


| | | | | |
|---|--|-----------------------------|-------------------------------|------------|
|  | SNOMED CT representations to support care planning functionality | | | |
| | Programme | NPFIT | Document Record ID Key | |
| | Sub-Prog / Project | Data Standards and Products | NPFIT-FNT-TO-TOSCI-007.21 | |
| | Prog. Director | Ken Lunn | Status | Approved |
| | Owner | Ian Arrowsmith | Version | 1.0 |
| | Author | Zac Whitewood-Moores | Version Date | 21/07/2010 |

SNOMED CT representations to support care planning functionality

Amendment History:

| Version | Date | Amendment History |
|---------|------------|---|
| 0.1 | 15/07/2009 | Initial draft for discussion |
| 0.2 | 27/07/2009 | First revision |
| 0.3 | 20/08/2009 | Second revision |
| 0.4 | 24/09/2009 | Third revision |
| 0.5 | 18/11/2009 | Fourth revision |
| 0.6 | 5/12/2009 | Fifth revision |
| 0.7 | 8/12/2009 | Sixth revision |
| 0.8 | 18/12/2009 | Seventh revision following meeting at RCN |
| 0.9 | 06/01/2010 | Further revision with addition of content from Chief Terminologist |
| 0.10 | 11/02/2010 | Revision following Terminology Liaison Meeting including title change |
| 0.11 | 26/02/2010 | Revision following Terminology Liaison Meeting and feedback received |
| 0.12 | 16/03/2010 | Revision following UKTC Implementation Forum |
| 0.13 | 22/03/2010 | Revision following Terminology Liaison Meeting and feedback received |
| 0.14 | 07/04/2010 | Update of approvers following feedback from National Clinical Content Board |
| 0.15 | 17/04/2010 | Contractual statement revised (purpose) |
| 0.16 | 14/05/2010 | Minor corrections from feedback received |
| 0.17 | 24/05/2010 | Minor corrections from feedback received |
| 0.18 | 28/05/2010 | Revision following feedback received |
| 0.19 | 30/06/2010 | Rationale for limited number of procedure contexts inserted |
| 0.20 | 30/06/2010 | Rationale for limited number of procedure contexts modified |
| 1.0 | 21/07/2010 | Publication following correction of typo from approver |

Forecast Changes:

| Anticipated Change | When |
|--------------------|------------------|
| Annual Review | 1 year from v1.0 |
| | |

Reviewers:

This document must be reviewed by the following:

| Name | Signature | Title / Responsibility | Date | Version |
|----------------|-----------|---|------------|---------|
| Gill Stonham | | Head of Knowledge and Strategic Alignment | 14/05/2010 | 0.20 |
| Su Wilkinson | | Strategic Partner Liaison | 14/05/2010 | 0.20 |
| Ian Arrowsmith | | UKTC Chief Terminologist | 14/05/2010 | 0.20 |
| Anne Casey | | RCN Advisor in Information Standards / IHTSDO Nursing SIG Chair | 14/05/2010 | 0.20 |
| Ed Cheetham | | | 14/05/2010 | 0.20 |

Approvals:

This document must be approved by the following:

| Name | Signature | Title / Responsibility | Date | Version |
|------------------------|-----------|---|------------|---------|
| Ken Lunn | | Director of Data Standards and Products | 14/07/2010 | 0.20 |
| James Paton | | UKTC Clinical Director | 13/07/2010 | 0.20 |
| UKTC Edition Committee | | | | |

Distribution:

LRA

xPfITs

BT PMO

CSCA PMO

Professional Bodies

Document Status:

This is a controlled document.

Whilst this document may be printed, the electronic version maintained in FileCM is the controlled copy. Any printed copies of the document are not controlled.

Related Documents:

These documents will provide additional information.

| Ref no | Doc Reference Number | Title | Version |
|--------|--|--|----------------------|
| 1 | Internal Audience Only: http://intranet.connectingforhealth.nhs.uk/departments/npo/glossary/glossary?searchterm=glossary External Audiences: http://www.connectingforhealth.nhs.uk/actsandfiction/jargonbuster/acronyms | Glossary of Terms Consolidated.doc | v13 |
| 2 | http://www.ihtsdo.org/fileadmin/user_upload/Docs_01/SNOMED_CT_Publications/SNOMED_CT_Technical_Reference_Guide_20090131.pdf | SNOMED CT Technical Reference Guide 20090131 | Jan 2009 |
| 3 | BS EN ISO 18104:2003 | Health informatics – Integration of a reference terminology model for nursing | 16 February 2004 |
| 4 | NPFIT-FNT-TO-DPM-0935 | Care Components Model – Working Draft | v0.3.2 02/06/2009 |
| 5 | TBA | Logical Record Architecture for Health and Social Care Terminology Binding Technical Specification | V0.4 |
| 6 | NPFIT-NCR-DES-0402 | Guidance on implementing the SNOMED® Clinical Terms Context Model P1R2 Build 3 | V1.2 |
| 7 | NPFIT-FNT-TO-DSD-0153 | SNOMED CT Guiding Principles | V1.0 |
| 8 | http://www.rcgp.org.uk/news_and_events/news_room/news_2009/rcgp_shared_record_professiona.aspx | Informing shared clinical care | June 2009 |
| 9 | NPFIT-FNT-TO-TOSCTI-0001 | Clinical Content Terminology Binding: Practical Considerations | 12 June 2009 |
| 10 | http://www.ihe.net/Technical_Framework/upload/IHE_PCC_Patient_Plan_Of_Care_PPOC_TI_-2009-08-10.pdf | IHE PCC Technical - Framework Supplement - Patient Plan of Care (PPOC) | 2009 |
| 11 | ANSI/HL7 Arden V2.7-2008 | Health Level Seven Arden Syntax for Medical Logic Systems | 6 May 2008 |
| 12 | NPFIT-FNT-TO-DSD-0160 | Use of SNOMED CT UK Edition for Scored Assessments Implementation Guidance | 16/10/2009 |
| 13 | NPFIT-FNT-TO-TOSCI-0007.9 | SNOMED CT in care planning | 06/01/2010 |
| 14 | Notes by Ed Cheetham | A State Model for SNOMED CT Context values for actions | 10/1/2006 |
| 15 | NHS Information Authority | The Context of Care Project Model and Termlist | V0.3 01/2001 |
| 16 | NHS CUI Design Guide Workstream | Care Pathways Conceptual Modelling | 28/3/2007 |

Glossary of Terms:

List any new terms created in this document. Mail the NPO Quality Manager to have these included in the master glossary above [1].

