID-19 severity score	UK 20200401

B.3.3 Clinical Measurements

The following extension concepts have been created for this COVID-19 data element.

CV19-ASS-ClinicalMeasurements			
Concept id	Fully Specified Name	National Preferred Term	Edition
251000220105	National adult early warning system parameter ranges and scoring (observable entity)	National adult early warning system key	IE 20200421

In addition, the following extension concepts have been created for assessment scales.

Assessment Scale			
Concept id	Fully Specified Name	National Preferred Term	Edition
331000220106	Alert confusion voice pain unresponsive scale (assessment scale)	ACVPU scale	IE 20200421

B.3.4 Clinical Examination Findings

No known extension concepts have been published for this COVID-19 data element.

B.3.5 Diagnosis

The following extension concepts have been created for this COVID-19 data element.

CV19-ASS-Diagnosis			
Concept id	Fully Specified Name	National Preferred Term	Edition
1240751000000100	Coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 (disorder)	COVID-19	UK 20200401
1240761000000102	Suspected coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 (situation)	Suspected COVID-19	UK 20200401

B.3.6 Clinical History

No known extension concepts have been published for this COVID-19 data element.

B.3.7 Secondary Conditions and Complications

The following extensions concepts have been published for this COVID-19 data element.

CV19-ASS-SecondaryConditionsAndComplications			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
118901000146108	Acute respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Acute respiratory disease caused by severe acute respiratory syndrome coronavirus 2	NL 20200325
118911000146105	Gastroenteritis caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Gastroenteritis caused by severe acute respiratory syndrome coronavirus 2	NL 20200325
118921000146100	Suspected acute respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (situation)	Suspected acute respiratory disease caused by severe acute respiratory syndrome coronavirus 2	NL 20200325
119731000146105	*Cardiomyopathy due to infection by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Cardiomyopathy due to infection by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
119741000146102	*Conjunctivitis due to infection by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Conjunctivitis due to infection by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
119971000146105	*Disease due to infection by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Disease due to infection by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
119981000146107	*Dyspnea due to infection by severe acute respiratory syndrome coronavirus 2 (finding)*	*Dyspnea due to infection by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
119751000146104	*Fever due to infection by severe acute respiratory syndrome coronavirus 2 (finding)*	*Fever due to infection by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
119761000146101	*Infection of heart caused by severe acute respiratory syndrome coronavirus 2 (disorder)*	*Infection of heart caused by severe acute respiratory syndrome coronavirus 2*	*NL 20200925*
1240571000000101	Gastroenteritis caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Gastroenteritis caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240541000000107	Infection of upper respiratory tract caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Upper respiratory tract infection caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240531000000103	Myocarditis caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Myocarditis caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240521000000100	Otitis media caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Otitis media caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240551000000105	Pneumonia caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Pneumonia caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240561000000108	Encephalopathy caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Encephalopathy caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401

B.3.8 Risk Factors

No known extension concepts have been published for this COVID-19 data element.

However, the following related extension concepts have been published.

Risk Categories			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
1300591000000101	Low risk category for developing complication from coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 infection (finding)	Low risk category for developing complication from COVID-19 infection	UK 20200401
1300571000000100	Moderate risk category for developing complication from coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 infection (finding)	Moderate risk category for developing complication from COVID-19 infection	UK 20200401
1300561000000107	High risk category for developing complication from coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 infection (finding)	High risk category for developing complication from COVID-19 infection	UK 20200401

B.3.9 Comorbidities

No known extension concepts have been published for this COVID-19 subset.

B.3.10 Exposure Event

The following extension concepts have been published for this COVID-19 data element

CV19-ASS-ExposureEvent			
Concept id	Fully Specified Name	National Preferred Term	Edition
1240431000000 104	Exposure to severe acute respiratory syndrome coronavirus 2 infection (event)	Exposure to SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection	UK 20200401
1240441000000 108	Close exposure to severe acute respiratory syndrome coronavirus 2 infection (event)	Close exposure to SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection	UK 20200401

B.3.11 Covid-19 and Viral Co-Infections

No known extension concepts have been published for this COVID-19 data element.

Footnotes

1

https://pubmed.ncbi.nlm.nih.gov/?term=covid+19&filter=pubt.review

B.4 Extension Concepts - Tests and Investigations

This page includes examples of SNOMED CT extension content for the subsets listed in 2.4 Tests and Investigations.

Please note: This extension content should only be used in clinical systems that implement the relevant SNOMED CT Edition.

B.4.1 Specimen

No known extension concepts have been published for this COVID-19 data element.

B.4.2 Laboratory Tests

The following extensions concepts have been published for this COVID-19 data element.

