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| Directorate / Programme | Data Services | Area | Terminology and Classifications Development Service |
| Document Reference | **SCCI0034** | | |
| Head | Lynn Bracewell | Status | Final |
| Owner | Lynn Bracewell | Version | 2.0 |
| Author | Denise Downs | Version issue date | **07/05/2020** |

# SCCI0034 SNOMED CT

## Implementing the standard

**A range of materials on SNOMED CT are also available from NHS Digital.**

# Document Management

## Revision History

| Version | Date | Summary of Changes |
|---|---|---|
| 1.1 | 25/02/2020 | Update to address broken links and issues raised by implementers since ver 1.0 |
| 1.2 | 18/03/2020 | Updates to reflect reviewer comments |
| 2.0 | 07/05/2020 | Final version, taking account of reviewer comments. |
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## Reviewers

This document must be reviewed by the following people:

| Reviewer name | Title / Responsibility | Date | Version |
|---|---|---|---|
| Pete Turnbull | Principal Terminology Specialist | 18/03/2020 | 1.2 |
| Karen Grimshaw | Terminology Implementation Specialist | 18/03/2020 | 1.2 |
| Tracy Simmonite | Terminology Implementation Specialist | 18/03/2020 | 1.2 |
| Data Coordination Board publication | Final review | 21/04/2020 | 2.0 |
| | | | |

## Approved by

This document must be approved by the following people:

| Name | Signature | Title | Date | Version |
|---|---|---|---|---|
| Lynn Bracewell | | Head of Terminology and Classifications Development Service | 16/03/2020 | 2.0 |
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SCCI Standardisation Committee for Care Information

This information standard (SCCI0034) has been approved for publication by the Department of Health under section 250 of the Health and Social Care Act 2012.

Assurance that this information standard meets the requirements of the Act and is appropriate for the use specified in the specification document has been provided by the Standardisation Committee for Care Information (SCCI), a sub-group of the National Information Board.

This information standard comprises the following documents:

- Requirements Specification
- Implementation Guidance
- Change Specification.

An Information Standards Notice (SCCI0034 Amd 35/2016) has been issued as a notification of use and implementation timescales. Please read this alongside the documents for the standard.

The controlled copies of these documents can be found on the NHS Digital website. Any copies held outside of that area, in whatever format (e.g. paper, email attachment), are considered to have passed out of control and should be checked for currency and validity.

Date of publication: 7 May 2020

**NOTE:** From 1 February 2023, Delen - the information sharing and collaboration platform for Terminology and Classifications products, has migrated from https:///hscic.kahootz.com to https://nhsengland.kahootz.com. URLs in this document have been corrected to ensure continuity of access. No other changes have been made.

# Glossary of Terms

| Term / Abbreviation | What it stands for |
|---|---|
| CTV3 | Clinical Terms version 3; also known as Read v3. CTV3 was developed as part of the Clinical Terms project and extended the content from Read v2. This is a clinical terminology that provides the vocabulary for electronic record systems. CTV3 provided over 60% of the original SNOMED CT content. CTV3 is now a deprecated standard. |
| EHR | Electronic Health Record. Also referred to as the EPR (electronic patient record) |
| FSN | Fully specified name. The fully specified name is one of the Concept descriptions, is unambiguous and provides the point of reference for the meaning of the concept. Every concept has a FSN. |
| GPES | The General Practice Extraction Service; collects information from general practice (GP) clinical systems in England and forms part of NHS Digital's GP Collections service. |
| GPSoC | GP Systems of Choice. GP Systems of Choice (GPSoC) was a contractual framework to supply IT systems and services to GP practices and associated organisations in England. The GPSoC Framework ended on 31 March 2018, when a continuity agreement was agreed, to ensure that the essential core services from GPSoC remain available until a replacement GP IT Framework is in place. Details of the new framework can be found under Future GP IT systems and services. |
| ICD-10 | The World Health Organisation's (WHO) International Statistical Classification of Diseases and Related Health Problems – Tenth Revision is an existing NHS Information Standard - SCCI 0021: ICD-10 5th Edition. |
| IHTSDO | International Health Terminology Standards Development Organization. IHTSDO is a not-for-profit organisation that owns, administers and develops SNOMED CT; the UK is a founder member of the IHTSDO. IHTSDO now operates under SNOMED International. |
| Clinical Classifications Service | The Clinical Classifications Service is part of the Data, Insights and Statistics Directorate within NHS Digital. The service manages, maintains and provides national guidance on OPCS-4 and the version of ICD-10 implemented in the UK. |
| PBCL | The Pathology Bounded Code List (formerly known as the Laboratory Messaging Subset) provides a defined or bounded subset of Read codes for use in lab to GP messaging. |
| OPCS-4 | The Classification of Interventions and Procedures, formerly from the Office of Population Censuses and Surveys. Version 4 |
| QOF | Quality Outcomes Framework, the annual reward and incentive programme detailing GP practice achievement results |
| Read v2 | Read v2 is the terminology developed in the UK for primary care systems; it provides the clinical vocabulary for electronic systems. |
| RF1 | Release Format 1. The file structure specified by the IHTSDO for the files used to distribute SNOMED CT content in 2002. |
| RF2 | Release Format 2. The file structure specified by the IHTSDO for files used to distribute SNOMED CT content from 2011. |

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|---|---|
| SCCI | Standardisation Committee for Care Information, SCCI replaced the previous Information Standards Board ISB and issues ISNs (Information Standards Notices) |
| SNOMED CT | SNOMED CT is the clinical vocabulary for use in electronic record solutions in health and care. SNOMED CT has been adopted as the standard clinical terminology for the NHS in England. A standard clinical terminology is essential for the interoperability of electronic health records. Earlier legacy terminologies in use are The Read Codes Version 2 and Clinical Terms Version 3 (The Read Codes) |
| TRUD | Technology Reference data Update Distribution site; this distribution site for NHS Digital which provides the SNOMED CT release files as well as SNOMED CT derivative products and tools. |
| UKTC | The UK Terminology Centre. The Centre is now known as the Terminology and Classifications Service within NHS Digital and it manages, maintains and provides guidance on the use of terminology within the UK. |

# Contents

# 1 Introduction

***Note**. This document should be read alongside the Product Specification. Further guidance on SNOMED CT can be found on the NHS Digital webpages.*

**Why has this document been updated?**

The requirement to enable all health and care systems to use SNOMED CT by 1st April 2020, as specified in SCCI0034, has not changed. The ability to flow patient data electronically and safely between health and care systems remains a high priority. Since December 2019, this objective has been achieved in General Practice. However, the requirement to enable SNOMED CT content in Secondary, Dentistry and Optometry care systems by 1st April 2020 is still be fully achieved; although we appreciate many providers have SNOMED CT enabled EPR systems in place.

Recognising this is the case, the NHS Digital Terminologies Delivery Service has gained approval from the Data Coordination Board, supported by NHSX, to provide an uplift to the key and supporting documentation to enable further progress of SNOMED CT implementation across health and care systems.

The information in this document has been refreshed to ensure links to current guidance and information is correct; clarifications have been made based on feedback from those systems that have adopted SNOMED CT; additional advice, where necessary, has been provided on the support available to help implementation.

It is expected that all secondary, optometry and dentistry service providers will have detailed plans in place with an associated implementation schedule for SNOMED CT **by December 31st 2020.** These will be required by NHSX/NHS England and NHS Improvement as part of provider planning activity.

## 1.1 Overview

SNOMED CT is the fundamental standard for healthcare terminology. SNOMED CT provides the vocabulary for recording structured data in electronic records that relate to the health and care of an individual; it provides the clinical terms clinicians need to record to communicate key information to other clinicians. As such its use in systems is wide ranging and thus account of the standard will be needed in **all** systems that are used in the direct management of the health and care of individuals.

SNOMED CT enables standard meaningful clinical phrases to be recorded and understood by the user, as well as enabling sophisticated interpretation by the computer. It provides features that enable decision support functionality, powerful analytics and a high level of expressivity of information about the health and care of an individual; reporting and data extraction solutions need to be able to take account of SNOMED CT encoded data. The use of SNOMED CT will also enable data exchange in a safe and managed way between different systems in the health and care environment.

SNOMED CT is provided as a set of data files: to implement the standard requires these data files to be incorporated into the electronic system such as the Electronic Patient Record system:

- if the system is provided by a vendor then SNOMED CT needs to be specified as a requirement of the solution;
- if the system is in-house, the internal development team needs to utilise SNOMED CT in the solution.

This may either be the full set of SNOMED CT or a subset of SNOMED CT.

As a fundamental standard, SNOMED CT will be required in other approved information standards. New standards such as data collections, message specifications, and information standards will have to use SNOMED CT as the source content for data items that relate to the health and care of an individual. These items include data such as diagnosis, procedures, symptoms and interventions; further details are provided in Sections 4 and 8.

It should be noted that implementation dates in this standard are for the minimum set of data items (where currently held in the system) listed in Section 8.5.4; however, other standards may have requirements over and above these which will be expressed in the individual standards and/or collections with their required implementation date. The NHS Data Model and Dictionary provides a comprehensive list of all the data items that are specified to utilise SNOMED CT for their content across all the NHS standards.

The priority for the NHS over the next 2 years is interoperability and the seamless exchange of data; this is critical to reduce unnecessary burden through repeated data entry of the same data; to enable extraction of data from the EPR for national data collections; while also enabling the increase of decision support in systems to provide better patient care. It is expected that use of SNOMED CT in systems will increase in sophistication over the next few years as its use becomes intrinsic to all electronic health and care systems. System providers should take account of this in their development roadmap.

## 1.2 Purpose of Document

This document aims to provide a general understanding of SNOMED CT and the requirements in relation to its effective implementation in systems. It is provided to support the Information Standards Notice (ISN) for SNOMED CT as the mandated standard for terminology within health and care systems in England.

While its prime role is to support those with responsibility to meet the ISN (e.g. procurement, roll-out and systems suppliers), it also provides a general overview of SNOMED CT.

This document alone will not provide all the information required; its aim is to give an overview and to signpost additional materials providing greater detail. This will ensure that individuals can access the most up to date information.

SNOMED CT is an international standard, managed by SNOMED International (also known as the International Health Terminology Standards Development Organisation - IHTSDO). SNOMED International provide extensive documentation on SNOMED CT; this document augments the international documents with specific UK requirements as well as signposting key aspects that need to be addressed within UK implementations.

