

Serveur Terminologique

Consolidation d'un noyau de base et d'une méthodologie de développement d'un Vocabulaire Médical Contrôlé (CMV) dans le cadre de la mise en place future d'un serveur belge de terminologie dans le secteur de la santé.

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Partie 2/4 : Vocabulaire contrôlé multilingue et multi-classification : noyau de base
Section A : Méthodologie

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Note : cette partie du rapport contient deux sections :

Section A : méthodologie

Section B (uniquement sous format excel) : vocabulaire contrôlé

Editeur : MIM

Editorial note :

This document describes the method used to produce the Controlled Medical Vocabulary included in part 2, section B (excell file).

The document is globally approved by all its authors and should be seen as a good pragmatic methodological basis to select the various concepts and terms of the CMV. All the rules included in the document are not completely stable and some rules should be completed (improved) in a dynamic process when the work goes on. Many rules are subjective (and subject to the terminologists' appraisal), but this is unavoidable and will be corrected by the fact that several terminologists are working on the same concepts and terms.

We would like to remind the objective of the CMV: to define a restricted set of concepts to support, from a clinical point of view, the communication between medical doctors (GPs and Specialists). This should be quickly enlarged to other health professionals. Interface functionalities (or terminologies) should still be developed between end users (the health professionals) and the CMV. This CMV will not substitute for more accurate terminologies, but these last ones should map with the CMV. The CMV offers a "suitable" granularity level to support the clinical communication, but it should always be possible to store in a EPR or to transfer between professionals more or less granular concepts.

Since the beginning of the current contract (late 2010) the CMV has not been restricted to some well identified uses. Its prupose is to support many kinds of uses. Its usability will be assessed in a later stage (2013) within pilot applications. Only small modifications should be required to support these applications. Snomed CT has been (and will be) used to link various classifications and terminologies. A clear distinction should be made between

- * The selection of relevant concepts for the CMV;
- * The litteral translation of the concepts in French and Dutch (standardized terms);
- * The selection of preferred terms.

| | |
|---|----|
| 1. Objective..... | 1 |
| 2. Working packages | 2 |
| 2.1. Terminology 3BT-UZB 15.700 diagnoses subset | 2 |
| 2.2. All Snomed CT..... | 3 |
| 2.3. Mapping 3BT-Terminologie..... | 3 |
| 2.4. Testing & Validation | 4 |
| 3. General methodology..... | 4 |
| 3.1. Selection concepts..... | 4 |
| 3.1.1. Clinical | 5 |
| 3.1.2. Distinct..... | 5 |
| 3.1.3. Specific..... | 5 |
| 3.1.4. Actual..... | 6 |
| 3.1.5. No synonyms | 6 |
| 3.1.6. Avoid concept combination..... | 6 |
| 3.1.7. Avoid Time indications | 6 |
| 3.2. Translation..... | 7 |
| 4. Specific guidelines | 8 |
| 4.1. Selection specific concepts..... | 8 |
| 4.1.1. '...Or...' '...other...' '... not spec...' | 8 |
| 4.1.2. '... with complication' '...without complication....' | 8 |
| 4.1.3. '... in pregnancy' '... delivered' 'postpartum' | 8 |
| 4.1.4. Congenital vs. Acquired..... | 8 |
| 4.1.5. Primary vs. Secondary | 9 |
| 4.1.6. Postoperative | 9 |
| 4.1.7. Malignant neoplasms | 9 |
| 4.2. Translation Fr..... | 10 |
| 4.2.1. 'Du' 'De la' | 10 |
| 4.2.2. Taxonomic names..... | 10 |
| 4.2.3. Varia..... | 10 |
| 4.3. Translation NI | 11 |
| 4.3.1. Malign neoplasm | 11 |
| 4.3.2. Disorder vs Disease..... | 11 |
| 5. Work Flow | 11 |
| 5.1. Selection concept | 11 |
| 5.1.1. First evaluation..... | 11 |
| 5.1.2. Reconciliation | 11 |
| 5.2. Translation..... | 12 |
| 5.2.1. Translation: First evaluation..... | 12 |
| 5.2.2. Translation: Validation | 12 |
| 5.3. International validation | 12 |
| 5.4. Real life testing..... | 12 |
| 6. Mandatory reading..... | 12 |
| 7. References..... | 13 |

Objective

The purpose is to constitute a Reference terminology for Diagnoses based on Snomed and translated in French and Dutch.

