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SNOMED CT AND ICD-10-BE: TWO OF A KIND?

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ICD-10 & NRG day @3M

SNOMED CT and ICD-10-BE: two of a kind?

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Introduction

- Context
  - Migration to ICD-10-BE
    - 2009 - 30/07/2010: *Roadmap for the implementation when transitioning from ICD-9-CM to ICD-10-CM*
    - 18/11/2010: request for advice by the Minister of Public Health to the Multipartite structure regarding the replacement of ICD-9-CM
  - Use of a reference terminology
    - 22/10/2012: Round table on e-health
      - Action plan e-health 2013-2018
    - 29/04/2013: Action plan approved by the interministrial conference
      - Action point 13: implementation of a national terminology policy

SNOMED CT and ICD-10-BE: two of a kind?

- NO
  - Neither a clinical terminology nor a classification can, by itself, serve all of the purposes for which health information is currently used or will be used in the future

SNOMED CT and ICD-10-BE: terminology and classification

- Reference terminologies such as SNOMED-CT
  - Are input systems and codify the primary documentation of clinical care captured in an EPR (Electronic patient Record) during the course of patient care
  - Are inadequate for serving the secondary purposes for which classification systems are used because of their
    - Immense size (SNOMED CT > 311.000 concepts)
    - Considerable granularity
    - Complex hierarchies (poly-hierarchie)
    - Lack of reporting rules

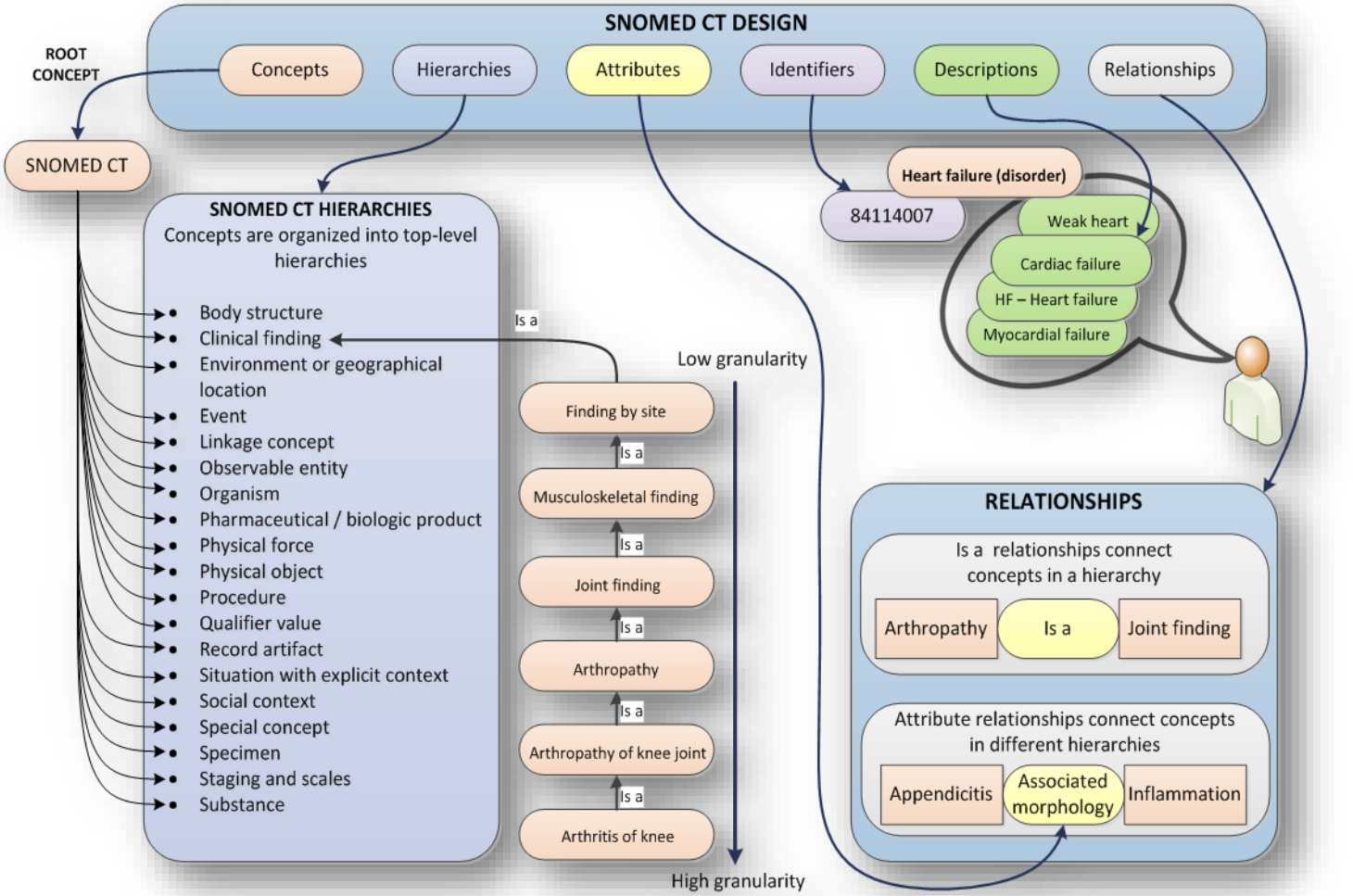
SNOMED CT and ICD-10-BE: terminology and classification