## 1.3 Document Scope

This document addresses the UK Edition of SNOMED CT.

For convenience the document refers to the electronic health record (EHR), but SNOMED CT provides content for care in its widest sense including social care requirements.

The UK Drug Extension is derived from the dictionary of medicines and devices (dm+d): it provides additional content such as relationships to concepts in the clinical extension and additional concepts such as Trade Family names; and omits some attributes such as price. The UK Drug Extension is part of the UK Edition and thus included within this document. dm+d is a separate standard SCCI 0052 with its own implementation guidance; anyone

requiring specific details in relation to medicines and devices should also consult documentation on the dm+d standard.

## 1.4 Audience

This document aims to address the needs of those with responsibility for ensuring the effective adoption of the fundamental standard SNOMED CT, as well as for those who will subsequently utilise the standard. Specific details on applicability of the standard can be found in the Information Standards Notice.

As such this document includes information for those responsible for policy, procurement, commissioning of care, audit, development of software solutions, analysis and training; whether they are receiving, sending, processing data or producing specifications.

It applies to all NHS organisations, arm's length bodies, commissioners of care for the NHS, and to all providers of care for the NHS. Private patient care in private organisations may use the standard; where the flow of information for the direct management of patient care comes into the NHS then they must use this standard. Its use in social care is also under active discussion. SNOMED CT is provided under licence but there is no fee for its deployment within the UK; for more information see the section on licensing.

It is planned that specific sections of this document will be of interest to a range of individuals including clinicians, developers, information analysts, business analysts and those procuring solutions that state requirements in relation to SNOMED CT.

It is not expected that everyone reads every Section and so each is written to stand alone with its own references to relevant further information. Inevitably this introduces some repetition of content.

## 1.5 Terminology and Classifications Service

The Terminology and Classifications Service within NHS Digital manages the UK Edition of SNOMED CT and represents the UK within SNOMED International (the organisation that manages and maintains SNOMED CT internationally). The Terminology and Classifications Development Service authors and makes changes to content on behalf of the UK as well as providing the releases that constitute the data files of the terminology; external governance is provided by the UK Strategy Board, which includes representation from England, Scotland, Wales and Northern Ireland.

NHS Digital provide implementation support on SNOMED CT for both system/app developers and healthcare providers.

NHS Digital provides a number of education and training resources to support organisations who wish to use SNOMED CT within their systems and products.

If after reading this guide you require further advice please contact the terminology helpdesk by emailing information.standards@nhs.net.

# 2 Background

It is widely acknowledged that an electronic health record (EHR) is essential to meeting the increased challenges for healthcare professionals to provide effective care. Examples of improved resource management and improved decision making when electronic records are available are already in evidence. When clinically relevant data can also be processed by the computer and the data shared between systems without loss of meaning or understanding, additional gains such as drug alerts, graphing of test results, triggering completion of an assessment form, pre-populating a clinical letter, can also be achieved. To attain such processing of data requires that clinically relevant data is captured in a nationally consistent way through the use of a single national vocabulary within an electronic record system.

SNOMED CT provides such a vocabulary; it provides clinical phrases for capturing relevant aspects of health and care by all clinical and care professionals across all specialties. SNOMED CT is much more than a vocabulary of clinical phrases; it provides additional information and features that support more sophisticated reporting, electronic decision making and enables the incorporation of business rules and process management within systems. SNOMED CT is known as a **terminology** and is currently the only international terminology available with the capability to support the requirements of all our health and care professions for EHRs.

SNOMED CT is owned and managed by SNOMED International *(also known as the IHTSDO*[1]). The UK is one of the founder members of the organisation and continues to work collaboratively as a member to support the international maintenance and adoption of SNOMED CT. SNOMED International currently has 39 member countries (February 2020) who contribute to its development and use within their own health environments; this number is increasing year on year.

SNOMED CT was first stated as the national standard in 2001 and has been re-enforced as the national standard in all subsequent strategies and policy documents. It is one of the five priority standards[2] to be implemented as part of the electronic health record and is documented as an action within the policy document: 'Personalised Health and Care 2020: a framework for action[3]' published by the National Information Board[4] (NIB). The ability to meet requirements in future national information standards, interoperability programmes and data collections will require systems to have adopted SNOMED CT.

[1] www.ihtsdo.org
[2] https://www.england.nhs.uk/wp-content/uploads/2015/03/item9-board-260315.pdf
[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384650/NIB_Report.pdf
[4] https://www.gov.uk/government/organisations/national-information-board

# 3 Implementing the standard

Implementation of the standard must be undertaken as part of undertaking *paperless at the point of care*. The national requirement for structured records that support the health and care of an individual and allow data to be transferred between systems **must** be implemented using this fundamental standard for clinical content. As such the standard is required in a wide range of applications, not restricted to but including:

- The electronic patient record system
- Electronic health records
- Electronic care plans
- Specialist systems such as Cancer MDT systems
- Decision support tools
- Clinical Knowledge Resources
- Clinical Guidance
- Care Pathways
- Messages between care solutions.

To achieve implementation, health care providers **must** specify in the solutions they procure or develop in-house the requirement for the clinical vocabulary within that system to be provided by SNOMED CT. Development of a local dictionary is both wasteful of resource but requires new staff to learn alternative terms and structure while preventing electronic records being communicated outside the enterprise without some process of mapping which inevitably introduces clinical risk. The requirement for interoperability is part of national policy.

As well as requiring SNOMED CT in all systems within the organisation that relate to the health and care of an individual, it will also require that reporting and analysis tools can utilise features provided by SNOMED CT so that benefits over and above straight lexical matching can be undertaken for data extraction and reporting.

In overview, adoption of SNOMED CT means:

- The end user can enter data using terms from within SNOMED CT;
- Data can be communicated outside the organisation and received by systems within the organisation with appropriate data items coded using SNOMED CT;
- National query specifications written using SNOMED CT can be processed by the system;
- National guidance such as the interventions to be undertaken can be expressed consistently using SNOMED CT.

The implementation approach within systems, design of the user interface and utilisation of the features of SNOMED CT may vary between applications. The requirements section (8) in this document provides aspects to consider when developing or procuring solutions that utilise SNOMED CT and Section 9 aims to provide information for those developing systems to consider. Section 11 provides a look at different solutions that already incorporate SNOMED CT.

It is not possible to provide a detailed step-by-step guide on implementation; however Section 6 outlines a structured set of questions to assist the decision making for those required to implement the standard in their organisation; Chapter 7 provides a set of questions to help developers adopt SNOMED CT within the solutions they provide. This document highlights aspects for consideration by those procuring solutions or those developing solutions that must incorporate this standard.

NHS Digital are currently developing a set of blueprints; these capture the lessons learnt in General Practice, Secondary Care and Mental Health. These will be published on the NHS Digital product pages for SNOMED CT.

# 4 An Overview of SNOMED CT

## 4.1 Why do we need a common national terminology

Most electronic systems provide a pre-existing list for data entry for particular data items the system requires, for example Title, Country of residence, their product catalogue. Such lists are provided for many reasons: for example they can speed up data entry; they can eliminate typographical errors; and for something like ordering a product they ensure consistency and clarity on which product is being ordered.

For similar reasons, in electronic health record systems if say diagnosis was entered as free text, it is questionable whether the computer could interpret and thus process the response with a high degree of confidence. While clinical language is more predictable, any interpretation by a computer would still need confirmation by the user if just free text is allowed; even web search engines often respond with '*did you mean xyz'*. In clinical systems we require a very high level of confidence that the computer can interpret correctly what has been written. It is therefore necessary that clinical content for data items such as diagnosis, procedure, allergies, medications, family history etc. is selected from a pre-defined vocabulary. If data is to be shared between different care professionals and/or across different systems, it is essential that the same vocabulary is used throughout the health and care estate.

Electronic health records will only be able to meet expectations nationally in terms of data exchange and supporting the end user in their care of the patient (for example through decision support and access to knowledge resources) if all systems use a common single national terminology. It has been determined for the NHS in England that this is SNOMED CT. While only mandated in England, its use is encouraged by all the UK countries.

## 4.2 What does the terminology provide

The clinical phrases (known as clinical terms) that a health care professional would want to record in a patient record in relation to aspects of their care are provided within the terminology. In addition, the different phrases used by clinicians to refer to the same thing are accommodated by providing for multiple terms (i.e. text descriptions) linked to the same clinical **concept**. The clinical concepts provided cover a wide range of data including diagnoses, clinical findings and observations, anatomy, procedures, medicines and devices, causes of disease as well as administrative terms such as 'Did not attend'. All terms authored within the terminology must have evidence of use in clinical care and unambiguously represent clinical thoughts. They must have national relevance and in many cases they are internationally relevant; the UK has the ability to add clinical terms that are relevant to the UK only, such as for national screening programmes.

Terms within the SNOMED CT terminology range from things like *left* and *right*, *leg*, *leg ulcer*, *blood pressure*, *appendicitis*, *appendicectomy* to very specific diseases such as *von Recklinghausen's bone disease* and *cochlear Ménière syndrome*. These illustrate just a few of the terms within SNOMED CT but hopefully illustrate the depth and breadth of the terminology.

In the previous section we highlighted that a terminology was more than just a dictionary of clinical terms and concepts. In addition SNOMED CT contains relationships between the clinical concepts: for example toe is-a foot structure, Ménière's disease is-a peripheral vertigo which is-a labyrinthine disorder. These relationships enable systems to provide users with a powerful mechanism to select patients according to the criteria they are looking for, for

 

example when searching for all stroke patients, a patient with a diagnosis of *infarction of basal ganglia* will be matched as the terminology 'knows' this is a type of stroke.

In addition to these relationships, the terminology also holds other information: for example that *appendicitis* has a finding-site of '*appendix structure'* and that the associated morphology is '*inflammation'*; that carpal tunnel syndrome has a finding site of '*median nerve at wrist*' and an associated morphology of '*entrapment with compression'*. These are known as attribute relationships or defining relationships.

Relationships (is-a and attribute) enable sophisticated processing by software that can support decision support as well as reporting. As systems become more mature, the terminology will also enable the expression of complex health scenarios by combining the different clinical phrases: for example the *first episode* of a *severe* myocardial infarction.