The objective of the reference terminology is to provide the physicians and other care takers a selection of validated clinical concepts for reporting in the electronic medical record. These concepts will be also the standard in Kmehr-messages for communication between systems.

These concepts should be cross mapped with all secondary coding systems (ICPC, ICD-..., RIZIV-INAMI, ...) in order to avoid double data entry and coding.

Registration in the medical record requires highly granular concepts.

Snomed is a vast terminology system with this same objective and was created by combining SNOMED Reference Terminology (SNOMED RT) and Clinical Terms Version 3 (CTV3), formerly known as the Read Codes.

When faced with SNOMED CT® terms in a translation context, it is useful to bear in mind that the terminology is not 100% consistent and that errors or inconsistencies do occur on the word as well as the system level (Asta Hoy, 2006, Spackman et al. 2002 & 2004, Bodenreider et al. 2004).

Therefore, it was decided to build an independent Belgian terminology which is linked to Snomed CT as it will be linked to other relevant classifications and coding systems.

In a first step all the relevant Snomed CT concepts will be selected and will be translated in French and Dutch resulting in a Snomed CT subset.

In a second step new concepts, not present in Snomed CT, and needed in the Belgian context will be added resulting in an extension of Snomed CT.

All selected concepts will be identified with a unique Belgian identifier (IBUI).

Working packages

The working group 'Findings and Diagnoses' is the first project started at the end of 2010.

It starts with the validation of the terminology subset resulting from the merge 3BT-UZB which will be extended in a second run with all useful concepts coming from the Snomed CT version 20110630.

Accidents and social factors (E- and V-codes in ICD-9-CM) are needed for hospital discharge registration and will therefore be added to the core terminology of findings and diagnoses.

After the completion of the reference terminology of diagnoses, the terminology will be mapped with the 3BT thesaurus in order to allow the transition from the 3BT to the new terminology without losing information.

Terminology 3BT-UZB 15.700 diagnoses subset

A terminology of diagnoses (n=15.700) resulted from a merge of the thesaurus 3BT developed by the department of general practice of the university U.L. Brussels and the university U. Gent with the controlled medical vocabulary of the university hospital UZB. The merged terminology was completely mapped to Snomed CT.

All concepts of this terminology will be reviewed and evaluated according to a set of formal guidelines.

After a first run, all concepts will be presented again to another terminologist with the previous evaluation and translation. This procedure will serve as a peer review before going to the WP2 Extension.

All Snomed CT

The initial 3BT-UZB subset will be extended with Snomed CT concepts version 20110630.

All concepts will be presented together with the 15.700 validated subset.

Sample:

| SNOMEDID | FULLYSPECIFIEDNAME | Concept ok | Nl_Belgium | Fr_Belgium | FR_Canada |
|----------|--|------------|-----------------------|-------------------|-------------------------|
| D0-0119B | Boil of upper limb (disorder) | | | | |
| D0-0119C | Pilonidal disease of natal cleft (disorder) | | | | |
| D0-01200 | Abscess of skin AND/OR subcutaneous tissue (disorder) | | | | 0-012 Abscès de la peau |
| D0-01201 | Abscess of digit (disorder) | | | | abcès d'un doigt/orteil |
| D0-01202 | Abscess of finger (disorder) | x | abces van de vinger | abcès du doigt | abcès d'un doigt |
| D0-01203 | Abscess of foot (disorder) | x | abces van de voet | abcès du pied | |
| D0-01204 | Pulp abscess of finger (disorder) | | | | panaris |
| D0-01205 | Abscess of elbow (disorder) | x | abces van de elleboog | abcès du coude | |
| D0-01206 | Loin abscess (disorder) | | | | |
| D0-01208 | Abscess of skin area excluding digits of hand or foot (disorder) | | | | |
| D0-0120B | Prepatellar abscess (disorder) | x | prepatellair abces | abcès prérotuléen | |
| D0-0120C | Abscess of face (disorder) | x | abces van het gelaat | abcès de la face | |
| D0-0120D | Abscess of limb (disorder) | | | | |
| D0-0120E | Abscess of cheek (disorder) | x | abces van de wang | abcès de la joue | |
| D0-0120F | Abscess of lower limb (disorder) | x | abces van het been | abcès de la jambe | |
| D0-01210 | Abscess of toe (disorder) | x | abces van de teen | abcès d'un orteil | abcès d'un orteil |
| D0-01211 | Abscess of big toe (disorder) | | | | |
| D0-01212 | Abscess of upper limb (disorder) | x | abces van de arm | abcès du bras | |

Mapping 3BT-Terminologie

After the completion of the reference terminology of diagnoses, the terminology will be mapped with the 3BT thesaurus.

In order to avoid useless mapping of concepts never used, the really used IBUI-codes will be gathered from different systems: Maisons médicales, Sosoeme, Wachtpoort,....

All IBUI-codes not retrieved from real life registration will be retired.

9.672 concepts of the reference terminology have already an exact match.

The 3BT items without corresponding concept in the reference terminology will be analyzed for further mapping. Some 3BT concepts will be synonyms or quasi synonyms of existing

concepts in the reference terminology, some will be combined concepts and can be coded with a combination of concepts, some will be invalid (ambiguous, too general): they will be retired.

Valid 3BT concepts which are missing in the reference terminology will be added to the reference terminology as a Snomed extension.

Testing & Validation

Once the terminology is finished it will be validated through real life use in general practice and hospitals.

Testing the terminology entails the use of the terminology in electronic medical records of G.P. and/or hospitals. The testing physicians should have access to a web based terminology management system in order to report errors and missing concepts.

Submission of the Belgian reference terminology to Holland and France/Canada is considered.

General methodology

Validation of the general and specific guidelines is a dynamic process. It is impossible to foresee all eventualities.

The Methodology and Amendments will be managed by a iterative Questionnaire in XLS.

The Rule is proposed in a Proposed.doc. In the inquiry.XLS the Rule is presented with the question 'OK?'. Answer is 'ok' if the terminologist agrees and 'No' if he/she doesn't. Put a Comment or Suggestion if needed.

All items with consensus are documented in Methodology.doc with the date of approval (unless it was approved from the beginning).

Items without consensus will be resubmitted with all answers and/or discussed during the Teleconference meetings.

Selection concepts

The Belgian reference terminology aims at clinical documentation and reporting. The quality (granularity) of the concepts is directly proportional to the care with which options (clinical protocols, alerts, studies) are presented to the user (Tim Benson, 2010).

This granularity is therefore higher than required for epidemiology (ICD) or reimbursement purposes (RIZIV/INAMI, DRG).

This does not mean that the reference terminology should be extended to cover all detail. Standardization is needed to the point decision and administrative support is required. In the electronic patient record full detail of the concepts will be described in free text.

Because the reference terminology can be used as a vocabulary in electronic health records, the choice of a concept is restricted according to general guidelines (cf Infra).

The objective is to start with a vocabulary covering more than 90 % of diagnoses and procedures without biasing registration with terms which might be ambiguous or superfluous.

The strategy is to start off with a limited corpus of agreed terms and to extend this vocabulary with new terms based on the real life use of care takers who will be able to request new terms

if they feel they don't find the proper concept.

For diagnoses and procedures, it is estimated that 30.000 concepts (without synonyms) will be sufficient for each domain.

In order to know the exact meaning of a Snomed concept it is sometimes necessary to look up the parents, children and/or attributes of a concept in the Snomed ontology.

Any Snomed browser can be used, e.g. CliniClue.