| Term | Acronym | Definition |
|---|---------|--|
| Clinical Document Architecture | CDA | Clinical Document Architecture used in messaging templates |
| Health Level Seven | HL7 | Standards for electronic interchange of clinical, financial, and administrative information among health care oriented computer systems |
| NPfIT Local Ownership Programme | NLOP | Accountability for the delivery of National Programme for IT transferred to strategic health authorities strategic health authorities on 1 April 2007, as part of the National Programme for IT Local Ownership Programme |
| London Programme for Information Technology | LPfIT | Part of NHS London, LPfIT has overall responsibility for upgrading NHS information technology to make it possible for hospitals, community services, mental health trusts and GPs to share electronic patient records across the capital. |
| North, Midlands and East Programme for Information Technology | NMEPfIT | The six strategic health authorities (SHAs) overseeing the geographic area covered by the former East, North East, and North West and West Midlands Clusters are: <ul style="list-style-type: none"> East of England SHA East Midlands SHA North East SHA North West SHA West Midlands SHA Yorkshire and the Humber SHA |
| Southern Programme for Information Technology | SPfIT | The three SHAs overseeing the Southern Programme for IT are: <ul style="list-style-type: none"> South Central SHA South East Coast SHA South West SHA |
| x Programme for Information Technology | xPfIT | Under the NLOP NPfIT Local Ownership Programme to describe any of the three regional programmes, LPfIT, NMEPfIT or SPfIT |
| International Health Terminology Standards Development Organisation | IHTSDO | The International Health Terminology Standards Development Organisation is an international not-for-profit organization based in Denmark. IHTSDO acquires, owns and administers the rights to SNOMED CT and other health terminologies and related standards. |

Contents

| | | |
|-------|---|----|
| 1 | About this document | 8 |
| 1.1 | Purpose | 8 |
| 1.2 | Audience | 8 |
| 1.3 | Scope | 8 |
| 1.4 | Out of scope | 8 |
| 1.5 | Assumptions | 9 |
| 2 | Background | 10 |
| 2.1 | Care planning | 10 |
| 2.2 | SNOMED CT | 11 |
| 2.2.1 | Terminology to support care planning | 11 |
| 3 | SNOMED CT in care planning functionality..... | 12 |
| 3.1 | Assessment | 13 |
| 3.2 | Diagnosis/Analysis..... | 13 |
| 3.3 | Procedures and context | 13 |
| 3.3.1 | Context values for actions (recommended) | 15 |
| 3.3.2 | Context values for actions (supplementary)..... | 15 |
| 3.3.3 | Additional context values for actions (not recommended in most circumstances) | 16 |
| 3.3.4 | Typical state transitions for procedures | 16 |
| 3.3.5 | Frequency and representation of recurring procedures | 17 |
| 3.4 | Rendering of post-coordinated expressions for procedures..... | 18 |
| 3.5 | Formal assessment procedures and named care plans | 19 |
| 3.6 | Representing goals in a care plan..... | 19 |
| 3.6.1 | Rendering of post-coordinated expressions for goals..... | 19 |
| 3.7 | Nature of the procedure (Intent)..... | 20 |
| 3.7.1 | Suggested intent value range | 20 |
| 3.8 | Evaluation and Outcomes | 21 |
| 3.8.1 | Measure of status of diagnosis or finding | 21 |
| 3.8.2 | Change/no change of a finding | 21 |
| 3.8.3 | Achievement of, or progress towards a goal..... | 21 |
| 3.8.4 | Evaluation and review of the plan together with the expected and actual outcome | 22 |
| 3.9 | Other technical considerations..... | 22 |
| 4 | Document Lifecycle & Feedback..... | 22 |
| 5 | Appendices | 23 |
| 5.1 | Appendix 1 – Context values for actions (October 2009 UK release) | 23 |
| 5.2 | Appendix 2 – Additional Reference Materials | 24 |
| 5.3 | Appendix 3 – Clinical episode walk through..... | 25 |

1 About this document

1.1 Purpose

This document provides guidance on using Systematised Nomenclature of Medicine Clinical Terms (SNOMED CT) in the design and configuration of multidisciplinary care/treatment planning functionality within electronic health care systems to be compatible with anticipated current clinical system capabilities for routine documentation. This document is intended to give guidance on the use of SNOMED CT in care planning type functionality but is not a proxy for the comprehensive requirements and functional design process, and should in no way be considered a contractual obligation in the current framework for the NHS in England.

1.2 Audience

This guidance is for NHS Connecting for Health (NHS CFH) teams, xPfiTs, LSP, suppliers, and clinical leaders or health informatics staff involved in electronic care planning design and configuration for patients/clients/service users¹. A good general understanding of SNOMED CT and its use in clinical systems is required prior to using this document.

1.3 Scope

This document provides guidance on the use of SNOMED CT in care planning and related functionality, irrespective of the system's information model although it may also have an impact on system architecture, user interface design, system configuration and clinical content development. The document also provides guidance for those designing electronic care planning or other applications, which may wish to interface with these systems.

1.4 Out of scope

This document does not:

- Deliver detailed guidance on generic post-coordination² principles, proprietary specific considerations and other aspects covered within guidance from NHS CFH, the IHTSDO and UKTC. General features of the SNOMED CT concept model and its use in clinical systems will not be explored in detail
- Address differing models of professional care across the many disciplines involved in care/treatment planning, nor significantly influence them
- Detail the process of referral or task referral from one professional group to another whether within an application or by messaging.
- Address areas such as adult and child protection, multidisciplinary delivery of care, mental health and health and social care integration, although many principles will still be applicable to these areas
- Consider the design, usability and specification of any user interface. There needs to be consideration to making the care plan easy to use, accessible

¹ Across health and social care, the people that care plans may refer to patients, clients and service users by various agencies. This list is not exhaustive but reflects the major references. For clarity, this document refers to any of these variants as service users.

² Post-coordination in SNOMED CT is a term for a piece of clinical information that requires more than one code or attribute to explain it. For example, arm | laterality | left.

and consistent for service users in terms of both the terminology used and the ability to navigate a version of the care plan with little or no training.

- Give guidance on the service user's access to their care plan.
- Identify the specific training needs of staff leading up to configuration or use of any SNOMED CT enabled system
- Identify the deployment timelines for specific application dependencies and antecedent reporting functionality
- Identify the timescales for delivery of full interoperability of care plans and care planning functionality between organisations, which is required to meet NHS business needs.
- Medication administration is considered out of the scope of care planning and this guidance
- Conditional statements to guide actions have not been considered in detail despite being required by many areas of care planning and therapeutic prescription (not just medication) require a combination of statements e.g. "If ... then ..." Within the information model "Arden Syntax"³ is well established, however it's combination with structured terminology less matured.

1.5 Assumptions

In this document, the care planning functionality is generally referred to as a "care plan"; however, some professions/sectors have differing descriptions for this concept. Application functionality and descriptions must reflect these varying needs, whilst bringing the record together as an integrated health record. The phraseology currently used differs slightly between professions; for example medicine generally refers to "treatment plans", midwifery has "birthing plans", social care has "support plans" and nursing and many other health and social care professions refer to "care plans" or "intervention plans".