So the terminology provides software systems with a comprehensive vocabulary for use in the application (for example the EHR). In addition relationships within the terminology support how that vocabulary may be made visible to the user (e.g. all procedures) and also provides a powerful mechanism for identifying patients for a particular requirement (e.g. all stroke patients). To the end user, the terminology may be just a long list of data but there are applications available called browsers that enable a user to search through the terminology and examine the relationships that link the clinical phrases. Some systems also use these relationships to help the end user ensure they have the right term(s) for the activity they are undertaking (e.g. entering data or searching for patients).

In healthcare, different clinicians may use a different clinical phrase to another, yet mean the same thing. SNOMED CT supports this by allowing more than one clinical term for the same clinical 'thought' or **concept**. For example, if you searched for all patients who have had chicken pox in the last 12 months, you would also pick up patients who have been recorded with Varicella. There is one preferred term for each concept and optionally one or more synonyms. SNOMED CT also contains nationally common abbreviations such as COPD, though never without being expanded in full (this means when data is transferred it is still interpreted correctly).

So a terminology at its simplest provides a dictionary of clinical terms for use in clinical applications, but contains many features that enable sophisticated management and processing of patient data.

## 4.3 What content does SNOMED CT provide

SNOMED CT evolved from the legacy terminologies: *the Read codes* and was combined with SNOMED RT in the USA. The work undertaken in the 1990's as part of the UK clinical terms project was brought into SNOMED CT. As such, the content within SNOMED CT has been under development and actively maintained for over 30 years. Since then efforts both nationally and internationally have expanded content and kept content current. As interest has increased significantly over the last few years a number of clinical volunteers representing their professional body have supported content development to ensure SNOMED CT meets their requirements. The work being undertaken by the World Health Organisation (WHO) to develop ICD-11 has also resulted in enhancing the terminology. This means that for most clinical specialties SNOMED CT provides the required clinical terms and work is ongoing to ensure the content remains current and relevant.

Individuals may also directly request content. The terminology Service also receives content requests relating to NICE guidelines, NHS England policy directives, PHE vaccinations and programmes to ensure appropriate clinical concepts are available.

SNOMED CT provides content to support all health and care professions, and all clinical specialties. A number of clinical specialties in the UK have created subsets of the clinical terms (terms identified from within SNOMED CT that are relevant to the specialty) to highlight to their members terms to be used. Some systems also enable these subsets to be available as part of the approach for data entry. The number of these is growing as the professional bodies develop their strategy for standard record keeping. To illustrate the diversity here are just some clinical specialties that have engaged: renal, rheumatology, thoracic, paediatrics, gastroenterology, dietetics, speech and language, orthopaedics, occupational therapy, physiotherapy, ophthalmology, cosmetic surgery, pathology, urology, cardiology, radiology, dentistry, oncology.

For further information on subsets available nationally please refer to YouTube video 'Introduction to Subsets' and the Data Dictionary for Care which provides a searchable repository of all the national subsets.

The data items that can be captured using SNOMED CT currently vary from system to system and standard to standard. For example those items currently prioritised by the Transfer of Care programme for eDischarge letters include diagnosis, procedures/interventions (including therapeutic), allergies and medications; those highlighted by MHSDS include interventions, diagnosis, outcome measures and observations.

## 4.4 Pre and post coordination

It is undesirable for every single possible clinical phrase to be authored within the terminology; this would increase the content within the terminology considerably and thus the results of data entry searches could be very large with minor differences in clinical terms, making finding the required term more difficult. For example, if every possible area of anatomy was provided with versions for left, right and bilateral, this would increase the number of anatomy terms within the terminology almost three-fold. This would make the terminology inordinately large. Many systems therefore for example provide laterality as a separate field to be added when appropriate.

Clinical concepts provided within the SNOMED CT release are known as pre-coordinated concepts, for example 'fracture of the femur' is a pre-coordinated concept. SNOMED CT provides the ability to express detailed clinical information in a structured manner without having to create a pre-coordinated concept for every detailed clinical phrase. This approach is called 'post-coordination'. The grammar defined as part of SNOMED CT defines how clinical phrases can be expressed by combining two or more concepts together to create a post coordinated expression.

So in our fracture of femur example, the expression for 'fracture of left femur' would be 'fracture of femur'; laterality=left. These can be more complex such as the example, "third degree burn of left index finger caused by hot water". Using the grammar (or compositional syntax) of SNOMED CT it can be represented as: burn of skin; morphology = third degree burn injury; laterality = left; causative agent = hot water; finding site = index finger structure. We would not expect a clinician to write such an expression, but software can be designed to facilitate the creation of such expressions. Such expressions held within a data warehouse can significantly increase the ability for sophisticated analysis.

Further illustrations are provided within the SNOMED International Technical Implementation Guide.

## 4.5 Browsing the terminology

SNOMED CT is provided simply as a set of data files; to be able to view and search the clinical terms available one needs to use either a clinical application or to use a generic browser that allows you to simply navigate around the terminology. There are a number of free to use on-line browsers available.

NHS Digital provide an on-line browser of the UK Edition of SNOMED CT; this includes clinical concepts as well as medicines and devices.

## 4.6 Subsets

Subsets provide for a part of the terminology to be provided. Subsets are therefore a useful method for helping to restrict the content of SNOMED CT made available for some function in the application: for example only providing 'left, right and bilateral' for a field for laterality; providing a list of procedures for the stroke clinic data entry form.

Subsets can be specified by listing the terms to include or by a query on the terminology (e.g. the concept 'stroke' and all children of stroke). This means that subsets are also dynamic; terms can be made inactive and if using a query, new terms may become part of the subset.

The UK Edition of SNOMED CT includes a number of subsets; some are to support system functionality (e.g. document types), others support user interaction or data extraction/analysis (e.g. Renal subset).

For further information on subsets available nationally please refer to YouTube video 'Introduction to Subsets' and the Data Dictionary for Care which provides a searchable repository of all the national subsets.

## 4.7 Requesting content changes

SNOMED CT is dynamic and designed to accommodate the constantly evolving needs of health and care so that it can be updated to reflect those changes. Content must be nationally relevant rather than only having meaning to a region or locality. The Terminology and Classifications Service authors new content or makes changes to existing content in response to requests from individuals, solution providers, professional bodies or national organisations such as NICE, Public Health England and NHS England. New requests are assessed against 'editorial principles' that are applied internationally and nationally.

If you wish to request changes to existing content please use the Request Submission Portal.

Requests for change to national subsets are also submitted through the same portal.

## 4.8 Licensing

SNOMED CT is issued under licence but is free to deploy within the UK. Organisations deploying SNOMED CT within their product need to register for a licence; but individual users do not. Any individuals downloading the SNOMED CT data files for use say in research will need to register for a licence.

UK organisations deploying their solutions outside the UK need to establish whether that country provides an Extension, and whether they are a member of SNOMED International,

but typically should not deploy the UK Edition. For further details see the licensing information on the UK and the SNOMED International websites.

## 4.9 Further information

The above provides a brief overview of SNOMED CT, if you would like more information and/or the ability to ask questions you may find the following of interest:

- NHS Digital Training and Resources
- The SNOMED International: SNOMED CT Starter Guide
- Live WebEx (available monthly) providing an 'Introduction to SNOMED CT'
- SNOMED International Education materials
- NHS Digital Helpdesk

# 5 Rationale for a single national terminology

## 5.1 Benefits of a single national terminology

Many benefits can be accrued simply from having an electronic health record, for example being able to review the information in multiple places at the same time, records not going missing, speed of electronic communication vs paper and being able to find information quickly. Implementing an EHR without a national standard vocabulary would mean that important data such as current health issues, allergies and procedures undertaken cannot be exchanged in a way that enables systems to reliably process such data. This would severely restrict the expected benefits we have of an EHR in providing decision support, clinical alerts and supporting business processes.

The use of terminology within a patient record can also be utilised to support the allocation of classification codes to a completed episode of care. With the current situation where the classification business rules are held within text, cross-maps provided by the Clinical Classifications Service can be incorporated within encoder software to improve the efficiency of the allocation of ICD-10 and OPCS-4 codes. It should also be noted that SNOMED CT is integral to ICD-11 (see Section 10).

SNOMED CT is the only current standard in England for terminology; both Read v2 and CTV3 are deprecated standards and no longer maintained. The benefits of using SNOMED CT can be summarised as follows:

- **It provides a single comprehensive clinical language for direct care across all care settings, all professionals and all clinical and care specialties:** Clinicians often use multiple systems; a single language ensures that clinical information is recorded in the same way across all systems thus providing consistency and ease of use. A single language enables specifications for clinical tools, data extracts, clinical audit etc. to be written once and thus utilised by many different systems.

- **An enabler for Interoperability**: The use of SNOMED CT across all systems ensures that data can be transferred between systems without the need for mapping and can reliably be processed and interpreted by both systems. Where systems have developed local codes to support local analysis; these are not shareable outside that organisation and results in the organisation having to continually map to provide national data or interpret national specifications.

- **Extensive Analytics capability**: SNOMED CT is more than just a vocabulary; it contains additional features and data that enable extensive analytics of clinical data using a wide range of analysis techniques to support clinical audit and research work.

- **International**: SNOMED CT is an international terminology; this gives the potential to support cross-border data communications, contribute to international health research and overcome language barriers; but also provides a more efficient market for vendors developing systems. As an international terminology many countries contribute to the development of content enabling development in relation to rare diseases and genetics to be a shared effort, thus reducing the overall cost compared with maintaining a national terminology.

- **Building for the future**: SNOMED CT has been developed to ensure it can support current and future requirements. Its design has addressed challenges experienced in

earlier terminologies such as running out of actual codes in the right place (as with Readv2, but also experienced with postcodes, number plates and telephone STD codes previously), the inability to deal with out of date content, the ability to categorise a clinical term in more than one way (e.g. Respiratory Infection is an infection **and** is a respiratory disease).

# 6 Steps to Implementation: Care Providers

This section walks you through a series of questions to consider in relation to adopting the standard across your organisation. As SNOMED CT provides the clinical vocabulary to be used across all systems that relate to the direct management of care, the standard will need to be adopted in **every** such system used by clinical users. Each system must comply with the standard.