CliniClue can be installed from <http://www.cliniclue.com/software> . The Belgian terminologist in this project can accept the conditions of use since he/she is covered by the agreement of the IHTSDO to use Snomed.

Guidelines for the selection for the controlled medical vocabulary:

Clinical

'Clinical' concepts are concepts as used in electronic medical records and in medical reports.

If there is doubt, check the term in English (or French, NL) in approved sources of information (special dictionaries, textbooks, specific homepages on the Internet, medical literature).

- English: <http://gateway.nlm.nih.gov/gw/Cmd>
- In French <http://www.cismef.org/>
- All languages: Google (literature and/or professional websites)

The existence of a concept in a given classification is not a sufficient condition to accept the concept because the concepts in a classification can be too broad for registration.

Distinct

Concepts should be clear and not ambiguous.

Homonyms are excluded.

Terms containing '.... or....' are excluded. They are often used in classifications but never in a medical record. One could split the term in two terms apart as far as the apart concepts exist in Snomed.

The same is true for terms containing '.... other....' In this case one doesn't know what concept is meant if one doesn't know the given hierarchy of the classification.

Specific

The granularity of the chosen concepts should satisfy the needs of all health care professionals (general practice, super specialists, nurses, ...).

Vague terms are to be avoided. E.g. 'cardiac disorder' is too general.

On the other hand, different levels of specificity are to be accepted because the health care professional is not always able to give all needed specificity.

E.g. in the history taking, the patient might refer to a previous myocardial infarction without knowing if it was with or without a ST-elevation. Although 'myocardial infarction' is not very specific, it should be included as a concept.

Very specific and rare conditions should be accepted with 'x' if they are compliant with the other criteria. E.g. 'Fort Bragg Fever'.

In these cases one may mark a 'x' in the column 'specificity'. Since there are no formal criteria to define 'specificity', this qualification is optional.

Actual

Because of the evolution of medical knowledge, some concepts might become obsolete.

E.g. Before the Hepatitis-C testing, 'Hepatitis non-A non-B' was a currently used concept which lost his validity after new diagnostic techniques.

No synonyms

One concept in the reference terminology excludes all other concepts.

Sometimes, the difference between two Snomed concepts can be so close that the choice between the two concepts cannot be done in an univocal way. Then one concept will be accepted and the other will be retired.

E.g.

- 'foot ulcer' and 'foot ulcer without complication'
- 'benign hypertension' vs 'benign essential hypertension'
- 'thrombosis' vs 'thrombosis and embolism'

In order to find synonyms the concepts will be presented sorted by SnomedId which follows a semantic order. For diagnoses, the concepts will be presented with ICD-9-CM and/or ICD-10 for the same purpose.

Avoid concept combination

In the medical record, the physician might want to indicate the relationship between concepts: 'reason for', 'indication for', 'complication of', 'due to'

The structure of the electronic patient record should provide the possibility to define relationships between the different elements (diagnosis, treatment, contact,...).

A concept combination should be represented by the registration of the two concepts apart and their relationship: concept1 – relationship type – concept2

In general concept combination is to be avoided.

E.g.

1. 'dementia with depression'
2. 'pericarditis secondary to acute myocardial infarction'

Combined concepts can't be deleted when the distinctive concepts are not available so that the combined concept cannot be registered with a distinctive relationship.

E.g. 'Fetal blood loss from cut end of co-twin's cord'

Combined concepts which refer to a specific pathological process and therapy/prognosis should be accepted:

E.g.

1. diabetic retinopathy
2. post-radiation maculopathy

Avoid Time indications

In the medical record, any concept will be defined in time with a start date/time and a stop date/time. The relationship between the time of the event and today is not given in the concept but with the meta-information of dates.

A myocardial infarction of today becomes an old infarction after a certain time.

Avoid concepts with Time indications, e.g. ‘Old’ ‘Recent ...’ ‘First episode ...’

Translation

In the development of a reference terminology one focuses on the selection of the concept and one preferred term in Fr and NL.