- Classification systems such as ICD-9-CM, ICD-10-CM/PCS
  - Are output systems and are inadequate for the primary documentation of clinical care, meaning:
    - They are inadequate in a reference terminology role because they
      - Lack granularity
      - Fail to define individual clinical concepts and their relationships.
  - Yet are most common source of clinical data today, readily available as a byproduct of the healthcare reimbursement process
  - Are typically used for external reporting requirements and other uses where data aggregation is advantageous

SNOMED CT and ICD-10-BE: terminology and classification

- SNOMED CT:
  - Is a comprehensive, multilingual, reference terminology, with comprehensive coverage of diseases, clinical findings, etiologies, procedures, living organisms, and outcomes
  - The basic elements of SNOMED-CT are comprised of
    - Concepts
    - Descriptions
    - Attributes
    - Relationships
    - Hierarchies or organizations of concepts

SNOMED CT and ICD-10-BE: terminology and classification



SNOMED CT and ICD-10-BE: terminology and classification

- Concepts are the basic units of SNOMED-CT and are unique units of thought to which a concept identifier has been assigned
- Descriptions are terms or names that are assigned to specific SNOMED-CT concepts
- Attributes are properties or characteristics of concepts
- Relationships are the connections between concepts
- Hierarchies are comprised of parent-child relationships, meaning that there are broad concepts at the top of the hierarchy (parent) followed by (child) concepts that are more specialized or specific
  - An example of a parent-child relationship would be “arthritis” and “arthropathy” in which “arthopathy” is the parent and “arthritis” is the child because arthritis is a type of arthropathy

SNOMED CT and ICD-10-BE: serve distinct purposes

- Serve distinct purposes
  - Standardized terminologies, such as SNOMED-CT,
    - Facilitate electronic data collection at the point of care (i.e., an input system)
    - Do not work well as an interface terminology (a type of terminology used for presentation to end users)
    - Do not work well for the administrative purposes for which a classification system is designed because of its immense size, considerable granularity, complex hierarchies, and lack of reporting rules.
    - Is intended to support clinical care processes and should not be manipulated to meet reimbursement and other external reporting requirements, as such manipulation would have an adverse effect on patient care, the development and use of decision support tools, and the practice of evidence-based medicine.