Whilst the descriptions differ slightly, the essential content is similar, the application itself may also describe the area used for this purpose differently again, e.g. Structured Care or PowerPlans, some of these descriptions may be subject to Trade Mark. There are likely to be systems from many different suppliers in use across all health and social care sectors, therefore any design is likely to need to be transferable or accessible and updatable in multiple systems rather than dependent on any single application.

Some degree of post-coordination within the supplier application is expected to be present or available in imminent releases. Care planning and delivery is an iterative process and pre-coordination of every phase of planning and recording of a given procedure would be unrealistic and onerous for the application, record and terminology to manage.

Common User Interface design mandates and recommendations are being incorporated into the specific requirements identified by the NHS for care planning functionality. The way a given application presents this functionality to a user will differ between supplier systems; however, consistency in the user interface will be beneficial in reducing training and ensuring safe use. The CUI project has nine areas

³ There is guidance available for the information system within the Health Level Seven Arden Syntax for Medical Logic Systems; however, specific guidance on how SNOMED CT is used in conditional statements is under consideration.

of guidance, mandated for basic demographic information. Please see the NHS Information Standards Board site⁴

Any examples shown are not for direct use in clinical systems; whilst based on real clinical documents, a comprehensive clinical assurance process for their generalisation has not been undertaken.

The contents of this document reflect a consultation process involving over 400 healthcare practitioners (predominantly nurses) and consultation with expert opinion at both a national and international level. Further guidance is likely to emerge alongside the development of clinical systems to support the health care process.

2 Background

The NHS has identified SNOMED CT as the terminology of choice for electronic clinical record keeping, of which, care and treatment planning forms a significant part. This document provides guidance in the use of SNOMED CT in care planning functionality to address requirements for support in this area, requested by the supplier community and the NHS.

2.1 Care planning

Care planning is a conceptual framework with many interrelated dependencies and antecedents. A complete understanding of the real world processes is required to specify and build and/or configure a system that supports clinical care planning. These processes include assessments, predefined care plans, bespoke care plans, integrated care pathways and may include care plan elements or combinations of the afore mentioned concepts.

Figure 1 illustrates the Key “documentation” points associated with the care planning process. In this context, “referral” is either a handover of care or a service order request without handover of care. The care transfer may be internal or external and is likely to involve integration with associated functionality. This will depend on system design, scope and configuration and the arrangements in place in a given health economy or health or social care environment.

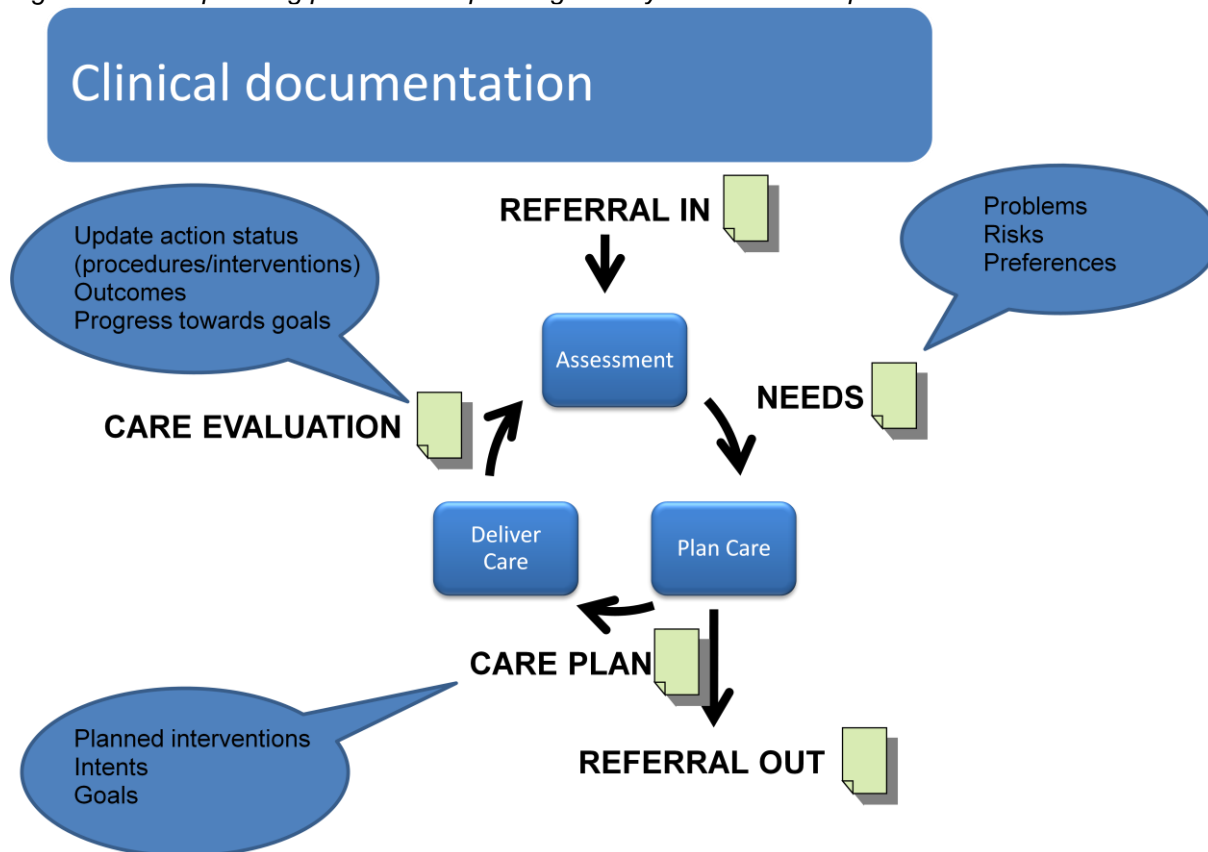
The Department of Health identifies personalised care planning as essentially about addressing an individual’s full range of needs, taking into account their health, personal, social, economic, educational, mental health, ethnic and cultural background and circumstances.⁵

In healthcare, multiple professional models of care co-exist which broadly follow a similar approach. This guidance seeks to support all common models without endorsing any one over any other. Figure 1 is a pictorial illustration of the basic model common to most care planning approaches, which all resemble the scientific method.

⁴ <http://www.isb.nhs.uk/docs/cui>

⁵ Department of Health (2009) http://www.dh.gov.uk/en/Healthcare/Longtermconditions/DH_093359

Figure 1 – Care planning process incorporating the key documentation points



2.2 SNOMED CT

The IHTSDO describes SNOMED CT as a comprehensive terminology for health care with declared guiding principles that:

- Development efforts must encompass broad, inclusive involvement of diverse clinical groups and medical informatics experts
- The clinical content must be quality focused and adhere to strict editorial policies
- The quality improvement process must be open to public scrutiny and vendor input, to ensure that the terminology is truly useful within healthcare applications
- There must be minimal barriers to adoption and use.