## 6.1 Planning Adoption of the standard

***Which systems will be impacted within your organisation? If you have multiple systems how will you plan the adoption of the standard? It is unlikely that you will change all the systems at once, so how will you prioritise – being aware of which data collections and standards require SNOMED CT and by when can help in this prioritisation.***

Adoption of SNOMED CT is part of the achievement of 'Paperless 2020'; as part of your current plans to achieve electronic health and care records you need to ensure that all solutions implemented utilise SNOMED CT.

A number of providers have implemented a single EPR across the whole organisation, while others have implemented a portal to the various specialised systems. Whichever approach has been taken, all systems that relate to capturing data on the health and care of the individual need to use SNOMED CT as their clinical dicstionary.

***Which national information standards do you as an organisation need to comply to? Which national data collections that currently have a requirement for SNOMED CT do you need to submit? Are there any standards that are in development that will require SNOMED CT that will impact you?***

Obtaining this list will help your organisation prioritise what needs to be done.

***Are these systems provided externally or through in-house development?***

If external:

- Can your current supplier provide a SNOMED CT solution?
- Can you obtain a SNOMED CT solution under the current contract?
- SNOMED CT has been a mandated standard since 2011; from April 2020 this is a contracted NHS requirement; we would expect all major suppliers to be able to offer a solution that meets the requirements for this standard. If your supplier requires advice, including technical support, ask them to contact snomed.implementation@nhs.net.

If internal:

- Ensure the internal development team has this in the development roadmap within the required timeframes. They may wish to look for open source initiatives, or approach a 3rd party supplier to provide a terminology module (often referred to as a terminology server) or develop their own functionality.

***What senior management briefing / training needs to be undertaken to ensure there is an understanding of the requirements, impact and benefits that can be gained? As part of implementation, how can data be made available to clinicians in a useful way?***

Implementation of the standard should be undertaken as part of the 'Paperless' initiative. Experience has shown it is useful to discuss what can be achieved by implementing SNOMED CT; some think SNOMED CT is just another set of codes for national reporting and are unaware of the local benefits its use can bring. It is critical the CCIO/CIO are on board. Addressing SNOMED CT at the SMT will ensure appropriate messages are given and that plans are in place for integrated health records, electronic discharge letters etc. Implementations benefit from management of business change, as inevitably the introduction of systems that directly impact clinical processes lead to business change. It is recommended that senior management leading the introduction of the standard have an appropriate briefing to ensure benefits are realised, contact information.standards@nhs.net with the subject 'SNOMED Implementation' if you require further guidance.

### *Championing SNOMED CT with clinical staff*

The main users entering data in SNOMED CT will be clinical staff. It is important that such staff do not see SNOMED CT as *just* another coding scheme that is the domain of the information management and clinical coding teams. We suggest SNOMED is not referred to as coding, but facilitating structured data capture. It is important that the CCIO and other senior clinical colleagues champion its use.
One important consideration is how data can be given back to clinicians; this will ensure the appropriate level of data quality is undertaken. So what reports can be provided to clinical groups and individual clinicians to support their work; experience indicates that effort undertaken to produce some standard reports for clinical teams and individuals can result in significant time savings over a period of time.

### *A SNOMED lead?*

It is useful to understand if the organisation would benefit from obtaining specialist skills in SNOMED CT to support the organisation's adoption of the standard. Some organisations have employed a SNOMED CT lead and others have undertaken training of key clinical and administrative leads, as well as impacted teams such as clinical coders in hospitals. A number of resources to support training are freely available on the NHS Digital website.

## 6.2 Implementation and roll-out of the electronic solution

### *Configuration*

What level of configuration in relation to SNOMED does the system allow, for example are structured data items optional (for example diagnosis). Where data entry is optional this is often omitted and the information just put in free text. This then results in other functions such as auto-populate of the draft Discharge letter not working. Experience shows that when mandatory, with support to find the required terms if needed, data entry is faster than continual entering into free text.

Some systems allow the hierarchies available for data entry into a particular field to be configured; again done appropriately can speed up data entry.

### *Can the system be configured to use subsets?*

Depending on the solution selected, it may be possible to configure the system to use subsets of SNOMED CT for particular users, particular specialist areas and/or particular data

entry forms. Some systems refer to these as favourite lists. Note that some national data sets already have specified subsets for particular data items; these are detailed in the NHS Data Model and Dictionary. Some subsets may restrict what data is to be sent nationally, but do not necessarily imply you should restrict data entry in your system to just that subset.

The UK Edition provides as part of the release a number of specialty subsets, most have been developed in liaison with a professional body. As these are developed to be nationally relevant, it is highly likely that these will need tailoring for your organisation. If no national subsets are available, there may be benefits in developing these in-house. Speak to your supplier who may have a standard set of subsets that can be used as a starting point and can be refined for your organisation. This aspect needs to be planned within the preparation for system configuration.

### *How will you provide training to end users?*

Some training on SNOMED CT needs to be provided to all end users; experience has shown that if no training or understanding of SNOMED CT is provided, this hampers end users in their use of the system. The on-line presentations provided by the NHS Digital Terminology Service (An introduction, and Finding content) have been reported as being sufficient end-user training. You can contact NHS Digital for downloadable copies of these that can be hosted on-site either on the web or as part of a Learning Management System.

Specialist teams such as the clinical coders in hospitals, summarisers in GP practices, data quality facilitators and information analysts/those writing reports, will inevitably need more training in SNOMED CT. This is available from a number of external training companies but the presentations provided by NHS Digital also give a good grounding. The eLearning courses from SNOMED International also cover the knowledge requirements; but probably go beyond what is needed.

## 6.3 Implementing a new release of SNOMED CT

The content of SNOMED CT is continually updated with a new release being provided every 6 months. To keep systems up-to-date it is recommended that a new release is implemented within 2 months of the release date, but that systems should not be more than one release out of date. As part of the requirements of the system, organisations should ensure that updating the release of SNOMED CT in the system is addressed.

### *Does your solution provider update the release of SNOMED CT in the system or is it something that must be undertaken within the organisation?*

In many managed solutions the update to the terminology is undertaken as part of the service provision; where a solution is implemented on the organisation's own infrastructure, it may be that the update has to be undertaken in-house. If the update needs to be undertaken in-house, ensure that tools are provided to assist.

If in-house, the first time this is undertaken will take longer than subsequent updates. Organisations should use a team of IT and clinical staff, as a number of decisions will need clinical oversight. Feedback from a large hospital trust suggests that the first time this is undertaken will take between 1 and 3 weeks of time including planning and testing. Subsequent updates are reported to take 2-4 days.

If by the supplier, there will still be a need locally to review reports and templates that may need to be updated following the new release. This is because concepts can be added but also 'removed' (known as made inactive) – see next section.

### *What type of changes in a release can happen that I need to take account of?*

The following components may change in the following ways:

- Concepts: new concepts added, concepts made inactive.
- Terms (descriptions): new terms added, terms made inactive, terms changed (minor typing mistakes may have been corrected).
- Relationships: new relationships, relationships made inactive, additional inferred relationships from classifying the terminology.
- Subsets: new subsets, new members to a subset, members made inactive within a subset, a subset being 'removed' (made inactive)

These may impact your pick-lists and reports; tools provided with the solution should enable you to identify changes and address these. The following sections give more detail.

### *If a component has been made inactive, can that still be used?*

Components are made inactive for a number of reasons, but generally this is an indication that they should no longer be used. It is accepted for reporting that it might still be necessary to use inactive components but they should not be available for future data entry. Part of the process of managing an update is to decide what to do about inactive content – when content is made inactive, replacement terms are generally suggested. It is recommended that the clinical lead(s) review terms that have been inactivated and either accepts the replacement that has been suggested or otherwise defines their own replacement for the inactivated term.

### *How can the technical team inspect what changes have occurred between this and the next release?*

The release files for the UK Edition of SNOMED CT contain a release file type: Delta which provides all the components that have changed between this release and the previous. For example the delta concepts file provides just the concepts where changes have occurred; the delta relationships file is changes to SNOMED CT relationships etc.

### *Where in the system might these changes impact?*

Changes could impact aspects of the system that directly use the terminology. The following lists the main things to consider:

- Decision support rules (e.g. drug alerts)
- Subsets used to support data entry
- Data Entry Forms e.g. pick-lists
- Favourites lists
- Standard pick-lists lists such as theatre procedures with resource allocations
- Future Orders / booked procedures in patient records
- Reports / data extractions
- Formularies / shortcodes / abbreviations
- Business protocols / mail merge documents

- Content in systems that derive their data such as data warehouse
- Encoder software for allocating the classification codes (ICD-10 and OPCS-4)

### *What do we do about inactive content in patient records?*

Inactive content can be left as is in patient records in which case systems must still be able to retrieve this **OR** (with appropriate audits) content can be over-written with what is clinically agreed as the most appropriate current term. Different approaches have been implemented in different organisations. The supplier must provide appropriately for inactive content; either tools to manage or tools to retrieve. Consult your supplier as to how the system deals with inactive content and what your organisation needs to do. Advice can be sought from NHS Digital by emailing information.standards@nhs.net with a subject line of 'SNOMED Implementation'.

### *What might a typical update process involve?*

a) Upload the new release to the test environment.
b) Using system tools identify inactive terms/concepts in use within the system: this could be any of the items listed in the section that illustrates how a system might be impacted.
c) Identify the replacement term(s) and obtain clinical sign off: when terms/concepts are made inactive then possible replacement terms/concepts are usually indicated. These can be provided to representatives of the end user community allowing them to decide or confirm which terms the system is to use.
d) Using the relationships in SNOMED CT identify possible new terms that might be in scope for existing subsets or to communicate to end users as available for data entry.
e) Consult the IHTSDO and UKTC release notes for areas within the terminology that have changed, and inform specialty leads.
f) If temporary codes are available within the system and have been requested for authoring, match these with the authored terms and update the temporary codes with the appropriate SNOMED CT term throughout the system.
g) Identify inactive terms in future orders/tasks that will need replacing.
h) Test the changes proposed in data entry (both forms and live data entry).
i) Test the changes to reports and data extractions.
j) Test the changes to business rules such as drug alerts.
k) After all tests have been passed, communicate the changes to end users in a timely manner with notice of planned live update.
l) Promote the updates to the live system.
m) Inform end users of the change as they may wish to browse the terminology in relation to their specialty for new terms that have been added.

