SNOMED CT in EMR
Use case 5-months post go-live at CUSL

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Introduction

CUSL launched a new EMR end of November 2020

- Trajet Patient Intégré Informatisé -

1st time EPIC is implemented in French

1st time EPIC is using SNOMED CT as the main medical terminology in EU

SNOMED CT chosen in line with e-Health plan of the SPF santé publique

Objectives

Expected benefits of EMR including patient data recoded using interoperable medical terminology such as SNOMED CT

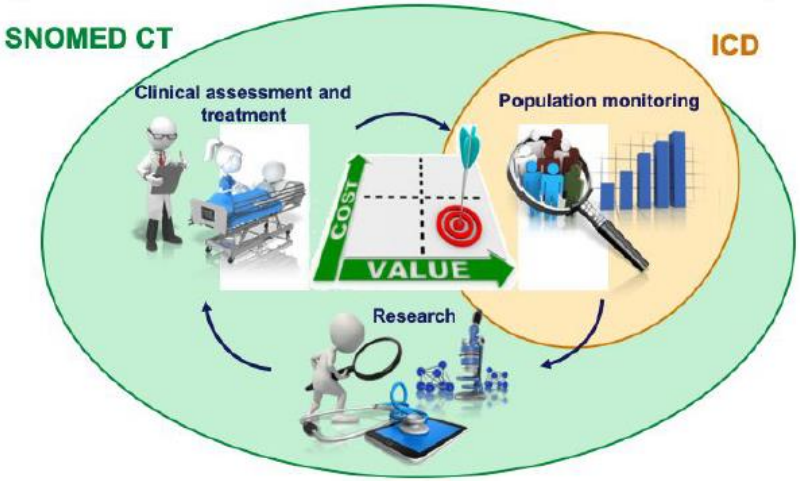
I. Patient care

- Retrieval and sharing of appropriate information among care providers
- Integration of guidelines and clinical decision support messages and alerts

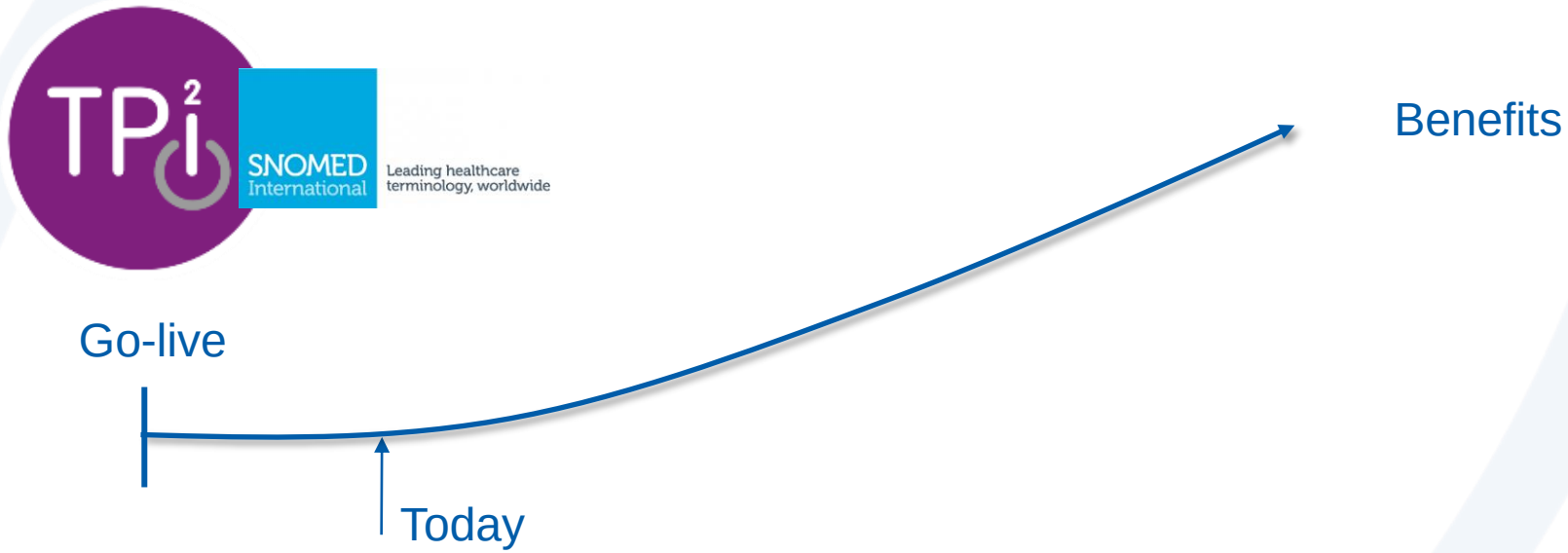
II. Reporting

- Internal reporting for management purpose
- Legal reporting (Sciensano, RHM, ..)