2.2.1 Terminology to support care planning

There is significant support for an electronic patient record using a structured terminology amongst health professionals, and this is acknowledged to be SNOMED CT within the NHS.⁶ SNOMED CT supports the majority of descriptions identified in consultation regarding interventions and has a suitable structure to support multidisciplinary care planning. Health and social care professionals are working in a more service user centric fashion with an increasing blurring of the boundaries between professional groups and working with non-professional support staff. Interdisciplinary working has led to an increased necessity for health and social care to share a common terminology. The Royal College of General Practitioners

⁶ http://www.rcn.org.uk/newsevents/government/briefings/electronic_patient_record_brief

Informatics Group believe that appropriate information sharing is essential to the safe, effective provision of care in a modern health service and one of the issues highlighted in their report is establishing shared understanding of ontology⁷.

3 SNOMED CT in care planning functionality

Many elements of the care plan would usefully be coded; however, it should also be noted that there may also be a degree of narrative beyond the scope of the formal clinical terminology. In general, information is worth coding if there are any business processes that are driven by this coding.

There will also be structured elements of the system information model which provide essential business functionality but would not be coded using SNOMED CT such as dates, times, frequencies and scheduling.

When considering how much SNOMED CT to use within care planning functionality of electronic clinical systems, it is essential to consider the properties of SNOMED CT, any trigger/transition points for actions/intervention plus the likely retrieval and analysis requirements. Important clinical information intended for context and/or detail that does not need to be processed, need not be coded. There are also essential elements of healthcare that are represented in other ways that are important components of the care planning process, for instance the ability to measure progress over time or for particular demographic classes of service user. These requirements should normally be satisfied using other aspects of the information model. It is important to acknowledge that other parts of the record (over and above any SNOMED CT concept coding) are also essential parts of the care planning process.

Checklist items, such as local or specialty protocols, may be important in the care of the service user but are more like reminders to perform activities. These may not belong in a care record and there would generally be little utility currently in coding them. These may include subtasks of an overall procedure that may have utility as reminders but only the overall procedure would normally be coded. In addition there may also be items which fall outside the care plan itself but may be incorporated in supporting policies/guidance – e.g. ensure bed sheets are crumb/crease free. These do not belong in an individual care record, whether paper or electronic but are part of the general standards of care in place in the organisation at a given point in time.

In the future, as systems become more sophisticated, and the possibilities of the use of information become better understood, then it will almost certainly be beneficial to record additional information in a coded form. Much of the impact of this type of functionality will be dependent on real time multiple-resource scheduling functionality of clinical systems.

The initial scope for care planning using SNOMED CT (principally actions, goals & outcomes) are illustrated in Table 1 below. Whilst this will not support all aspects of the care planning process conceptually, these are considered to deliver the most benefits to professional care. Section 3.3 and subsections consider the conceptual modification eluded to in this table. This guidance document particularly focuses on the latter four sections of the process to support the design and deployment process.

Table 1 – Care planning elements and SNOMED CT Chapters

⁷ http://www.rcgp.org.uk/PDF/Get_Involved_SRPG_final_ref_report.pdf

| Professional process | Principle relevant SNOMED CT chapters |
|--|--|
| Assessment | Procedure |
| Assessment outcome | Finding and/or observable entity + value |
| Diagnosis/Analysis | Finding/disorder +/- contextual modification |
| Plan of required actions | Procedure with contextual modification |
| Goals | Finding with contextual modification |
| Actions | Procedure with contextual modification |
| Evaluation of care / reassessment, care outcomes | Finding +/- contextual modification |

The key aspects of SNOMED CT in representing important elements of clinical expressions in care planning follow. The majority of representations use some form of post-coordination.

3.1 Assessment

Assessment is often considered a precursor to the care planning itself and is an integral part of the process overall. When instantiating a new care plan, the assessment itself is a procedure and increasingly the systems will display this in an initial care plan as one of the first planned interventions. It may be that even though the assessment has already started, if not finished, it may require evaluating to record progress or completion. Thus, the initial care plan for an unplanned admission may incorporate just those elements that are required for all service users, with identification of a more comprehensive plan once a working or definitive diagnosis is made. Future assessments in conjunction with evaluation/reassessment may be indicated or as part of an ongoing process. Guidance on the use of SNOMED CT in scored assessment is in the document Use of SNOMED CT UK Edition for Scored Assessments - Implementation Guidance (ref NPFIT-FNT-TO-DSD-0160.05).

Results of assessments, which do not result in a formal score, are normally represented as a clinical finding. This may identify a particular intervention requirement or a formal care plan.

3.2 Diagnosis/Analysis

In addition to simple findings resulting from an assessment, the clinician may assert a diagnosis as part of the analysis of findings. The representation of clinical findings and disorders has established guidance from the IHTSDO and therefore not presented further in this paper.

3.3 Procedures and context

One of the more useful components of a care plan to code with SNOMED CT are the actions (interventions/procedures) required or undertaken.

Expressions for clinical actions/interventions are found in the procedures hierarchy in SNOMED CT, which encompasses regimes/therapies, assessments, administrative

procedures etc. Within this document, the term “procedure” includes any of these sub-categories unless explicitly stated otherwise.

SNOMED CT procedures are expressed in “tense neutral” verb forms. This allows them to have context added, e.g. a commonly used expression in a care plan, such as “monitor blood pressure”, represented in SNOMED CT as “blood pressure monitoring” and would indicate that it is “done” unless otherwise modified. To represent other states such as to be done, or not to be done etc this concept could be modified using the SNOMED CT context model and would allow a user to assert that. Anecdotal evidence suggests that the tense variation may be of little significance to users when displayed in the plan itself; however, those designing interfaces and search algorithms may need to account for end users using different tenses.

The SNOMED CT context model is of particular importance when attempting to represent a service user’s progress with respect to procedures (as part of a care plan) as it allows significant modification of concept meaning by combination with other concepts.

Take for example a simple procedure concept such as “dressing of wound”. We might want to say in a care record that this is “planned” as part of a formal care plan and we might want to record that it has been “done” or even “considered and not done”. All of this can be achieved by applying procedure contextual modifiers to the focus concept ‘dressing of wound (procedure)’ – it is not necessary to create separate concepts to represent each possible stage or status of this procedure.

A considerable number of permissible SNOMED CT values support multiple apparently similar use cases. The use of all of these values in care planning activities might lead to some confusion, e.g. is it clear, in the context of a care plan, or an activity within one, what the difference is between ‘ended’, ‘done’ and ‘performed’.