**Note**. Your system may also incorporate third party products (for example for decision support, encoder software) which may also require updating.

# 7 Steps to Implementation: Developers

This Section walks you through a series of questions to consider in relation to adopting the standard in an application. These decisions need to be made irrespective of whether you are developing a new product or incorporating into an existing product. Further details are provided within other Chapters of this guide, especially Chapter 9; the aim is not to clutter this checklist with details.

### *Does the system have to support SNOMED CT use now, or is it expected to in the near to medium term?*

- SNOMED CT has replaced the Read codes; if your current solution uses Read codes (either Read v2 or CTV3/Read v3) you now need to use SNOMED CT instead of the Read codes. The Read codes are no longer maintained and must not be used in systems.
- Your System and/or application content should be consistent, where appropriate, with the NHS Data Dictionary. The NHS Data Dictionary already indicates SNOMED CT content for many data items; this should be consulted when planning a transition to SNOMED CT. Please note that changes to content, provided primarily through the release of updated and/or new SNOMED CT subsets, can occur and you should ensure alignment and/or replacement of data dictionary codes is managed as part of the SNOMED CT release cycle.
- Does your application use data dictionary codes as content for some data items? These are likely to be replaced with SNOMED CT codes in the near future (often specified as subsets), which will coincide with an update to the data collection that requires these. While you should ensure your system can incorporate SNOMED CT, it is advisable to wait for national guidance in relation to these codes.
- Does your application use locally coded or pre-defined entries for data relating to the direct management of care of the individual? If so you should consider replacing these with SNOMED CT now. The use of local codes for such lists means this data cannot be shared and organisations have to map this to national codes if the data is required for national reporting; it also risks different interpretations and so is open to poor data quality.
- Are there any existing or new standards (eg. Data sets, clinical audits) in development, message specifications or interoperability requirements that require SNOMED CT? For example eDischarge, clinical letters are being developed that will require data exchanged using SNOMED CT. These will have specified implementation dates to work to.
- Are there any new policy requirements that require the recording of specific data; this will now generally be expected to be expressed using SNOMED CT for example guidance relating to social prescribing, stop the clock eligible activity in relation to eating disorders. This guidance is often issued via NHS England or NICE.

### *Do you have a basic understanding of SNOMED CT?*

The first step is to understand what SNOMED CT can offer to enable you to make the appropriate design decisions in relation to your application. The following presentations are designed to help you gain that understanding. They are available as live presentations via WebEx and as pre-recorded versions:

- An Introduction to SNOMED CT will provide an overview of the structure, the type of content it provides and a look at its use in some applications.

- Finding Content in SNOMED CT will enable you to explore the content within SNOMED CT as well as understand its structure.

- An Introduction to the data files in RF2 will illustrate how the data files that constitute SNOMED CT are structured and provides information about the release file types provided (currently only available as a recorded version).

- Clinical Data Analytics will introduce what is possible using SNOMED CT and go through a demonstration using a demonstrator tool that is available free under OGL.

### *Do your developers/database administrators require technical training on SNOMED CT and the datafiles?*

NHS Digital and SNOMED CT international have a number or resources available. SNOMED International cover the basic principles of SNOMED CT while NHS Digital provide additional information specific to the UK Edition of SNOMED CT. There are also a number of independent training organisations offering training on SNOMED CT.

### *Does the application need all of SNOMED CT?*

There are a number of approaches to the use of SNOMED CT in applications and this depends on the needs of your application. The following provides key decisions to be made:

- Which data items in your application are required to use SNOMED CT, consult the NHS Data Model and Dictionary in relation to any standards or data sets you need to comply with.
- Which data items are to be completed using pre-defined content and is this in scope of SNOMED CT, if so it is better to commit to using SNOMED CT than defining your own dictionary which you will need to maintain.
- Is your application aimed at a particular specialty and so only needs specialty specific content (so may only need a subset of SNOMED CT. Note more than one subset may be needed if content such as current problems, symptoms etc. are also required) or is it a general EPR (so needs all of SNOMED CT). If your application is say a mobile application or you have established you just need one or more subsets, is there a subset provided nationally that meets your needs, will this be defined by those who use the application, or is this something to be raised with those procuring the product?

### *How will users access and select the terms within SNOMED CT?*

Will the terms available for a data item be configurable by the user; determined by the application (e.g. as part of the Intellectual Property of the product) or via a national standard? It may be that a combination of approaches is required depending on the actual data item.

What support for subsets will your application provide (even if utilises all of SNOMED CT) and how will these be configured? Will the application make any of the national subsets available either at configuration time or user specified say when creating forms? Consider the provision of favourites that can be developed by users and if so how will these be structured and searched.

If using a subset, depending on its size you may decide to use radio buttons (e.g. laterality), pick-lists (e.g. operations undertaken in a particular theatre), or search techniques (e.g. a diagnosis). If the subset is large, do you also require the is-a relationships from SNOMED CT to help structure the subset to assist users in their selection approach?

If using all of SNOMED CT how will users search and select from SNOMED CT, what methods of ordering search results will the application use? SNOMED International Guidance exists on techniques. Will you provide this functionality or will you purchase a 3rd party product (there are products known as terminology servers with APIs that you may wish to explore).

### *How will the application data tables/data model accommodate SNOMED CT?*

Firstly will you upload the terminology (or a subset of it) into the application, or will you use a third party product to provide the terminology functionality within the application?

If you plan to incorporate in the product, SNOMED CT is distributed in an application agnostic way. It is therefore important to design the data model necessary to most efficiently enable the application to access the terminology. Once this has been done an import routine will need to be developed to obtain subsequent releases.

How will the application store the selected code(s) to ensure end users see the description they selected and to be able to effectively retrieve data? (Concept Id and/or Description Id – see Section 8.5.3 for detail).

Will the application use particular data archetypes / data models for specific data items? For example national specifications exist for allergies and document types.

What message specifications exist that require SNOMED CT content for the particular data items, will the application reflect this model or translate from the application data model when sending data? What implications does that have for system reporting/extraction?

### How will the application deal with new releases?

SNOMED CT is distributed via three different types of files: full, snapshot and delta. You need to decide which approach you will use to obtain the content of the next release.

Whichever approach you use: subsets or the full release, the content in SNOMED CT changes. New content is added and content may become inactive. This has implications for the data already in the database, in the design (e.g. data entry forms) and reports/business rules. Planning your design so that you can manage this aspect of the terminology is critical.

### Are there existing dictionaries/keywords in the application

If adopting the standard in an existing product that already uses a dictionary, terminology or keyword lists:

- Is the terminology a national standard (Read v2, CTV3, SNOMED RT, SNOMED II or SNOMED 3.5); if so mapping tables are provided nationally to help map existing data to SNOMED CT. (See 9.8).
- Are the keyword lists / dictionary locally defined (either specific to the application or by the end user), how will these be mapped and clinically assured as equivalent, and at what point will these maps be applied (e.g. when sending data externally, or by migrating existing data) . It is appreciated systems have many man years of investment in their development and business rules so how best to accommodate SNOMED CT needs to be decided. It may be useful to review the 'Advanced Guidance' for primary care where the Requirements for the replacement of Read codes with SNOMED CT are provided.

- What about historical data? Will that be mapped and will this be stored in addition to the current codes; our recommendation is to keep both the old and new codes. How will the previous codes be made available to users and analysts?
- What about locally defined forms or searches where they use the local codes? How will users be facilitated to change these without having to start from scratch?

### *Are there any national products or open source routines available that may help development?*

There are a number of open source platforms that may provide useful components for you to use in your application. SNOMED International also makes a number of its tools available as open source, for example a browser.

# 8 Requirements

SNOMED CT is a fundamental standard; as the national terminology in relation to direct management of care, its required use is widespread. Requirements can therefore only be expressed at a general level.

New and updated national information standards are required to take account of SNOMED CT; information standards will therefore increasingly contain specific requirements on SNOMED CT. A number of current dataset collections require SNOMED CT and/or indicate data items that will be required in SNOMED CT in future revisions.

SNOMED CT is not a stand-alone product but incorporated within electronic systems, it is critical that all future procurements and system developments take account of the high level requirements and require that SNOMED CT is used within systems deployed.

## 8.1 High Level Requirements

In essence, the requirement is that health and care systems **must** use SNOMED CT to provide the standard clinical phrases available for data entry within the software solution for data items other than free text (where their content is in scope of SNOMED CT). Where an application simply uses a vocabulary or dictionary rather than the full set of features provided by the terminology (for example an app for completion of an asthma review), those terms provided (along with the relevant codes) must be valid terms from within SNOMED CT.

The national requirements are that:

- SNOMED CT to be the terminology utilised for terms within all electronic communications. *National message specifications will require data relevant to the health and care of the individual to be captured using SNOMED CT when transmitted between systems.*
- Staff to be able to enter data into the clinical system using the terms from within SNOMED CT. *National guidance and national recording requirements will increasingly specify requirements utilising the terms within SNOMED CT. For example NICE guidelines in relation to medical technologies; PHE national screening programmes; NHS England national guidelines in relation to frailty; and national consent models – all contain requirements expressed using the terms within SNOMED CT.*
- Systems be able to accept data encoded into the system without a need for that data to be recoded. *For example the interventions undertaken provided on an eDischarge, the vaccinations given by the school nurse – **note**. While this may be the focus of a process flow that requires clinical confirmation to add these to the patient record, there should not be a routine requirement to re-code these.*
- Data extractions (including reports which may aggregate data) to be specified using SNOMED CT for clinical and care related content. *National dataset collections; national extractions to organisations such as national registries; national data returns (for example QOF - Quality Outcomes Framework) or GPES (General Practice Extraction Service) in primary care, to be specified using SNOMED CT and thus systems must provide reporting functionality that can incorporate queries written using SNOMED CT.*

This must be done in such a way that both the term text and the code of the concept within SNOMED CT are available for processing and onward communication.

## 8.2 Timelines

The use of SNOMED CT across solutions within the health and care environment is a key action for Paperless 2020 and is highlighted in the 'Personalised Health and Care 2020: Framework for Action' to enable interoperability.