CV19-INV-LaboratoryTests			
Concept id	Fully Specified Name	National Preferred Term	Edition
14454310001 68101	2019 novel coronavirus nucleic acid assay (procedure)	COVID-19 nucleic acid assay	AU 20200331
14544110001 68105	Nucleic acid assay of severe acute respiratory syndrome coronavirus 2 in nasopharyngeal swab specimen (procedure)	Nasopharyngeal swab COVID-19 nucleic acid assay	AU 20200331
14544910001 68101	Nucleic acid assay of severe acute respiratory syndrome coronavirus 2 in oropharyngeal swab specimen (procedure)	Oropharyngeal swab COVID-19 nucleic acid assay	AU 20200331
14545610001 68109	Nucleic acid assay of severe acute respiratory syndrome coronavirus 2 in sputum specimen (procedure)	Sputum COVID-19 nucleic acid assay	AU 20200331
14545810001 68100	Nucleic acid assay of severe acute respiratory syndrome coronavirus 2 in bronchoalveolar lavage fluid specimen (procedure)	Bronchoalveolar lavage fluid COVID-19 nucleic acid assay	AU 20200331
14546510001 68108	COVID-19 serology (procedure)	COVID-19 serology	AU 20200331

CV19-INV-LaboratoryTests			
12405110000 00106	Detection of severe acute respiratory syndrome coronavirus 2 using polymerase chain reaction technique (procedure)	Detection of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) using polymerase chain reaction technique	UK 20200401
12404610000 00109	Measurement of severe acute respiratory syndrome coronavirus 2 antibody (procedure)	Measurement of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) antibody	UK 20200401
12404710000 00102	Measurement of severe acute respiratory syndrome coronavirus 2 antigen (procedure)	Measurement of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) antigen	UK 20200401
12407410000 00103	Severe acute respiratory syndrome coronavirus 2 serology (observable entity)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) serology	UK 20200401

In addition, the following extension concepts for laboratory test related situations.

CV19-INV-LaboratoryTestSituations			
Concept id	Fully Specified Name	National Preferred Term	Edition
132104100000 0101	Self-taking of swab for severe acute respiratory syndrome coronavirus 2 offered (situation)	Self-taking of swab for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) offered	UK 20200401
132105100000 0103	Swab for severe acute respiratory syndrome coronavirus 2 taken by healthcare professional (situation)	Swab for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) taken by healthcare professional	UK 20200401
132103100000 0105	Swab for severe acute respiratory syndrome coronavirus 2 taken by subject (situation)	Self-taken swab for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401

B.4.3 Substances and Virus

The following extensions concepts have been published for this COVID-19 data element.

CV19-INV-SubstancesAndVirus			
Concept id	Fully Specified Name	National Preferred Term	Edition
124040100000 0105	Antibody to severe acute respiratory syndrome coronavirus 2 (substance)	Antibody to SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
124039100000 0107	Antigen of severe acute respiratory syndrome coronavirus 2 (substance)	Antigen of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
124041100000 0107	Ribonucleic acid of severe acute respiratory syndrome coronavirus 2 (substance)	Ribonucleic acid of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
124042100000 0101	Serotype severe acute respiratory syndrome coronavirus 2 (qualifier value)	Serotype SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
124038100000 0105	Severe acute respiratory syndrome coronavirus 2 (organism)	SARS-CoV-2 - severe acute respiratory syndrome coronavirus 2	UK 20200401

B.4.4 Laboratory Test Results

The following extensions concepts have been published for this COVID-19 data element

CV19-INV-LaboratoryTestResults			
Concept id	Fully Specified Name	National Preferred Term	Edition
13007210000001 09	Coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 confirmed by laboratory test (situation)	COVID-19 confirmed by laboratory test	UK 20200401

CV19-INV-LaboratoryTestResults			
1300731000000106	Coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 confirmed using clinical diagnostic criteria (situation)	COVID-19 confirmed using clinical diagnostic criteria	UK 20200401
1321121000000107	Coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 excluded using clinical diagnostic criteria (situation)	COVID-19 excluded using clinical diagnostic criteria	UK 20200401
1321111000000101	Coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 excluded by laboratory test (situation)	COVID-19 excluded by laboratory test	UK 20200401
1240581000000104	Severe acute respiratory syndrome coronavirus 2 detected (finding)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) detected	UK 20200401
1240591000000102	Severe acute respiratory syndrome coronavirus 2 not detected (finding)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) not detected	UK 20200401

B.4.5 Other Investigations

The following extensions concepts have been published for this COVID-19 data element.

CV19-INV-OtherInvestigation			
Concept id	Fully Specified Name	National Preferred Term	Edition
1300681000000102	Assessment using coronavirus disease 19 severity scale (procedure)	Assessment using COVID-19 severity scale	UK 20200401
1320971000000102	Taking of swab for severe acute respiratory syndrome coronavirus 2 (procedure)	Taking of swab for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401
1240451000000106	Telephone consultation for suspected severe acute respiratory syndrome coronavirus 2 (procedure)	Telephone consultation for suspected SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2)	UK 20200401

In addition, the following extension concepts related to investigation situations have been published.