For care planning, a constrained range of “context values for actions” will support most generic cases and will provide the most value in the short to medium term whilst electronic systems incorporate greater degrees of sophistication. There may be specific circumstances in which others from the range of context values for actions are appropriate.

In the case of an investigation or assessment procedure, alternative updating mechanisms such as citation (asserting a linkage between two statements in the record using the information model) may automatically change the status of a procedure. E.g., Recording of a blood pressure or Waterlow pressure risk assessment score can automatically update the plan to indicate the action is “done”. The functionality required for communication of repeating planned procedures/regimes such as 4-hourly blood pressure monitoring managing the relationship between “done”, “in progress” or “to be done” needs to be supported.

Supplementary information, for example the reason for not doing something, can be recorded by citing existing statements in the record, citing new statements or using free text.

For example, the reason for not undertaking any procedure would not be built into a composite concept such as ‘arthroscopy not done due to death in the family’ or ‘patient did not attend for arthroscopy’.

3.3.1 Context values for actions (recommended)

The number of recommended state transitions has been kept to a minimum to reflect known requirements. In particular, the permitted context value for procedures of 'planned' was not included in the recommended set due to the absence of an initial requirement to represent, in a care plan, whether an action was "scheduled", "being organised", "accepted", "requested" or "under consideration". Likewise, action states such as "cancelled", "denied" or "not needed" were not identified as initial requirements.

The range of procedure context values recommended for general care planning activities as part of a care plan at this time is:

3.3.1.1 To be done

This indicates that a considered action has been accepted and/or agreed and is going "to be done".

3.3.1.2 Done

This indicates that an action is completed and is the default status in the SNOMED CT context model.

NOTE: This does not necessarily indicate that the action has been successful.

In certain circumstances it may be appropriate to automate this based on other functionality or messaging, e.g. if an investigation report is received, it is reasonable to infer that the test has been done.

3.3.1.3 Not done

This concept identifies where the action entered a pre-starting action state but ended before entering any other post-starting action state. It is important to be able to state that it was "not done" (following some degree of consideration); it does not mean 'not yet done'

3.3.1.4 Not to be done

This indicates that a considered action is "not to be done".

3.3.2 Context values for actions (supplementary)

The most likely other states to consider are:

3.3.2.1 Stopped before completion

This indicates that an action that has been in progress ended before completion.

3.3.2.2 Under consideration

This indicates that a clinician is actively considering a given action.

3.3.2.3 In progress

Most anticipated procedures start in the plan as "To be done" and then following completion or otherwise, updated to an appropriate status. In most circumstances, a status update to "In progress" is superfluous; however, in the case of a prolonged or formal procedure, it may be appropriate, e.g. an operation, ECG monitoring or renal dialysis. Some degree of integration and communication with other systems will

improve workflow and safety; for example if a start time is recorded, without a finish time, the status might be set as “In progress”.

3.3.3 Additional context values for actions (not recommended in most circumstances)

A broader range of contextual modifiers is available for specific use cases, these may augment these recommended, and supplementary context values listed above, and the full list is in appendix 1.

3.3.4 Typical state transitions for procedures

Most often a procedure will go from being needed to being done and may go through various states in between.

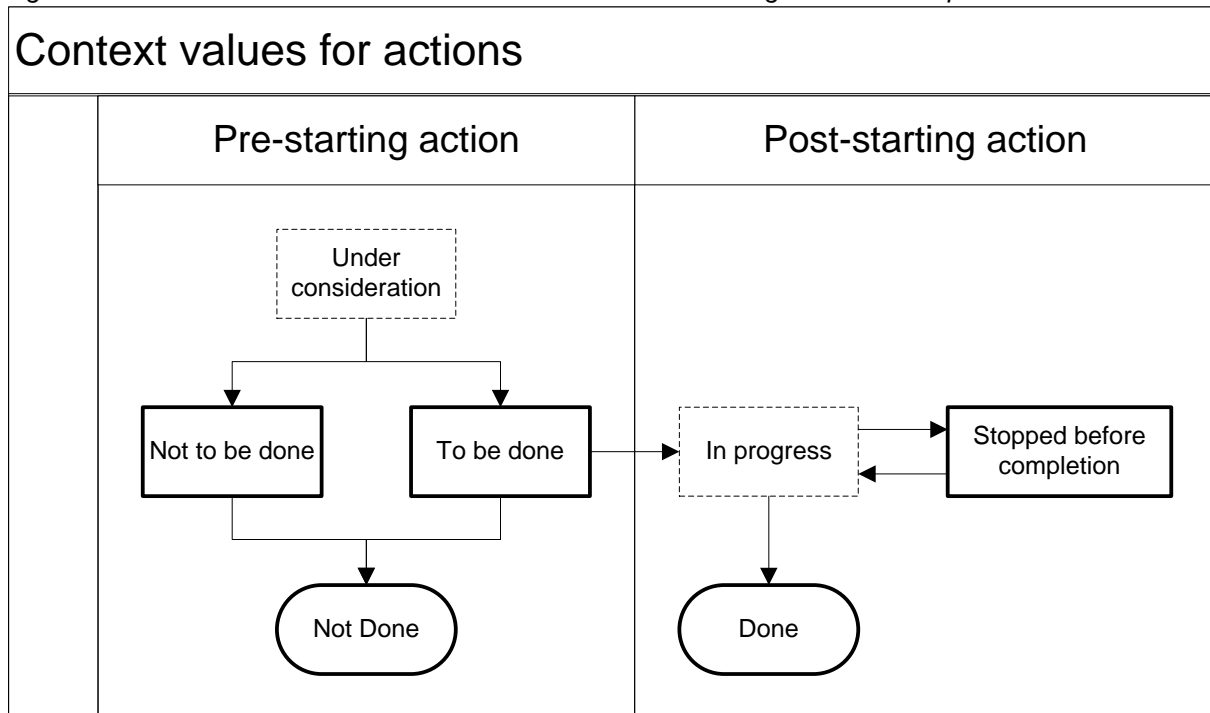
For example, a care professional applying a care plan to a patient record will consider whether a procedure within a care plan template is applicable to a service user – in which case the context will be set to ‘to be done’. If the procedure is contraindicated for any reason then it would be set to ‘not to be done’ (or ‘not done’ if previously planned), usually with an associated reason which may or may not be coded.

If the procedure was completed satisfactorily then the procedure status would be set as ‘done’, however, if started and problems were encountered forcing abandonment, then it could be assigned a context of ‘stopped before completion’.