As such the information standard requires:

- Systems used by NHS providers in the direct management of care of an individual **must** use SNOMED CT as the healthcare terminology from **1 April 2020** within all electronic patient level communications across the health and care environment.
- Other providers of health related services where the electronic flow of information for the direct management of patient care comes into the NHS **must** use this standard from **1 April 2020**.
- Providers of social care **must** use SNOMED CT as the healthcare terminology from **1 April 2020** within all electronic patient level communications across the health and care environment where the communication contains structured data rather than free text. However, this fundamental standard does not mandate a timetable for its use in social care. Some systems that are required to interchange structured data across the health and social care estate are known to already be utilising SNOMED CT.

## 8.3 Clinical Safety

Implementation of SNOMED CT may[5] require modification to the health IT system in which the code is recorded. The safety implications of any such modifications must be considered by the system manufacturers under SCCI0129 and by system user organisations under SCCI0160. Both SCCI0129 and SCCI0160 are mandated for use by NHS England under section 250 of the Health and Social Care Act 2012.

It is expected that Manufacturers and Organisations will take ownership of this risk and make the necessary additions to their respective Clinical Safety Case Reports. User Organisations are mandated to ensure that the Manufacturer and the health IT system comply with SCCI0129.

For systems adopting SNOMED CT from a legacy terminology, it should be noted that incorporation of SNOMED CT into systems will enable more specific terms to be entered than has previously been possible, this should result in improved care but may have clinical safety impacts from reports and interpretations compared with historical data.

Transition to SNOMED CT may initially result in a slower use of the system by end users until they become accustomed to the change. The introduction of SNOMED CT and the direct exchange of data electronically in coded form will inevitably result in business change; this needs to be monitored in relation to clinical safety.

## 8.4 Specific Published Requirements

The NHS Data Model and Dictionary[6] provides details of information standards and any data items within those standards that are required to be provided coded using SNOMED CT.

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[5] Implementation of SNOMED CT in an organisation may be achieved through purchasing a system that has been designed to incorporate SNOMED CT, or by modifying an existing system.

[6] http://www.datadictionary.nhs.uk/index.asp

Where subsets are also required to be used these will be detailed within the NHS Data Model and Dictionary.

The specific requirements for adoption of SNOMED CT in systems needs to be set by the particular use case and associated contract. To aid those responsible for providing SNOMED CT compliant systems, a list of requirements has been created and is published on the Terminology and Classifications SNOMED CT Product Page under Popular Publications. This will be actively maintained and we would welcome feedback from anyone using these requirements via emailing snomed.implementation@nhs.net.

The requirements for solutions operating within GP Practices are specified within the GP IT Futures framework.

## 8.5 Detailed Requirements

This section provides information pertaining to the specific requirements for those deploying solutions in the UK.

### 8.5.1 UK Edition of SNOMED CT

Within the UK, systems **must** use the UK Edition of SNOMED CT. The UK Edition contains UK English descriptions in addition to the US descriptions provided in the International Release; it also provides relationships to UK concepts.

Systems **may** provide only UK acceptable descriptions; to obtain these suppliers **must** utilise the UK language reference set (provided as part of the release; see UK release notes and the Technical Implementation Guide for more details; also the animations on the SNOMED CT product page).

### 8.5.2 Applying Release updates

The UK Edition is updated every 6 months; a new release being valid for use from 1 April and 1 October each year. Systems **should** be updated within 2 months of a release; but depending on the specific use case this may differ.

Those procuring solutions **must** specify the update timeframe required and ensure they have the appropriate mechanisms in place to manage new releases. Those using SNOMED CT within a standard e.g. a dataset collection **should** specify any update requirements. It should be noted that without this requirement being made explicit, systems may not have some terms available to end users for data entry. Tools **should** be provided by suppliers providing solutions to enable new releases to be incorporated into the solution **OR** the supplier **should** provide this service.

Suppliers **must not** update the subsets in a system without updating the release of SNOMED CT in use in a system.

The national dictionary for medicines and devices, often known as dm+d[7], is the required standard for medicines and devices. dm+d content is provided in two formats: an xml format and as part of the UK Edition of SNOMED CT (UK Drug Extension). There are differences in the data items provided between the two (e.g. prices are in dm+d but not UK Drug Extension, trade family names or in the Drug extension but not dm+d) and it should be established which product(s) meets the solutions requirements. The UK Drug Extension is updated every 4 weeks; dm+d is updated weekly. Further details are in the dm+d and UK

[7] http://www.nhsbsa.nhs.uk/1121.aspx

Drug Extension release documentation. Further information can be obtained from information.standards@nhs.net.

### 8.5.3 Data Entry

End users **must** be able to enter clinical terms direct into the electronic patient record. How those terms are made available is part of the user interface design of the solution, and may vary considerably depending on the application; what codes are stored in the actual record are also part of the solution design although this must enable the Concept id and description id to be accurately obtained for extraction and messaging purposes.

Techniques such as:

- searching using the beginning of words in the clinical term, for example 'fract femur' for 'fracture of femur' (in any order)
- subsets to provide just procedures or just paediatric terms,
- shortcodes, abbreviations, equivalent terms etc.
- Graphical user interfaces
- Natural Language Processing approaches (possibly linked to digital dictation)

can be used in order to provide a good user experience for data entry. For more information see the SNOMED International Search and Data Entry Guide in the document library on the guides documentation tab.

Users **must** be able to search on any of the descriptions where text searching is the method for data entry. It **should** be possible for the user to select and enter any of the SNOMED CT descriptions; however systems may always default to the preferred term. It is generally advised that systems should not enable selection of the FSN in a patient record. Users **should** see on future viewing of the record the term they entered. It is useful to see the FSN on say a hover over of a synonym as that provides the hierarchy information to help ensure an end user selects the correct term. The UK Edition does provide preferred terms for each concept which represent the most commonly used description; this is provided by the Language Refset which is part of the release files.

Suppliers will need to decide whether they store:

- the Description Id **and** the Concept Id of a term;
- just the Description Id;
- OR just the Concept Id.

It is recommended that suppliers store **BOTH** the Description Id and the Concept Id, unless their specific approach means this is not required. To help identify the approach required (**Note**. The international FHIR specification uses the Concept id and description text):

- *Description Id **and** the Concept Id*: The Description Id enables the system to present back to the user the exact term selected in systems where it is possible to select a synonym; the Concept Id should be used in data analytics and data retrieval because the concept selected rather than the specific synonym is required.
- *Description Id only*: The Description Id is a unique code and can always be used to retrieve the Concept Id if required. However this may significantly reduce performance if the system needs to undertake data retrieval of business rules based on the Concept ID.
- *Concept Id only*: If the system only allows the end user to enter the Preferred Term (Note. Such an approach may be explicitly excluded in some Requirements), then the Preferred Term can be retrieved from a look-up table when displaying the text of the concept on screen.

Systems **should,** wherever possible, restrict the terms available based on the context of the data item, for example only allow procedures in a procedure field. Care should be taken with diagnosis that this isn't too restrictive as often symptoms may be entered if a diagnosis has not been possible.

### 8.5.4 Data Items

As a minimum, systems that incorporate any of the following data items **should** be using SNOMED CT to capture their content:

- Symptoms
- Diagnosis
- Procedures
- Assessment Scales
- Family History
- Medications
- Allergies
- Blood pressure
- Documentation Type and documentation care setting
- Laterality
- Body Site

Note 1. There is an increase in the use of Data Archetypes for particular data objects such as blood pressure and allergies. Suppliers should check the interoperability toolkit or via the help desk with a request to the messaging team for any such specifications.

Note 2. Laterality and body site should not exist in a system on their own, but in relation to for example a procedure. This may be done using the data model or post coordination; or suppliers may decide currently to use only pre-coordinated content where the Body site and Laterality can be found from the defining relationships. More information on this is provided in the SNOMED International Technical Implementation Guide.

Note 3. Any data items currently captured using the Read codes must start to use SNOMED CT by the required implementation dates.

### 8.5.5 Subsets

Where subsets are required as part of a national data collection, the details will be provided in the NHS Data Model and Dictionary.

Requirements for systems **may** specify the ability to use national subsets and import these as part of system configuration. Requirements may also include the functionality for end users to create and manage their own subsets; sometimes these are simple lists, often known as favourites, or use the SNOMED hierarchy to define the members.

It should be remembered that subsets are dynamic. Provision needs to be made to update these when a new release is incorporated into the product; requirements should ensure tools are available to enable this.

### 8.5.6 Reporting and data extraction

Solutions **should** provide functionality to enable queries to be written in SNOMED CT. The current priority is for retrieval based on the 'is-a' relationships, but developers should plan for querying on attribute relationships in the near future.

Where the terminology has replaced an existing terminology or vocabulary, it is important that existing reports can still be run. All searching and reporting functionality MUST be able to be specified in SNOMED CT where appropriate. Existing reports MUST provide correct

results after say the introduction of new content that is in scope of the specification, and new reports specified in SNOMED CT must operate correctly over historic data including inactive codes.

Developers should use the operators in the SNOMED International document 'SNOMED CT Expression Constraint Language Specification and Guide v1.00'; this describes operators (for example this concept and all its children) to use for writing reports and data extractions, as well as the internationally agreed symbols for such operators.

### 8.5.7 Inactive Content

SNOMED CT is a dynamic terminology; as well as adding new terms it is possible to also make concepts, terms and relationships inactive.

Systems **must** support the ongoing view/retrieval of terms that exist within records which are inactive within the current release of the UK Edition of SNOMED CT. Users **should** only be able to enter active Clinical Terms, and **should** be prevented from data entry of inactive Clinical Terms into a Patient's Record. There may be occasions when it is required to enter inactive content, for example reporting and temporarily until a particular data entry template has been clinically assured with the new terms.

Systems **must** ensure that functionality such as the graphing of results is not inappropriately impacted by concepts becoming inactive.

Tools **should** be provided to support organisations manage inactive content in reports, templates and aspects of the system that may rely on active content such as planned procedures.

## 8.6 Further information

The document Requirements of SNOMED in Systems (PDF, 189.3kB) includes sample statements for use in procurement of systems that incorporate SNOMED CT; this is also useful for those developing systems to understand expected functionality.

NHS Digital also publish various guidance and documentation on the SNOMED CT product page.

# 9 Information for Solution Providers

This section aims to highlight aspects that developers need to take account of when developing their solution.

## 9.1 Distribution and Release Formats

Depending on the solution provided, a system may need to utilise all of the content within the terminology or just a subset.