SNOMED CT and ICD-10-BE: serve distinct purposes

- Serve distinct purposes
  - Classifications, such as ICD-9-CM and ICD-10-BE
    - Do not have a clinical content coverage as comprehensive as that of terminologies because classifications are not intended to represent the complete clinical content of a health record
    - Are not intended or designed for the primary documentation of clinical care.
    - Are output, not input coding systems
    - Are intended for secondary data uses, including measurement of quality of care, reimbursement, statistical and public health reporting, operational and strategic planning, and other administrative functions

SNOMED CT and ICD-10-BE: work together through mapping

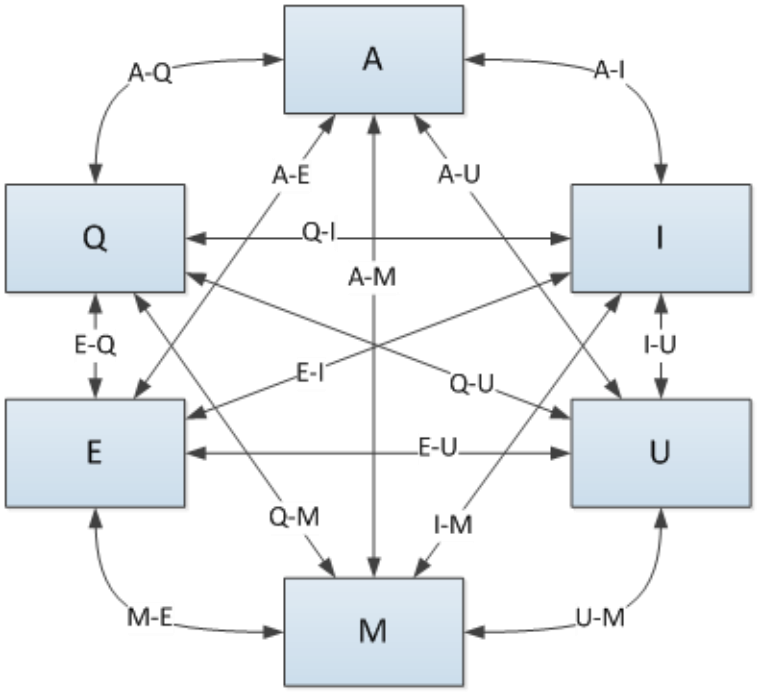
- Coding and mapping are very different activities.
  - Coding involves the use of clinician documentation and other clinical data contained in an individual patient record as the source for determining the appropriate code assignment within a terminology or classification
  - Coding conventions and guidelines are applied in determining code assignment
  - Coding sometimes depends upon the context of a specific patient record
    - Context = additional information that must be attached to a concept in order to fully and accurately represent information in a patient record, which fundamentally changes the meaning of the concept

SNOMED CT and ICD-10-BE: work together through mapping

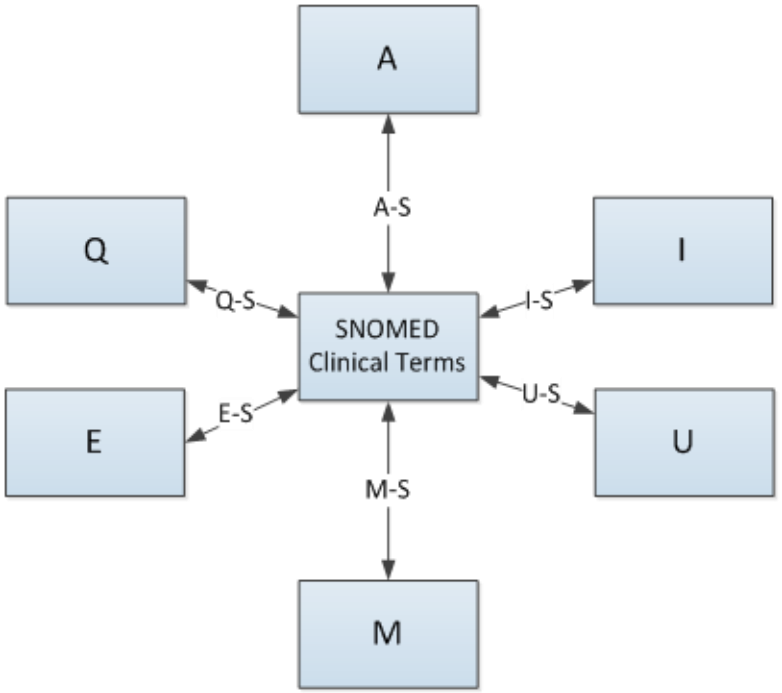
- Through mapping and integration, SNOMED-CT is linked with other terminologies or classifications:
  - Healthcare data collected for one purpose can be used for another purpose : “code once, use many times”
  - Data can be entered once and reused, avoiding multiple data entry and reducing the risk of higher cost and errors
  - The goal is to automate as much of the mapping process as possible using a rules-based approach