Although the same concept can be described with several terms, one preferred term will be selected in order to keep the vocabulary concise and to maximize the unity of language.

Since the preferred term is normally the only interface for the physician, the term should be univocal without further explanation.

In a second phase, some diagnoses, procedures can be documented in the terminology server with a full description and/or graphic interface, but this information will seldom be consulted by the health care professional. The preferred term will be the interface and should serve as a mnemonic.

The single compulsory criterion of the translated preferred term is the exact correspondence with the Snomed CT concept.

This does not mean that the English term should be translated literally.

E.g. ‘secondary malign neoplasm’ == ‘metastase’ in NL.

To some extent, techniques like borrowing or literal translation may be recommended as long as concept equivalence is ensured: the resulting target language terms will often be internationally recognizable and psychologically acceptable to clinicians, and they make it possible to conform with the structure of SNOMED CT®. However, several more genuinely functionalist techniques may often be preferable, for instance transposition, amplification/description, and established equivalents.

In order to keep a unity of language, guidelines are provided (Hoy Asta, 2006, IHTSDO, 2008):

- Unambiguity (a term having the status of “preferred term” must not refer to more than one concept in the hierarchy in question)
- Linguistic correctness (national syntactic and orthographic rules must be complied with)
- Motivation (immediately understandable terms, i.e. terms reflecting the characteristics of the underlying concept, should be preferred)
- International recognizability (terms based on Latin and Greek word elements should be preferred)
- Psychological acceptability (clinicians’ habits should be taken into account whenever possible)
- Systematism & consistency (similar morphological and syntactical solutions should be sought for terms covering semantically similar concepts).

Unfortunately, these requirements will often be in conflict. Psychological acceptability tends to be an obstacle to compliance with several other principles. E.g. Commonly used and accepted eponyms such as Apgar score or Down syndrome are at odds with the wish for motivation (Asta Hoy, 2006).

General guidelines IHTSDO, 2008:

1. Singular preferred unless the concept necessarily involved multiples. Follow English preferred term.

2. Description preferred over eponym. Follow the preferred term of Snomed CT. If Snomed uses an eponym, translate with eponym.
3. Lower case letter in the first word is recommended, unless it is an eponym or a proper name. Follow international taxonomic names:
<http://www.ncbi.nlm.nih.gov/Taxonomy/> e.g. Chlamydia pneumoniae
4. No abbreviations or only widely used abbreviations (ev. with full description)
5. Prefer a noun over adjective « de la prostate » vs. « prostatique »
6. Use reference vocabulary in the target language.
Widely recognized dictionaries in
NL: Zakwoordenboek der Geneeskunde, Kluwer.
Fr: Dictionnaire Illustré Des Termes De Médecine, Prodim
http://www.prodim.be/n_garnier04.htm
7. Browsers of translated WHO classifications can be useful for the choice of a preferred term. E.g. ICD-10:
Fr: <http://taurus.unine.ch/icd10?term=>
NL: <http://class.who-fic.nl/browser.aspx?scheme=ICD10-nl.cla>

Specific guidelines

Apart from the general Principles (cf. supra), the agreed guidelines and rules will be documented for specific cases.

This allows the terminologists and users to understand how the terminology is built and it allows easy and consistent corrections if needed.

General guidelines are proposed to the all group after agreement between at least two terminologists.

All proposed rules are discussed every month and are documented when accepted.

Selection specific concepts

'...Or...' '...other...' '... not spec...'

All concepts '...Or...' '...other...' '... not spec...' are withdrawn.

'... with complication ...'without complication...'

Keep the general concept 'nonvenomous insect bite' and not the concept 'nonvenomous insect bite without infection'.

'... in pregnancy' '... delivered' 'postpartum'

No combination concepts unless the combined concept cannot be expressed through two apart concepts or when the combined concept is a unique concept through the combination.

E.g. gestational diabetes mellitus, atonic postpartum hemorrhage
uterine inversion

Congenital vs. Acquired

A 'congenital' concept is always accepted.