This type of contextual post-coordination should be used to achieve representation of procedure status. There is therefore no need to create new pre-coordinated concepts for care planning across the entire procedure hierarchy such as:

- Arthroscopy to be done
- Arthroscopy not to be done
- Arthroscopy done

Figure 2 – Context values for actions and state transitions for single occurrence procedures



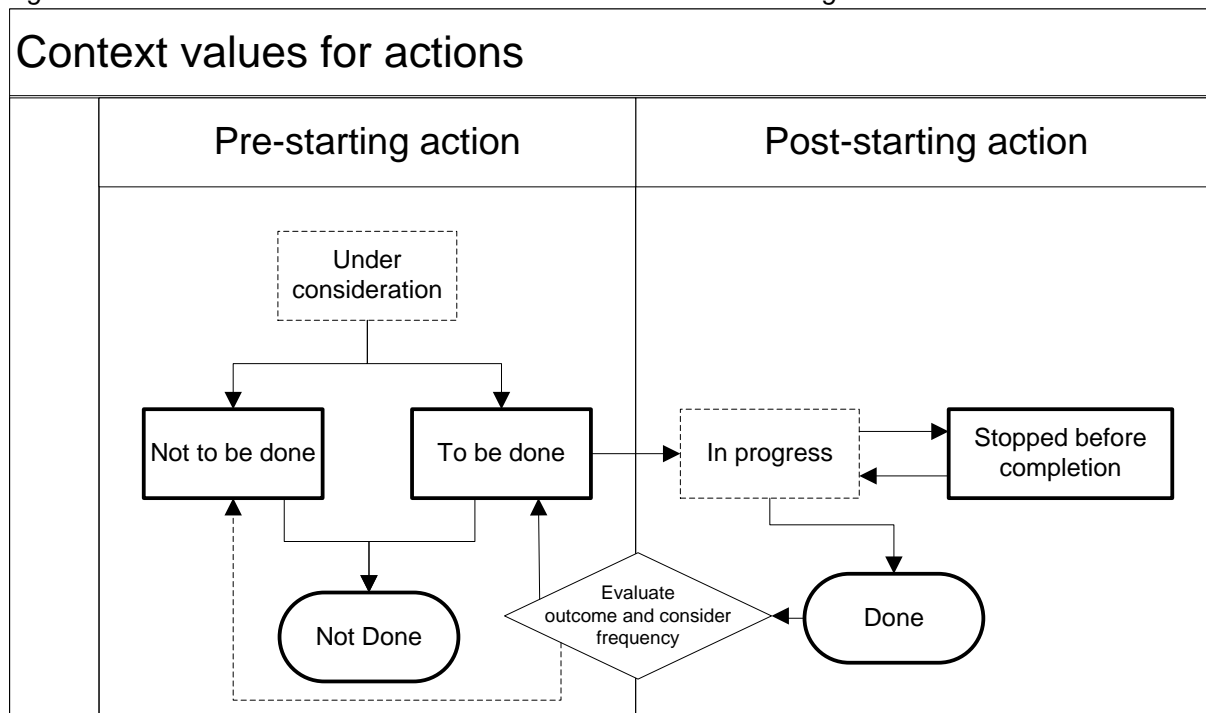
Dotted boxes are optional statuses

3.3.5 Frequency and representation of recurring procedures

Whilst some actions, e.g. an operative procedure are generally single occurrences in the patient plan, many occur several times throughout the care episode, e.g. vital signs investigations, medications administration, a course of therapy etc. An alternative consideration is required for the state transition in that a procedure will still need “to be done” again once “done” for the first and subsequent times.

For many of these recurring procedures, a certain amount of linkage between record entries is appropriate. For example, if the care plan has a regular scheduled element of “peritoneal dialysis catheter maintenance” it would be reasonable to expect the plan to be updated with “Done” and the item rescheduled for the next due time as “To be done”.

Figure 3 – Context values for actions and state transitions for recurring actions



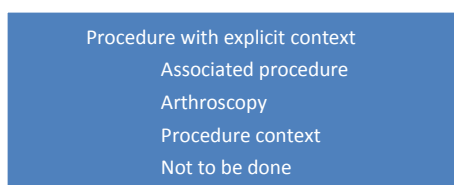
3.4 Rendering of post-coordinated expressions for procedures

Where concepts are post-coordinated and then re-displayed in an environment, different to that where the information entered then consideration of readable simple rendering on screen is essential and this should be congruent with Common User Interface (CUI) guidance where available. The examples shown should be considered with caution; they illustrate the issue of presentation of post co-ordinated concepts, rather than a complete and generalisable model, which would come from CUI guidance.

Any care planning module should enable user interface functionality to combine the focus procedure concept with its context, e.g. using a radio button/check box. However, upon subsequent retrieval, say in a summary screen, the user interface options may be different and it should be possible to display a sensible equivalent expression to that originally entered:

- 'y' procedure context – 'x' procedure, e.g. Not to be done – Arthroscopy

The application itself would retain the full SNOMED CT expression, including default context and attribute relationships, but these additional attributes and some default values may not be needed for display purposes, e.g. considering the above example (numeric identifiers removed for clarity).



Consideration of specific use cases may be required for scenarios, which differ, even slightly, from the guidance issued as not all guidance is universally applicable.

3.5 Formal assessment procedures and named care plans

Many formal and informal assessments have been developed to support the care process ranging from simple check-lists to enable care to be delivered efficiently, to more sophisticated measures to enable injuries to be assessed against a scale which may determine a course of action or subsequent treatment. The formal assessment process may be thought of as a care plan itself; although there may not be a need to code components individually within the assessment. For a full description of representation of assessment procedures is in SNOMED CT see the Use of SNOMED CT UK Edition for Scored Assessments Implementation Guidance (ref NPFIT-FNT-TO-DSD-0160).

3.6 Representing goals in a care plan

An electronic care plan may need to represent the overall goal of the plan and/or subsidiary goals of individual actions within the care plan. A goal can be considered the same as the desired outcome. The finding in SNOMED CT should be described in terms of a positive state as negative states already include contextual modification and are unsuitable to use as goals.

It is possible to express the achievement of a particular physical/mental state as the goal of a care plan by the use of the SNOMED CT finding context value of 'goal'. For example, it may be the goal of a care plan to be able to walk without assistance (independent walking), by assigning the finding context of 'goal' against the focus concept 'independent walking'.

The goal should not be expressed as a single concept attempting to combine the procedure with the goal, e.g.:

- Manipulation of knee joint to enable successful mobilisation
- Application of electric heat pad to reduce pain

Where required, these types of goal statements should be expressed separately as clinical attestations in their own right and any linkage with the actions (interventions/procedures) accomplished by citation or similar associations in the information model of the application, both becoming integral parts of the care plan.

In SNOMED CT, there may be regimes that incorporate an implicit or explicit goal for example:

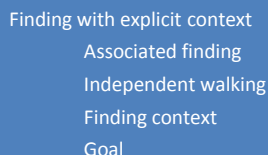
- maintaining the client's dignity
- aerosol or vapor inhalation for sputum induction for diagnostic purposes

These should not be seen as precedent of an approved term construct as many examples date from legacy terminologies, which have been included to support migration of active clinical records.