SNOMED CT and ICD-10-BE: work together through mapping

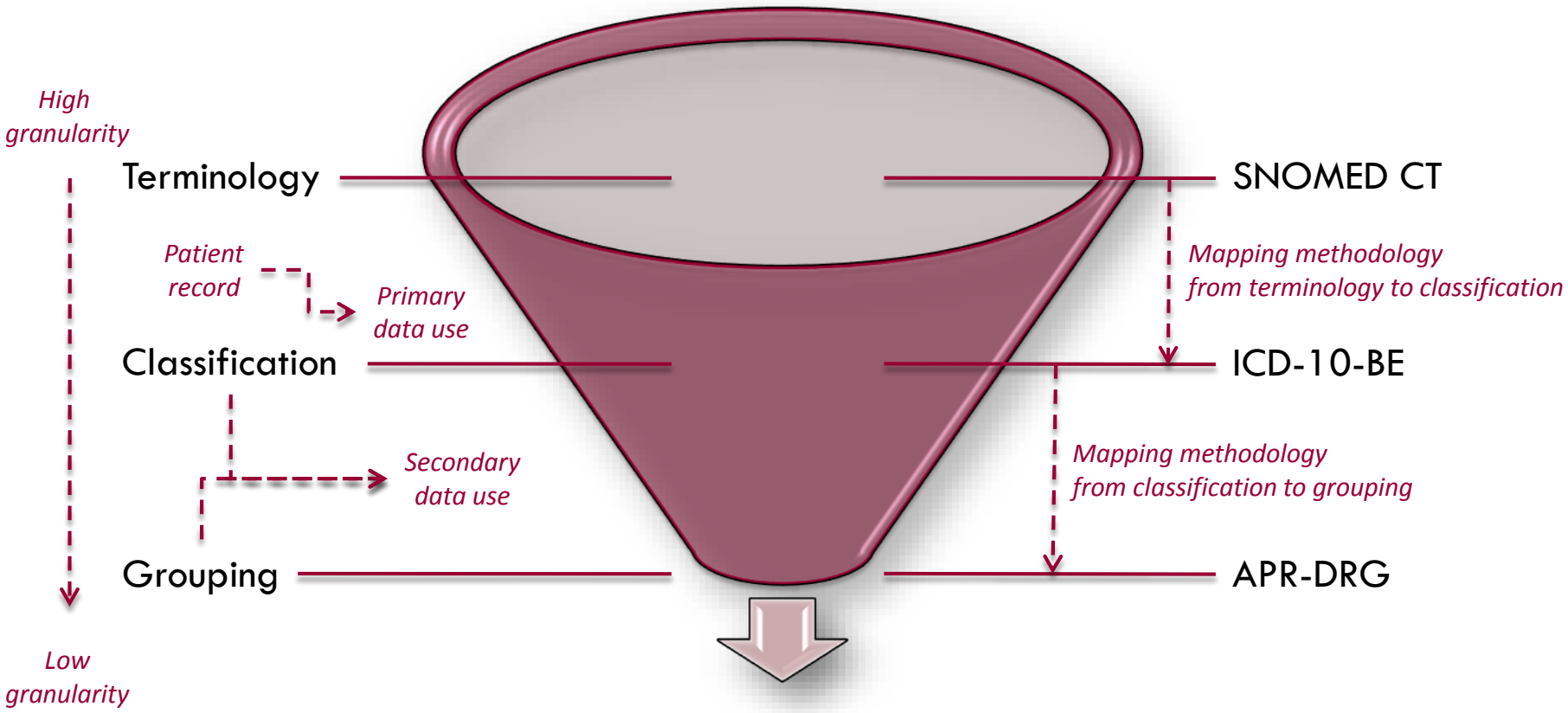
Map Everything to Everything



Map to from SNOMED CT



SNOMED CT and ICD-10-BE: work together through mapping



SNOMED CT and ICD-10-BE: work together through mapping

- The mapping process
  - Is a standard method in which the terminology context or classification description principles are interpreted between systems
  - Starts with development of heuristics and guidelines that support the use case or purpose of the map, respecting the conventions of the source and target to preserve the granularity and flexibility of both
  - Defined mapping rules must be developed and consistently applied to minimize incompatibilities without compromising clinical integrity.
- Mapping
  - One-to-one relationships
  - Many-to-one
  - One-to-many relationships
  - Concepts that are not mappable because the concept only exists in the source or target terminology

SNOMED CT and ICD-10-BE: work together through mapping

- Maps with different purposes
  - A map that is intended to simply identify the corresponding closest concept in another terminology does not require the application of coding rules, conventions, or guidelines
  - A map that is intended to be appropriate for use in reimbursement, needs algorithms that consider coding rules and conventions and reporting requirements (such as adhering to coding guidelines and identifying the principal diagnosis)

SNOMED CT and ICD-10-BE: work together through mapping

- For example:
  - A SNOMED-CT to ICD-9-CM already exists
    - The purpose of this mapping is to support the process of deriving the closest corresponding ICD-9-CM code from patient data.
    - The map consists of correlates between SNOMED-CT concepts in the disease and general patient-finding hierarchies and the closest ICD-9-CM target code or codes.
    - The map provides users with an approximation of the closest ICD-9-CM code(s).
      - However, the mapping table is not intended for reimbursement activities without additional authoritative review.
      - However, since SNOMED-CT's scope of content is much broader than ICD-9-CM, less than 30 percent of the content of SNOMED-CT can be mapped to ICD-9-CM.