As the variety of applications across healthcare is significant, it is not possible to provide a set of database files that meets the requirements of every application. The terminology is therefore distributed as a set of comma delimited data files; it is inevitable that you will need to process these in some way to import the data into the specific tables needed within your application. It should be emphasised that the distribution format is not anticipated to be a suitable data model for any clinical application, but is provided in this way to support pre-processing for upload into applications.

SNOMED CT is provided in what is known as Release Format 2 (RF2). File specifications are provided in the SNOMED International Release File Specifications Guide.

## 9.2 Subsets

Subsets can be held within a system using simple files structures, or may use the method within SNOMED CT (known as refsets). Solution providers wishing to use and distribute refsets across implementations should consider having their own namespace. Further details on namespaces are provided in the SNOMED International Extensions Practical Guide.

Subsets can be developed locally, for example as part of the configuration of a system to provide the procedures undertaken by a particular clinic. Suppliers should decide what level of tool support they provide for the development of local subsets

There are a number of national subsets provided as part of the UK Edition of SNOMED CT. These can be used as a starting point for developing subsets locally or as provided; alternatively system suppliers may wish to develop a standard set of subsets that they offer as a start-point to the organisation deploying the solution.

Subsets can be used to:

- order the results of searches (e.g. anything returned that is in the subset comes towards the top of the search results);
- restrict data entry (i.e. only data from that subset can be entered);
- identify patient records that contain any of the codes in the subset (i.e. for data analytics).

## 9.3 Relationships

The release files contain stated relationships (those stated by the terminology authors) and inferred relationships (those determined by the classifier that is part of the terminology authoring tools); systems should include BOTH these relationships by using the distributed relationships file. Further information on stated and inferred views can be found in the SNOMED International Technical Implementation Guide.

## 9.4 Obtaining SNOMED CT

The data files that constitute the Release are provided twice yearly: to be implemented from 1st April and 1st October respectively. The Release should not be implemented in a live system prior to the published dates, and should be implemented within 2 months of the release date. Specific contracts may have stated requirements in relation to when a release has to be incorporated.

The release files are obtained via the Technology Reference data Update Distribution site (known as TRUD); individuals need to ascertain which type they require (Full, Delta and/or Snapshot) and then register for the appropriate pack. Further details on the file types are provided by the recorded webinar: '**SNOMED CT Recorded Webinar - An Introduction to the release files in Release Format 2 (Technical)'.**

The Release Files are provided under licence; this is free to use for deployment in the UK.

It should be noted that the International Edition of SNOMED CT is published prior to the dates for the UK Edition (31 January and 31 July) but **must** not be implemented in the UK until the UK release dates of 1 April and 1 October. Systems implemented in the UK must not use only the International Edition.

## 9.5 Namespace

SNOMED CT provides a mechanism for suppliers to develop their own concepts, terms, relationships and refsets that are specific to their application but using the SNOMED CT code scheme; this is referred to as having a namespace. However, it should be remembered that such components will be local to the system and even though they use valid SNOMED CT identifiers, will not be able to be actioned in other systems.

Applications for a namespace[8] need to be made through SNOMED International. This also provides a mechanism for such codes to be uplifted to the UK Edition or the International Edition without the need to change the concept id. This is useful if there is a requirement for a code before the next release is due; however if there is more than one request to add a code to the UK or the International release, it may not be possible to retain a namespace code. For further information on namespaces see the SNOMED International Technical Implementation Guide.

## 9.6 Reporting, data extraction and business rules

The terminology provides features to assist in information retrieval; both the 'is-a' relationships and the attribute relationships can be utilised. Applications supporting data reporting, extraction and/or business rules **must** provide to retrieve/act upon data specified using the is-a relationships; solutions **should** enable data extraction and/or reporting using the attribute relationships. The codes within SNOMED CT do not hold any meaning and so queries are only possible to enact through the relationships.

Developers may wish to use a 'transitive closure table' to aid with queries over the is-a relationships. This will need to be computed locally; this is a large table and the script to produce such a table is provided within the SNOMED International: Technical

[8] http://www.ihtsdo.org/snomed-ct/change-or-add-snomed-ct

Implementation Guide (TIG). If you require further advice please email snomed.implementation@nhs.net.

## 9.7 Inactive Content

To meet the needs of electronic systems and the changes to medical knowledge, SNOMED CT provides a mechanism to make content inactive while maintaining a robust audit trail of what the code is, when it was made inactive and in many cases what codes may have replaced this. For more details on inactivation see the NHS Digital Fact Sheet and the SNOMED International Technical Implementation Guide (Inactive codes and History Mechanism). NHS Digital provides two products (in a TRUD pack separate from the main release of SNOMED CT): the history substitution table and the UKTC Query table, to help developers manage inactivation; these are accompanied by technical documentation.

## 9.8 Pre and Post Coordination

Currently within the UK our national requirements for GP solutions are for pre-coordinated concepts only. This has enabled systems to migrate from the legacy Read codes to SNOMED CT by replacing a current Read code with a current SNOMED CT code.

Current message specifications also generally use pre-coordinated content, using a number of fields for what might be a post coordinated expression (for example procedure and laterality required as separate data items). Some current data collections are using a simplified form of post coordination (for example procedure plus whether planned, done or declined); however suppliers will generally represent this as two fields in the system and algorithmically transform these of extracting to the dataset collection/

Suppliers may use post coordinated content within their solution and populate the fields in a message specification by transforming the post coordinated expression.

To facilitate the changeover to SNOMED CT from Read codes, a number of pre-coordinated expressions have been created within SNOMED CT to enable content in the Read codes to be mapped to SNOMED CT. It is planned that as systems mature and users are more proficient in the use of the terminology, the use of post coordination will become more prevalent. Developers should review post coordination approaches and consider how this may impact their system so they have a development roadmap for post coordination. It may be desirable to use post coordination in, for example, data warehouses and population management systems for improved retrieval.

It should be noted that post coordination can be used to modify a clinical concept as well as to further qualify a concept. For example a procedure concept can be modified with ‘planned’ or a diagnosis can be ‘definitely not present’. Developers should consider how the solution will address these while ensuring that anyone writing a query for a particular disorder does not retrieve those with ‘definitely not present’.

**Note**. Great care should be taken in the application if the ability to modify the meaning of a data item is provided. In SNOMED CT this form of post-coordination is called ‘context modification’; further information is provided in the SNOMED International Technical Implementation Guide (Axis modification).

## 9.9 Maps to SNOMED CT from the Read codes

The Read codes, both Read v2 and CTV3, are now deprecated standards and no longer maintained. To aid organisations to transition to SNOMED CT from the Read codes NHS Digital provides mapping tables from Read to SNOMED CT. These are available along with technical documentation to support their use on the TRUD site within the derivative products download area (NHS Data Migration). Special notice should be taken of the additional files in this pack that relate to *codes with values* and the associated guidance provided.

## 9.10 Prior versions of SNOMED CT

Antecedent versions of SNOMED include SNOMED II, SNOMED 3, SNOMED 3.5 and SNOMED RT. All these versions are no longer maintained and are out of licence[9] for use (other than for historical data) since April 2017. To aid suppliers who wish to migrate their product to SNOMED CT, mapping tables are provided for the antecedent versions to SNOMED CT. These are available from TRUD with the appropriate documentation within the derivative products download area.

## 9.11 Pathology and PBCL

There is on-going development in relation to Pathology which goes far beyond the scope of the original PBCL. Readers should consult the SNOMED CT in Pathology project for current guidance and up-to-date requirements.

The Pathology Bounded Code List (PBCL) was defined in terms of the Read codes. As Read codes are now deprecated products, 1:1 bi-directional maps are provided from the Read v2 codes within PBCL to SNOMED CT and for the CTV3 codes within PBCL to SNOMED CT. These are available in the pack: 'PBCL Read Code to SNOMED Code Translation Table' within the Derivative Products area of the Terminology Collections on TRUD. The maps are the same as those provided in the Terminology maps highlighted in Section 9.7, however if your solution only uses PBCL you may find these maps easier to use as they only contain PBCL and not all the Read codes.

## 9.12 Useful Sources for UK information

### 9.12.1 Implementation Forum

NHS Digital run a forum for those involved in the implementation of SNOMED CT. Further details including how to register for this can be found on the SNOMED CT product page.

### 9.12.2 Product Distribution Site

The UK Edition of SNOMED CT as well as a number of supporting products such as mapping tables and cross-maps to the classifications are available from the Technology Reference data Update Distribution website known as TRUD[10]. You need to register to download the various products, and subscribe to each pack you require. Emails are sent when a new release is made available.

[9] http://www.ihtsdo.org/news-articles/timetable-for-the-withdrawal-of-legacy-snomed-codes
[10] https://isd.digital.nhs.uk/trud3/user/guest/group/2/home

## 9.13 SNOMED International Resources

SNOMED International provides a number of resources and forums for those involved in development. Specifically these are:

- A vendor forum: this is supported using their collaborative platform but also meets virtually and at the International Expo. For further information and access to the collaborative platform email info@ihtsdo.org
- Documentation[11]: various documents to support those undertaking development using terminology.
- Open Tools Framework[12]: this is an open source repository containing various tools; for example the IHTSDO browser is available as open source.
- eLearning[13]: there is a variety of eLearning resources; readers can undertake a full course or dip into the modules within that course themselves.

## 9.14 Further Information

Technical information on the terminology is provided in the SNOMED International Technical Implementation Guide[14]. In addition the collaborative site holds a variety of documents and discussions that may be of interest. Contact info@ihtsdo.org for access to the IHTSDO collaborative site or information.standards@nhs.net for more information on implementation in the UK.

[11] http://www.ihtsdo.org/snomed-ct/learn-more
[12] http://ihtsdo.github.io/
[13] http://www.ihtsdo.org/snomed-ct/learn-more/elearning-overview
[14] http://ihtsdo.org/fileadmin/user_upload/doc/en_us/tig.html?t=tig_release_files

# 10 Terminology and Classifications

The NHS has a long history of using the classifications ICD-10[15] and OPCS-4[16] to enable it to monitor the health of the UK population as well as undertaking business processes such as payment. The classifications have evolved to what they are today from as early as the 17th Century. They were primarily designed to meet requirements when patient records were paper based and a sophisticated approach has been developed to get accurate categorisation of episodes of in-patient and day case care.