The non congenital disorder can be acquired or the origin can be unknown. Because it is not always clear if a disorder is acquired or congenital, the 'acquired concept' can be ambiguous and thus is withdrawn.

E.g.

Hip luxation: ok

Congenital hip luxation: ok
Acquired hip luxation: not ok

Primary vs. Secondary

Concepts with notion 'primary' 'essential' are avoided when the difference between 'primary' and 'secondary' is not clear.

Postoperative

'Postoperative' is avoided because it is

- ambiguous: some physicians will use it as an event after an operation and others will use it only when they believe there might be a causal relationship
- a concept combination
- aspecific: it is not clear to what operation the term refers

Malignant neoplasms

The selection and translation of 'cancers' is of great importance and should be consistent.

Physicians don't speak about a 'primary malignant neoplasm' but about a 'malignant neoplasm' with which term they mean 'primary malignant neoplasm'.

ICD-10 uses always the same logic: 'malignant neoplasm' == 'primary malignant neoplasm' and 'secondary malignant neoplasm' == 'metastasis'

In Snomed the term 'malignant neoplasm' is sometimes used as a 'primary malignant neoplasm' (cf infra 'malignant neoplasm of interlobular bile ducts' which in fact is a 'primary malignant neoplasm of interlobular bile ducts') and sometimes as the parent of 'primary malignant neoplasm' and 'secondary malignant neoplasm' (cf infra 'malignant neoplasm of intrahepatic gall duct').

This problem is recognized by the IHTSDO and is being studied:

Artifact artf6220 : malignant neoplasm, primary malignant neoplasm

Tracker: Content projects

Title: malignant neoplasm, primary malignant neoplasm

Description: Issue of how to handle existing Malignant neoplasm of X and Primary malignant neoplasm of X content.
If default context
of Malignant neoplasm of X means Primary malignant neoplasm of X, then these two concepts would be duplicates. Also, if
Malignant neoplasm of X means Primary malignant neoplasm of X, then it cannot be supertype of secondary malignant
neoplasm of X as is currently the case in SNOMED. There are about 3700 concepts with associated morphology of Malignant
neoplasm of primary, secondary, or uncertain origin (morphologic abnormality) or a descendant.

Awaiting a final conclusion of the IHTSDO, the following procedure will be followed:

The parent concepts of primary and secondary malignant neoplasm are rejected Concept_ok =

‘d’.

Translation Fr**‘Du’ ‘De la’**

15/10/2011

« De la » « Du » and « de l’ » are preferred over « d’un » « d’une’ and over « de » « d’ »

23415000 | **sprain of jaw** | is translated with ‘entorse de la mâchoire’**Taxonomic names**Follow international taxonomic names: <http://www.ncbi.nlm.nih.gov/Taxonomy/> e.g. Chlamydia pneumonia, Herpes simplex

Use lower case for French names like ‘pneumocoques’

Varia

| English label | French label | Validation group |
|--|---------------------------|-------------------------|
| aplastic | aplastique | 15/10/2011 |
| boil, furoncle, carbuncle | furoncle | 15/10/2011 |
| cleft labial, cleft of lip | fente labiale | 15/10/2011 |
| condylar | du condyle | 15/10/2011 |
| degeneration, degeneracy, deterioration, devolution | dégénérescence | 15/10/2011 |
| disease | maladie | 15/10/2011 |
| disorder | affection | 15/10/2011 |
| dysfunction | dysfonctionnement de | 15/10/2011 |
| jaw | mâchoire | 15/10/2011 |
| ombilicus | ombilic | 15/10/2011 |
| pelvis | bassin | 15/10/2011 |
| penis, precker, prick, lith, cock, rod | pénis | 15/10/2011 |
| pneumococcal | à pneumocoques | 15/10/2011 |
| punched out | à l'emporte pièce | 15/10/2011 |
| rheumatoid arthritis | polyarthrite rhumatoïde | 15/10/2011 |
| scapula | omoplate | 15/10/2011 |
| submandibular | sous-maxillaire | 15/10/2011 |
| secondary malignant neoplasm | tumeur maligne secondaire | 15/10/2011 |
| primary malignant neoplasm | tumeur maligne | 15/10/2011 |
| suppurative | suppurée | 15/10/2011 |
| thoracic vertebra, dorsal vertebra, vertebra of the back | vertèbre thoracique | 15/10/2011 |

Translation NI

Malign neoplasm

15/10/2011

'Primary malign neoplasm' = 'maligne neoplasma' (see also above)

'Secondary malign neoplasm' = 'metastase ...'