Other Investigation Situations			
Concept id	Fully Specified Name	National Preferred Term	Edition
1321221000000103	Consultation via video conference not available (situation)	Consultation via video conference not available	UK 20200401

Footnotes

[1]
https://thenativeantigencompany.com/why-we-need-antigen-and-antibody-tests-for-covid-19/

B.5 Extension Concepts - Prevention, Treatment and Education

This page includes examples of SNOMED CT extension content for the subsets listed in 2.5 Prevention, Treatment and Education.

Please note: This extension content should only be used in clinical systems that implement the relevant SNOMED CT Edition.

B.5.1 Prevention

The following extensions concepts have been published for this data element.

CV19-PTE-PreventionProcedures			
Concept id	Fully Specified Name	National Preferred Term	Edition

CV19-PTE-PreventionProcedures

1321161000000104	Household isolation to prevent exposure of community to contagion (procedure)	Household isolation to prevent exposure of community to contagion	UK 20200401
1321141000000100	Reverse isolation of household to prevent exposure of uninfected subject to contagion (procedure)	Shielding of household to prevent exposure of uninfected subject to contagion	UK 20200401
1321151000000102	Reverse self-isolation of uninfected subject to prevent exposure to contagion (procedure)	Shielding of uninfected subject to prevent exposure to contagion	UK 20200401
1321131000000109	Self-isolation to prevent exposure of community to contagion (procedure)	Self-isolation to prevent exposure of community to contagion	UK 20200401
1240491000000103	Severe acute respiratory syndrome coronavirus 2 vaccination (procedure)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination	UK 20200401
1321231000000101	Signposting to coronavirus disease 19 Home Management Service (procedure)	Signposting to CHMS (COVID-19 Home Management Service)	UK 20200401
1321061000000100	Signposting to National Health Service online isolation note service (procedure)	Signposting to NHS online isolation note service	UK 20200401

In addition, the following extension concepts for prevention-related situations have been published.

Prevention Situations			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
1240681000000103	Severe acute respiratory syndrome coronavirus 2 vaccination not done (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination not done	UK 20200401
1240701000000101	Severe acute respiratory syndrome coronavirus 2 vaccine not available (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccine not available	UK 20200401
1240781000000106	Severe acute respiratory syndrome coronavirus 2 vaccination invitation short message service text message sent (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination invitation short message service text message sent	UK 20200401
1240651000000109	Severe acute respiratory syndrome coronavirus 2 vaccination declined (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination declined	UK 20200401
1240661000000107	Severe acute respiratory syndrome coronavirus 2 vaccination contraindicated (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination contraindicated	UK 20200401
1240671000000100	Severe acute respiratory syndrome coronavirus 2 vaccination not indicated (situation)	SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination not indicated	UK 20200401

And, the following extension concepts for prevention-related findings have been published.

Prevention Findings			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**
1240631000000102	Did not attend severe acute respiratory syndrome coronavirus 2 vaccination (finding)	Did not attend SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination	UK 20200401
1321071000000107	Has National Health Service digital isolation note (finding)	Has NHS digital isolation note	UK 20200401
1240601000000108	High priority for severe acute respiratory syndrome coronavirus 2 vaccination (finding)	High priority for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) vaccination	UK 20200401
1321091000000106	Household isolation note issued to patient (finding)	Household isolation note issued to patient	UK 20200401
1321081000000109	Self-isolation note issued to patient (finding)	Self-isolation note issued to patient	UK 20200401

B.5.2 Education

The following extension concepts have been published for this data element.

CV19-PTE-EducationSituation			
Concept id	**Fully Specified Name**	**National Preferred Term**	**Edition**

CV19-PTE-EducationSituation

124073100000 0107	Advice given about severe acute respiratory syndrome coronavirus 2 by telephone (situation)	Advice given about SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) by telephone	UK 20200401
124072100000 0105	Advice given about severe acute respiratory syndrome coronavirus 2 infection (situation)	Advice given about SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection	UK 20200401
124071100000 0104	Educated about severe acute respiratory syndrome coronavirus 2 infection (situation)	Educated about SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection	UK 20200401
132117100000 0106	Provision of advice, assessment or treatment limited due to coronavirus disease 19 caused by severe acute respiratory syndrome coronavirus 2 pandemic (situation)	Provision of advice, assessment or treatment limited due to COVID-19 pandemic	UK 20200401

B.5.3 Medication

No known extension concepts for this data element have been published for the COVID-19 use case.

B.5.4 Therapeutic Procedures

The following extension concepts have been published for this data element.

CV19-PTE-EducationSituation

Concept id	Fully Specified Name	National Preferred Term	Edition
311000220101	National adult early warning system bedside response (procedure)	National early warning system bedside response	IE 20200421
301000220104	National adult early warning system emergency response (procedure)	NEWS emergency response	IE 20200421

B.5.5 Treatment Findings

No known extension concepts for this data element have been published for the COVID-19 use case.

B.5.6 Treatment Equipment

No known extension concepts for this data element have been published for the COVID-19 use case.