3.6.1 Rendering of post-coordinated expressions for goals

Where it is important to associate a particular condition (or improvement to one) as the goal, then the pattern might be

- y finding context (or goal), x finding, e.g. Goal, able to walk unaided



Finding with explicit context
Associated finding
Independent walking
Finding context
Goal

The model of SNOMED CT supports the achievement of a positive outcome more effectively than the elimination of a negative situation. It may be that additional content is required or the SNOMED CT model will need adapting to support such use cases, e.g. a goal of reduction of knee pain is currently problematic.

It will be easier to determine the achievement of a goal if it is defined objectively, this is especially important for goals that relate to quality indicators where a clear cut achieved/not achieved is required for reporting purposes. We describe progress towards a goal in the real world; however, in the context of informatics, individual goals of steps towards the final goal make representation of progress more tangible.

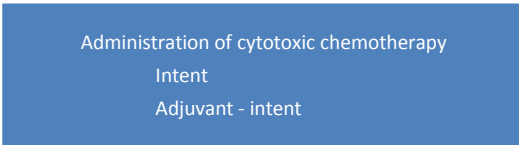
3.7 Nature of the procedure (Intent)

The aims of procedures, which can affect the way they are performed and their evaluation, such distinction can be provided by SNOMED CT using the ‘Intent’ qualifier. There are examples of pre-coordinated concepts that incorporate the intent within the concept, e.g. “Palliative course of radiotherapy”; however, there are many more that do not incorporate the intent, but for which the intent is important for primary clinical or reporting purposes. The intent may be implicit in the action concept or superfluous to the clinical record, so this should be an optional field.

A typical example, where this may be required is in the field of oncology care, e.g. where cytotoxic chemotherapy is administered; perhaps as an adjuvant or for palliative purposes. This intent may change during the course of therapy, but the majority of the care plan might remain unchanged. Extension of pre-coordination of intent is unlikely to be the most appropriate course of action and that post-coordination will generally offer a much more flexible approach.

Where it is necessary to describe the intent of the procedure then the focus concept would be post-coordinated with a permissible value from the SNOMED intents range of values, for example, the rendering pattern for this type of expression might be:

- Intent y, Procedure x, e.g. Adjuvant – intent⁸, Administration of cytotoxic chemotherapy



Administration of cytotoxic chemotherapy
Intent
Adjuvant - intent

3.7.1 Suggested intent value range

Known use cases exist for post-coordination a constrained range of ‘intent’ values for care planning as follows:

- Palliative
- Therapeutic
 - Adjunct

⁸ It has been suggested that the word “intent” should be dropped from the preferred term of the concepts in the intents hierarchy to improve the natural language rendering of expressions.

- Adjuvant
- Neo-adjuvant
- Curative
- Prophylactic
- Supportive

Whilst other intents exist, their use is not thought relevant at this point for care planning. Content also exists with intent already modelled within its procedure context, e.g. “palliative course of deep X-ray therapy”.

3.8 Evaluation and Outcomes

An outcome unrelated to the overall plan may be significantly recordable in its own right as a finding, e.g. the identification of “high risk of venous thromboembolism” identified by a “venous thromboembolism risk assessment” on admission to hospital. Whilst it may not be their primary reason for admission, this finding will be important to record and communicate to others involved in their care.

The system information model can be used to associating them in a care plan rather than using the terminology model, as there is no currently no SNOMED CT standard way of representing these notions.

Illustrations of example outcome types are in the following sections:

3.8.1 Measure of status of diagnosis or finding

This is an essential part of the clinical process in which the assessment findings at the end of care process are compared to previous findings and a judgement asserted on this comparison. Examples include:

- Improved
- Worsened
- No change

A number of change values appear to be in SNOMED CT; however, at this point use the information model to express change over time.

3.8.2 Change/no change of a finding

Relative change is not currently represented in SNOMED CT and should be represented using the information model.

An example might be a person identified to have a “high risk of primary heart disease” may, following smoking cessation programme be identified at “moderate risk of primary heart disease”. This reduction in risk can be represented using the information model; the terminology is used to represent the status at a given point in time.

3.8.3 Achievement of, or progress towards a goal

During the evaluation process, the achievement or progress towards a goal may involve both the information model and terminology. Whilst “Goal achieved” and “Goal not achieved” exist in SNOMED CT, there may also be a need to support intermediate progress towards a goal. Until a complete and consistent model is available, the information model alone should be used for this purpose.

3.8.4 Evaluation and review of the plan together with the expected and actual outcome

The process of evaluation also encompasses a degree of reassessment, thus there is likely to be a need to combine the recording of narrative text, the assessments or other procedures undertaken and findings of assessments. Whilst many of these elements are, are straightforward to develop in clinical systems, multidisciplinary evaluation involves a complex combination of conceptual processes, which need an interface with synergy between structured and unstructured content.

3.9 Other technical considerations

In most cases, the UK preferred term for the SNOMED CT concept will be used in configuration of care plans; however, the application should also be able to support any sanctioned synonym; decisions regarding the most appropriate descriptions will be determined as part of the NHS content requirements and assurance processes. There may be situations where use of a formally supported SNOMED CT synonym is acceptable but the system user should have immediate access to an unambiguous description e.g. using tool tip functionality.

The full term should normally be displayed, with any line wrapping complying with Common User Interface (CUI) guidance and truncation being avoided in screen displays and printing. The SNOMED CT maximum string length of 255 characters should be available in displays to support CUI guidance.

4 Document Lifecycle & Feedback

The content of this document is based on extensive consideration within the community of experts.

Experience gained from the application of this guidance will inform updated versions. It is anticipated that the provisions set out in the first formal release will not be subverted by subsequent releases of this document.

Feedback setting out experience of implementation and use of this guidance is sought and should in the first instance be sent to the UK Terminology Centre via the Data Standards helpdesk datastandards@nhs.net