Disorder vs Disease

15/10/2011

Disorder is translated as 'aandoening',

Disease is translated as 'ziekte'

Work Flow

Selection concept

First evaluation

All concepts will be evaluated by two physicians: one French and one Dutch speaking.

The evaluation of the concept is based on the English label.

When a Concept is considered valid the field [Concept ok?] is marked with 'x'.

When the concept is considered obsolete the field [Concept ok?] is marked with 'd' (to be deleted, = to be retired). Fill out the field [Comment].

When the field [Concept ok?] is marked with 'r' the concept is to be reviewed. Fill out the field [Comment].

When a concept is considered to be a synonym of an existing term, the field [Concept ok?] is marked with 's'. Put the Snomed code (CliniClue) of the preferred Snomed concept in the field [Comment].

Since the objective is not to gather information about synonyms, [Concept ok?] may also be set to 'd' with a comment.

If a concept is to be added the field [Concept ok?] is marked with 'a', ConceptId (Snomed CT number) is entered and the translation proposed. Since all possible Snomed CT concepts will be presented in the second work package, adding concepts in the first work package is optional.

Reconciliation

After the first run all concepts and translations are presented to a second terminologist of the same language with the first evaluation visible in the work file.

Dr. B. Van Bruwaene will join the final evaluation by the French speaking with the evaluation of the Dutch speaking physician based on the Snomed code.

When both physicians quoted 'x' or 'd' similarly, the selection/elimination of the concept is automatically confirmed and entered in the final terminology with the field [Concept ok?]= 'x' or 'd'.

When 'r' or the judgment of both physicians differ, the records are presented to two other

terminologists with the evaluation and comment of the first terminologists.
All disagreements after the second run are discussed in order to come to a consensus.

Translation

Translation: First evaluation

If a concept is accepted to be valid, the French and Dutch label will be validated. If the initial label coming from the merging project is accepted, no new proposal is done. If the Fr or NI label is absent or can be improved, a new label is proposed in Fr_Proposed / NI_Proposed.

For all 15.700 concepts a Dutch label is present from the merging project between the 3BT thesaurus and the CMV UZB. A terminologist selected in this merging project (2009-2010) the preferred term for a given Snomed concept either from the 3BT thesaurus either from the CMV UZB.

In this project the Dutch terminologist has to check if the proposed label represents the Snomed CT concept in an exact way and if it is conform with general translation guidelines. If not, a new Dutch label is proposed.

A French label is available from 3BT for 9.734 concepts and from the French Canadian Snomed 3.5 for 8.556 concepts. 2.811 concepts don't have any Fr translation available. The French terminologist can choose a label or can propose a new label.

Translation: Validation

In the second work package, all Snomed concepts are presented together with the validated translations of the first work package.

In NI_Belgium and Fr_Belgium appears the final translation coming from the first work package (cf sample in 2.2).

The terminologist will translate the new validated concepts. He/she will refer to the translation of the first work package where possible.

The terminologist can make a new proposal if he/she disagree with the previous label coming from the first work package.

International validation

The selected concepts and the French and NI labels will be submitted to the national release centers of France/Canada/Suisse and of the Netherlands in order to have a subsequent validation.

Real life testing

When the reference terminology will be in real life testing and use, users will be connected to the terminology management system and will be able to request corrections and additions.

Mandatory reading

The document 'IHTSDO, 2008: Guidelines for Translation of SNOMED CT. ' is mandatory for all terminologists.

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