III. Research



Journey to success is a challenge



Challenges are linked to :

- **SNOMED CT still needing improvements**
- **Characteristics / limitations due to EPIC system**
- **Physicians to become familiar with medical coding**

Organisation supporting the use of SNOMED CT in TPI²

- **Set-up of TPI²**
  - Large technical team at CUSL
  - Technical support team from EPIC
  - Physicians & health care providers
    - Champions, involved early pre-go-live for the strategic decisions
    - Super Users
    - All to be trained

- **Implementation of SNOMED CT in TPI²**
  - Terminology vendor providing SNOMED CT data and regular updates, formated specifically for the TPI²
  - Internal CUSL terminology team with physicians and a pharmacist with specific technical knowledge on EPIC system and SNOMED CT terminology
  - Physicians
    - Champions, Super Users, All to be trained
  - Rem: Maintenance needed (1) upon SNOMED CT updates, (2) based on feedback from physicians

SNOMED CT into TPI²

- SNOMED CT Concept (SNOMED RT+CTV3)
  - Body structure (body structure)
  - Clinical finding (finding)
  - Environment or geographical location (environment / location)
  - Event (event)
  - Observable entity (observable entity)
  - Organism (organism)
  - Pharmaceutical / biologic product (product
  - Physical force (physical force)
  - Physical object (physical object)
  - Procedure (procedure)
  - Qualifier value (qualifier value)
  - Record artifact (record artifact)
  - Situation with explicit context (situation)
  - SNOMED CT Model Component (metadata)
  - Social context (social concept)
  - Special concept (special concept)
  - Specimen (specimen)
  - Staging and scales (staging scale)
  - Substance (substance)

Clinical finding (finding) → Diagnostics de visite / Liste de problèmes / Antécédents médicaux

Medical disorders

Pharmaceutical / biologic product (product → Allergènes Non-médicamenteux

Procedure (procedure) → Antécédents d'interventions

Surgery, lararoscopy, radiotherapy, …

Drugs ← ATC

Searching SNOMED CT into TPI²

SNOMED CT terms are numerous, sometimes very similar: time consuming for physicians to select the appropriate terms: **Tool adaptations and training are needed for reaching good quality coding**