Classifications were not designed to provide the clinical phrases used by clinical staff for capturing care related information in the EHR at the point of care.

Current classifications are used to categorise a completed episode of care according to pre-determined classification codes; the classifications support indirect care related activities such as epidemiology, payment and population monitoring. They do not however provide the vocabulary a clinician wishes to use for recording activity related to the specific care of a patient within the electronic patient record. Terminology and Classifications are therefore designed for very different purposes and thus are structured differently.

It is inevitable there are some similarities between the two as they are both designed to relate to clinically relevant content. However there are fundamental differences, some of which are highlighted below:

- Every code within the classification sits in one chapter and one chapter only; this ensures that an episode of care will only be counted once when reporting. However, in SNOMED CT, a single concept can have multiple hierarchical relationships (parents); this ensures that when searching for patients according to specific criteria all instances are found.
- In the classifications, because these represent areas of interest to monitor populations, the category can incorporate data that is elsewhere within the record, for example there may be a different code for a particular disorder depending on the age of the patient. In SNOMED CT the term for the disorder would be the same for all ages and the age would be held elsewhere in the record.
- A statistical classification must be confined to a limited number of mutually exclusive categories and each category is structured to ensure all instances have been included, for example, to report on all types of skin cancer. This results in codes with descriptions such as NOS (Not Otherwise Specified) and NEC (Not Elsewhere Classified) which have a specific meaning within the classifications; however these would not be used in SNOMED CT in relation to the direct care of the patient as their meaning could change each release.
- Terminologies like SNOMED CT are dynamic and updated frequently (every 6 months) to cope with the changing needs of clinical care as they provide the dictionary for data entry. SNOMED CT has a history mechanism to allow full transparency of any changes. The classifications need to remain stable over time to enable consistent trend reporting. In order to strike a balance with the need to update clinical knowledge updates to the classifications are planned to be every three years (though this may vary if there is a particular requirement).

Some use cases are therefore best suited to classifications and others to terminology; one needs to examine what is required and then decide which is the most appropriate to use (or possibly both).

[15] International Statistical Classification of Diseases and Related Health Problems 10th Revision: http://www.who.int/classifications/icd/en

[16] OPCS Classification of Interventions and Procedures https://nhsengland.kahootz.com/connect.ti/t_c_home/grouphome

Cross-maps can be used to aid the efficient allocation of classifications codes to an episode of care, for example using data captured in SNOMED CT in the discharge letter. Currently there is no intention to change using classifications as part of the hospital payment mechanism (because of the methodology used) although terminology is being considered to refine payment where the costs vary considerable within one HRG. In primary care, payments (QOF, enhanced services) have been made based on SNOMED CT since April 2018.

## 10.1 Mapping from terminology to classifications

As outlined, terminology is designed to capture the detailed clinical information for the direct care of the patient and it is required to be recorded at a particular moment in time. In secondary care classifications are allocated at the end of an episode of care, based on information abstracted from the medical record. Mapping tables from SNOMED CT to the classifications ICD-10 and OPCS-4 are provided nationally and these can assist deriving the classification codes based on the terminology; however these maps are not 1:1. Hence, these mappings are only semi-automated allowing consideration of additional information from within the EHR that may need to be considered before the final assignment of classification codes can be made.

These maps are known as cross-maps and are provided as a map refset within the RF2 release of the UK Clinical Edition. A number of suppliers provide products that use these maps to help improve the efficiencies of clinical coding; either within their own product or as an additional module that can be integrated into the business processes. Documentation on the structure and use of the cross-maps is provided as part of the release download pack.

**Please note**. There are no nationally provided maps from the classifications to SNOMED CT; it is not recommended and is not possible from the maps published, to map from the classifications to SNOMED CT.

## 10.2 ICD-11

ICD-11 is being designed for use in electronic health information systems which contain content captured using terminology. Following a collaborative agreement between the WHO and the IHTSDO, work has been ongoing to ensure harmonisation between ICD-11 and SNOMED CT.

Within the UK we are keeping abreast of the ICD-11 developments. As part of the WHO-FIC collaborating centre network we will be co-ordinating the UK involvement in the field trials of ICD-11; this is a key activity to test the fitness for purpose within the UK of this new classification. Further information can be found on the NHS Classifications webpages.

# 11 Use Cases

SNOMED CT essentially provides the healthcare terminology for use within healthcare systems. This section illustrates some of the scenarios in which SNOMED CT has been used.

NHS Digital provides a number of case studies on its website of successful use of SNOMED CT within different organisations; in addition SNOMED International provides illustrations of SNOMED CT in Action[17].

## 11.1 Summary Care Record

Summary Care Record provides healthcare professionals treating patients in different care settings with fast access to key clinical information. The data is derived from the GP system; the definition of which clinical information is to be extracted is provided in SNOMED CT.

## 11.2 e-Referral Service (eRS)

The NHS e-Referral Service (eRS, aka Choose and Book) combines electronic booking with a choice of place, date and time for first hospital or clinic appointments. Patients can choose their initial hospital or clinic appointment; book it in the GP surgery at the point of referral, or later at home on the phone or online.

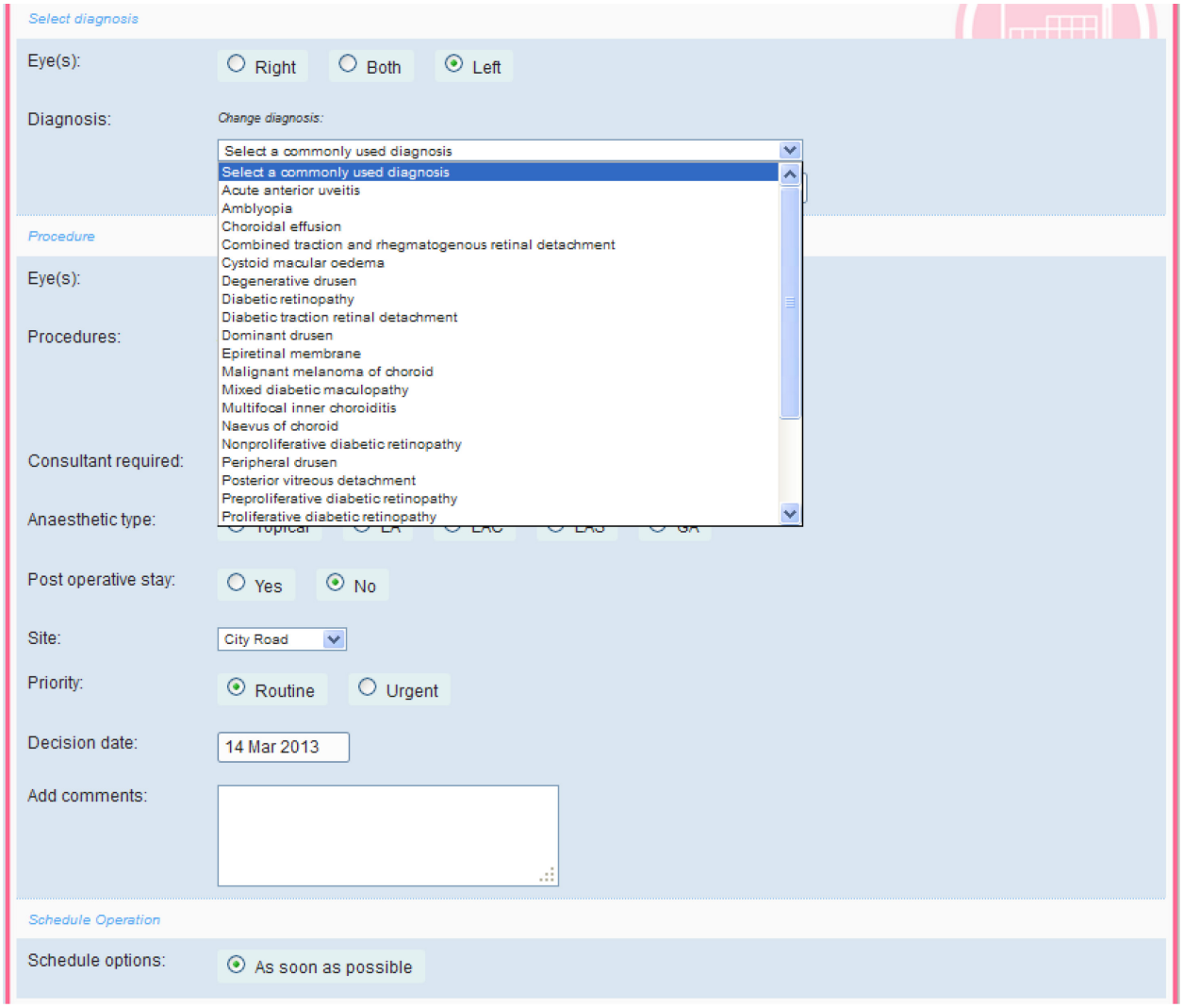
Searching for the appropriate hospital or clinic can be undertaken by using the clinical terms within SNOMED CT. Each hospital and clinic within eRS identifies from the provided set of SNOMED CT terms which apply to their facility.

## 11.3 Electronic Patient Records

A major use of terminology is within hospital electronic patient record systems (EPRs). Many of the solutions now available use the SNOMED CT terminology.

The following screen is provided by kind permission from Moorfields Eye Hospital who use SNOMED CT as part of their Open Eyes solution. SNOMED CT is used to capture diagnosis and procedure.

[17] http://www.snomedinaction.org/




## 11.4 Guidance and links to knowledge resources

Increasingly clinical guidance indicates the SNOMED CT terms to use in best practice guidelines. For example the NICE interventional procedures guidance and the Medical technologies guidelines indicate the appropriate SNOMED CT terms to use when recording such procedures and devices in the patient records. Further information can be found at: https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-interventional-procedures-guidance/coding-recommendations.

A variety of NHS England guidance, for example in relation to frailty, also indicates the appropriate terms to use when recording information in relation to the guidance.

As SNOMED CT provides a finite set of clinical terms, it is also useful for tagging knowledge resources and some EPR solutions use this to link directly to medical publications.

## 11.5 Clinical calculators

Some 3rd party clinical calculators such as risk of stroke are defined in SNOMED CT so that other applications can embed the algorithms in their systems.