      - However, when an up-to-date coding system is mapped to an outdated system, the map is less reliable and meaningful information is lost

SNOMED CT and ICD-10-BE: work together through mapping

- ICD-10-BE is an up-to-date coding system
  - The use of a map from SNOMED-CT to ICD-10-CM and ICD-10-PCS will allow clinical information captured at a very granular level to be aggregated for reimbursement and also reporting and statistical analysis purposes
  - Mapping a reference terminology to modern classification systems:
    - Decreases administrative costs
    - Decreases time in revenue cycle
    - Increases specificity and accuracy of data
    - Maintains comparable data
- Remark: Mapping (between SNOMED-CT and ICD) is an imperfect science
  - It is very difficult to adequately represent some of the ICD coding conventions for a computer's purposes.
  - The codes produced by the mapping will need to be evaluated in the context of the complete medical record and applicable reporting rules before being submitted

SNOMED CT and ICD-10-BE: affect the coder's workflow

- Conclusion:
  - The development of maps between terminologies and classifications will not eliminate administrative coding or the need for expertise in code selection
  - Maps will standardize translation of coding systems to a certain extent and therefore improve coding accuracy and coding efficiency
    - However, human review is still necessary
      - To ensure accuracy with regard to the context of a specific patient encounter
      - To ensure compliance with applicable coding guidelines
  - Availability of an electronic patient record coded in SNOMED CT are needed in order to benefit from maps

SNOMED CT and ICD-10-BE: need to be used within an electronic patient record

- The number of terms and level of detail represented in a reference terminology cannot be effectively managed without automation.
  - SNOMED CT consists of >300.000 concepts
  - SNOMED-CT is designed for use in electronic, not paper-based, health record systems.
  - SNOMED-CT codes can be embedded in the EPR and work behind the scenes to encode the clinical information recorded in the health record.