5 Appendices

5.1 Appendix 1 – Context values for actions (October 2009 UK release)

288532009 | [Context values for actions](#)
410537005 | [Action status unknown](#)
410536001 | [Contraindicated](#)
410535002 | [Indicated](#)
385660001 | [Not done](#)
410543007 | [Did not attend](#)
410534003 | [Not indicated](#)
410523001 | [Post-starting action status](#)
385656004 | [Ended](#)
410546004 | [Discontinued](#)
385658003 | [Done](#)
410542002 | [Attended](#)
398166005 | [Performed](#)
410545000 | [Stopped before completion](#)
385657008 | [Abandoned](#)
385655000 | [Suspended](#)
385651009 | [In progress](#)
385653007 | [Not to be stopped](#)
385652002 | [Started](#)
385655000 | [Suspended](#)
385654001 | [To be stopped](#)
410522006 | [Pre-starting action status](#)
385649005 | [Being organised](#)
385645004 | [Accepted](#)
397943006 | [Planned](#)
385644000 | [Requested](#)
416151008 | [Scheduled - procedure status](#)
44996008 | [Approved and scheduled](#)
410521004 | [Not to be done](#)
89925002 | [Cancelled](#)
441889009 | [Denied](#)
410529002 | [Not needed](#)
410530007 | [Not offered](#)
410528005 | [Not wanted](#)
385647007 | [Rejected by performer](#)
385648002 | [Rejected by recipient](#)
385650005 | [Organised](#)
385646003 | [Schedule rejected](#)
385643006 | [To be done](#)
385642001 | [Under consideration](#)
441898007 | [Consented](#)
442633000 | [Legal agent consented](#)
442681007 | [Recipient consented](#)
410525008 | [Needed](#)
410531006 | [Not wanted yet](#)
410532004 | [Not yet offered](#)
410527000 | [Offered](#)
410526009 | [Wanted](#)
410524007 | [Was not started](#)
89925002 | [Cancelled](#)
385661002 | [Considered and not done](#)

5.2 Appendix 2 – Additional Reference Materials

| Ref | Website | Organisation |
|-----|---|---|
| 1 | http://www.ihtsdo.org | International Health Terminology Standards Development Organisation |
| 2 | http://www.dh.gov.uk | Department of Health |
| 3 | http://www.medicine.ox.ac.uk/bandolier/booth/glossary/ICP.html | Bandolier |
| 4 | http://www.careplans.com | Care Plans |
| 5 | http://www.rcn.org.uk/newsevents/government/briefings/electronic_patient_record_brief | Royal College of Nursing |
| 6 | http://www.nice.org.uk | National Institute for Health and Clinical Excellence |
| 7 | http://www.ic.nhs.uk | Information Centre for Health and Social Care |
| 8 | http://www.projectsart.co.uk | Project Smart |
| 9 | http://www.mercksource.com | Merck Source |
| 10 | http://www.askoxford.com/?view=uk | Ask Oxford |
| 11 | http://www.hl7.org.uk | HL7 UK |

Please note – NHS CFH does not endorse or hold responsibility for the content of external internet sites.

5.3 Appendix 3 – Clinical episode walk through

This walk through provides edited highlights of a clinical episode, not a comprehensive care plan. For simplicity, terse or close-to-user forms are used for the example SNOMED CT Expressions. Other, sometimes more expanded representations may be needed (e.g. for analysis purposes). Explanations of ‘close-to-user’ and other forms (and rules for transformation between them) is found in *Transforming Expressions to Normal Forms*⁹

243796009|[Situation with explicit context](#)|:
 408731000|[Temporal context](#)|=410510008|[Temporal context value](#)|,
 363589002|[Associated procedure](#)|=315639002|[Initial patient assessment](#)|,
 408730004|[Procedure context](#)|=385658003|[Done](#)|

This document includes well-established assumptions about the record structure for SNOMED CT observables, such that a clinical record will preserve an inseparable pairing of the observable and any documented value (and often, unit of measure).

Beth is a 34-year-old visiting an oncology outpatient unit for treatment of her breast cancer. At her first visit, her team appraise Beth’s treatment options, which might include a clinical trial depending on findings.

On arrival, the following are done:

| |
|---|
| 129125009 Procedure with explicit context : 363589002 Associated procedure =315639002 Initial patient assessment , 408730004 Procedure context =385658003 Done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure =46973005 Blood pressure taking , 408730004 Procedure context =385658003 Done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure =65653002 Pulse taking , 408730004 Procedure context =385658003 Done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure =56342008 Temperature taking , 408730004 Procedure context =385658003 Done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure =82078001 Collection of blood specimen for laboratory , 408730004 Procedure context =385658003 Done |

A summary of findings

| |
|--|
| 271649006 Systolic blood pressure = 126 |
| 271650006 Diastolic blood pressure = 76 |
| 78564009 Pulse rate = 78 |

⁹

http://www.ihtsdo.org/fileadmin/user_upload/Docs_01/Technical_Docs/SNOMED_CT_Expression_Transformations_20080131.pdf

| |
|--|
| 415974002 Tympenic temperature = 36.7 |
| 166711002 Blood urea normal |
| 166716007 Serum creatinine normal |
| 165507003 White blood cell count normal |
| 429009003 History of left mastectomy |
| 373572006 Clinical finding absent : 246090004 Associated finding = 128462008 Secondary malignant neoplastic disease |
| 373572006 Clinical finding absent : 246090004 Associated finding = 22298006 Myocardial infarction |
| 373572006 Clinical finding absent : 246090004 Associated finding = 42343007 Congestive heart failure |
| 373572006 Clinical finding absent : 246090004 Associated finding = 38341003 Hypertensive disorder |
| 373572006 Clinical finding absent : 246090004 Associated finding = 44808001 Conduction disorder of the heart |
| The results of the tissue sample are available at the time of the appointment 427685000 HER2-positive carcinoma of breast |

Care Plan Goal¹⁰

| |
|---|
| 413350009 Finding with explicit context : 246090004 Associated finding =110279003 Inactive disease following therapy , 408729009 Finding context =410518001 Goal |
|---|

Actions

| |
|--|
| 129125009 Procedure with explicit context : 363589002 Associated procedure = 425196008 Insertion of peripherally inserted central catheter , 408730004 Procedure context =385643006 To be done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure = 38216008 Infusion chemotherapy for malignant neoplasm , |

¹⁰ Representation of negated findings as goals and/or outcomes is not recommended within the SNOMED CT concept model. Additionally pre-coordinated situations cannot be used as goals and/or outcomes. Positive findings should be used as goals and/or outcomes.

| |
|---|
| 408730004 Procedure context =385643006 To be done 363703001 Has intent =373846009 Adjuvant - intent |
| 129125009 Procedure with explicit context : 363589002 Associated procedure =8151003 Echocardiography for detecting cardiac output , 408730004 Procedure context =385643006 To be done |

Following the course of chemotherapy Beth is to receive Adjuvant Trastuzumab subject to satisfactory progress and investigation results. Specifically for this medication, cardiac function is evaluated and the following result is available prior to commencement.

| |
|---|
| 371857005 Normal left ventricular systolic function and wall motion |
|---|

This further action is planned for a later appointment following several weeks of chemotherapy

| |
|---|
| 129125009 Procedure with explicit context : 363589002 Associated procedure = 425196008 Insertion of peripherally inserted central catheter , 408730004 Procedure context =385643006 To be done |
| 129125009 Procedure with explicit context : 363589002 Associated procedure = 429624006 Intermittent intravenous infusion of therapeutic substance , 408730004 Procedure context = 385642001 Under consideration |

Evaluation

After five years the outcome is evaluated

| |
|--|
| 390802008 Goal achieved : 47429007 Associated with =416312007 Patient in full remission |
|--|