⇒ **Supporting tools in TPI²**

⇒ For medical disorders

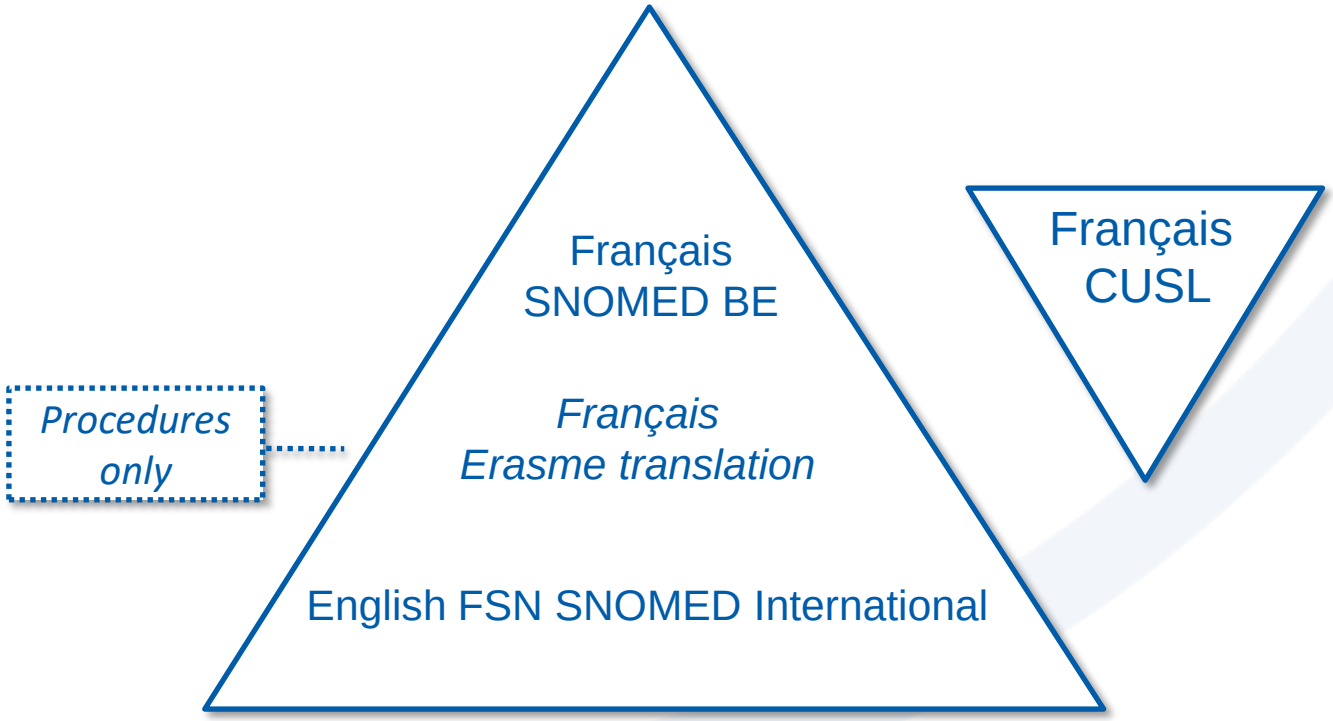
- Hierarchy tree search tool provided within the EMR
- Preference lists per speciality
  - build pre-go-live based on ICD-10 CM coding data available from the RHM
- Personnal preference lists completed by the physicians on an ongoing basis
- Searching allowed in French and in English (based on hidden synonyms)

⇒ For procedures / Interventions (surgical, other)

- Searching allowed in English for French terms

SNOMED CT term translations

1. **SNOMED BE official translations are preferred**
2. **Translations from Erasme are used for the procedures**
3. **Local CUSL translations are produced when other translations are missing or unsatisfactory for the physicians**
4. **Several synonyms may be available for medical disorders** (not for procedures : TPI[2] limitation)

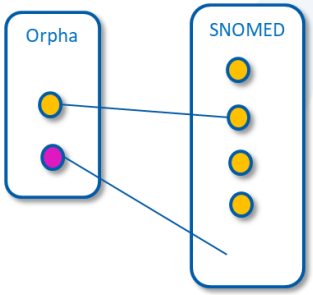


SNOMED CT codes mapping for automation of reporting …

- **Mapping to ICD-10 CM**
  - Mapping to ICD-10 OMS by SNOMED international not useful in Belgium

  ⇒ Mapping by CUSL to ICD-10 CM - for terms included the in preference lists

  ⇒ Benefit for the RHM expected to increase overtime



- **Mapping to ICD-10 PCS**
  - No existing mapping

  ⇒ Mapping by CUSL to ICD-10 PCS - for a limited % of procedures

- **Mapping to ORPHAnet codes (rare diseases) by Orphanet/SNOMED international**
  - Alpha release not yet for clinical use

  ⇒ Need for specific ORPHA coding by physicians, in addition to SNOMED CT coding

- **Mapping to ICD-0 (cancers) by SNOMED international**
  - « abnormal morphology » data set not included in TPI[2]

  ⇒ Specific ICD-0 coding by physicians for tumors, in addition to SNOMED CT coding

Conclusions

Lessons learned 5-months post-go-live:

- **SNOMED CT implementation is a challenge, not plug & play**
  - adaptations related to SNOMED CT issues and specificity of EMR system
- **A Terminology Team with members combining medical / pharmaceutial / SNOMED CT and technical EMR expertise is needed**
- **Medical coding by the physicians requires support & trainings**
- **Good quality SNOMED CT coding will**
  - allow Best Clinical Practice guidances, data analyses and researches
  - support automated reporting (including RHM) to health competent authorities
- **CUSL adaptations could be shared with other institutions and the NRC**
- **Efficaceous collaboration with the NRC would lead to further improvement of SNOMED CT needed to collect the benefits of the medical coding efforts**