SNOMED CT and ICD-10-BE: need to be used within an electronic patient record

- Designed to support the EPR, SNOMED-CT enables:
  - The development of richer computer-aided clinical decision support systems
  - Critical care monitoring (e.g., standardized capture of clinical details such as vital signs, signs/symptoms, medications, interventions, tests, and problem lists)
  - The development of clinical alert and reminder systems
  - Integration of medical device data output with EHR systems
  - Improved communication among clinicians
  - Use in clinical trials
  - Use in computerized physician order entry (CPOE) systems (e.g., standardized capture of type of diagnostic test being ordered)
  - Improvements in quality of data available for research and measurement of clinical outcomes
  - Improvements in completeness, accuracy, and consistency of health record documentation
  - Advancements in disease management programs
  - The practice of evidence-based medicine.

SNOMED CT and ICD-10-BE: need to be used within an information model

- An information model is constituted by the terminology model and the additional elements necessary to fully represent the meaning of clinical information
  - Standardization of the full meaning of patient medical data requires integrating terminology models with models of context and other structural relationships, as well as negation and time.
    - For example, the coded representation of “myocardial infarction” has different clinical significance when it appears in the context of current diagnosis, past medical history or family history. In the absence of context information, the full meaning of “myocardial infarction” may remain ambiguous, leading to incorrect reporting or decision-support behavior.
    - Other examples of contextual factors that influence the interpretation of medical data include negation (*e.g., .no complaints of chest pain*), time frames (*e.g., acute onset versus presence of symptom for several months*), severity (*e.g., mild versus severe*), multiple meanings for the same term (e.g., *patient is cold versus patient has a cold*), qualifying terms (e.g., *possible versus confirmed*) and demographic data elements (*e.g., patient sex and age*)

Conclusion

- It is clear that a reference terminology and a classification each have a specific purpose (and different target users) and, therefore, they complement, rather than compete with, each other
- It is clear that the full benefits of a reference terminology such as SNOMED-CT will not be totally realized unless it can be used in an EPR (Electronic Patient Record)
- It is clear that aggregation of clinical data will continue to be necessary after EPRs incorporating a reference terminology have been implemented, because it makes the data more manageable for secondary information purposes.

Conclusion

- It is clear that the benefits of using a reference terminology such as SNOMED-CT increase exponentially if it is linked to classifications and other administrative terminologies for the purpose of generating health information necessary for statistical analysis, reimbursement, and other secondary uses. (Code once, use may times principle)
- It is clear that ICD-10-CM and ICD-10-PCS are better suited for use in combination with a reference terminology than ICD-9-CM, as they represent modern medical practice and clinical knowledge, permit more robust mapping from SNOMED-CT, and are more amenable to use in an electronic environment.

Conclusion

- The Terminology Center must continue the process for the adoption of SNOMED CT, ICD-10-CM and ICD-10-PCS.
  - The healthcare industry must incorporate terminology standards in its EPR development initiatives.
  - Robust rules-based maps, designed for different use cases, must be developed from SNOMED-CT to ICD-10-CM and ICD-10-PCS to maximize the value of the clinical data and the benefits of an EPR system.
  - These maps should be made publicly available through the Terminology Center and should become a standard component of any EPR system.

For further information

- On SNOMED CT visit the website of the terminology center
  - http://www.health.belgium.be/eportal/Healthcare/Terminology_Center/index.htm#.VBdYIPl_tRQ
  - Or contact us at terminologie@health.belgium.be
- On ICD-10-BE, visit the website
  - http://www.health.belgium.be/ICD10BE

What's in the pipeline?

- Translation of the SNOMED CT starter guide to Dutch and French
- Extensive paper on how SNOMED CT and ICD-10-BE work together
- Online tool to test the semi-automatic mapping to ICD-10-CM


THANK
YOU