Creating Maps Between a Clinical Terminology (SNOMED CT®) and a National Intervention Classification (CCI): A Feasibility Study

Alana Lane, Sharon Baker, Karen Coghlan, Josée Migneault, Isabelle Roberge

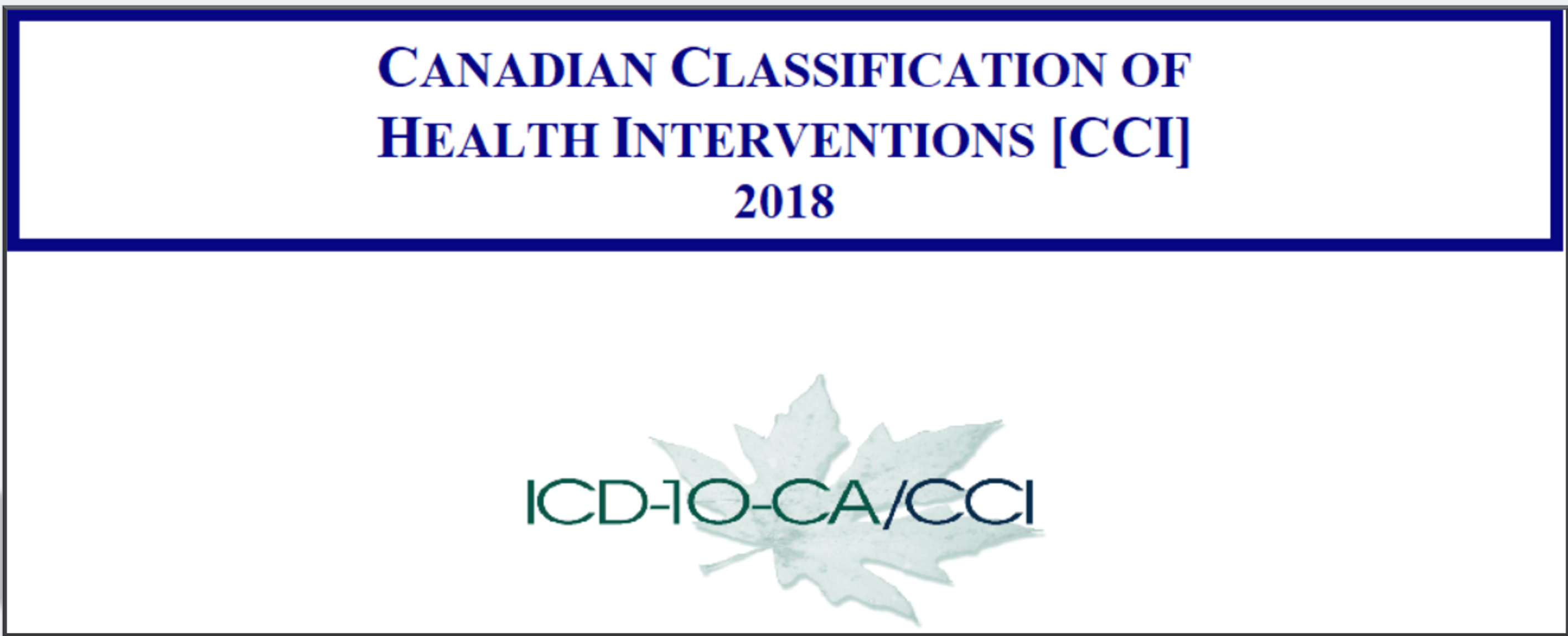**SNOMED CT EXPO 2020**
Virtual Conference October 8-9

Abstract

Semi-automated maps between SNOMED CT® and an intervention classification would enable the reuse of point-of-care clinical data from an electronic health record (EHR)

- To support statistical reporting;

- To provide real-time data; and

- To ease hospital coder burden.

This study aims to determine the feasibility of creating such maps.

CANADIAN CLASSIFICATION OF HEALTH INTERVENTIONS [CCI]
2018

ICD-10-CA/CCI

Background and topic

The Canadian Institute for Health Information (CIHI) undertook a pilot project to determine the feasibility of creating maps between SNOMED CT® (a terminology) and the Canadian Classification of Health Interventions (CCI). Currently, a map between SNOMED CT® and CCI does not exist.

The 3 main analytical questions addressed in this study were the following:

Can a web-based mapping tool significantly expedite the mapping process by automatically identifying equivalent maps?

Are SNOMED CT® concepts equivalent in meaning to CCI codes so that maps can support secondary data use for statistical reporting from the EHR?

Can an existing SNOMED CT® reference set be mapped to CCI?

INTRODUCTION | METHODS | RESULTS | DISCUSSION

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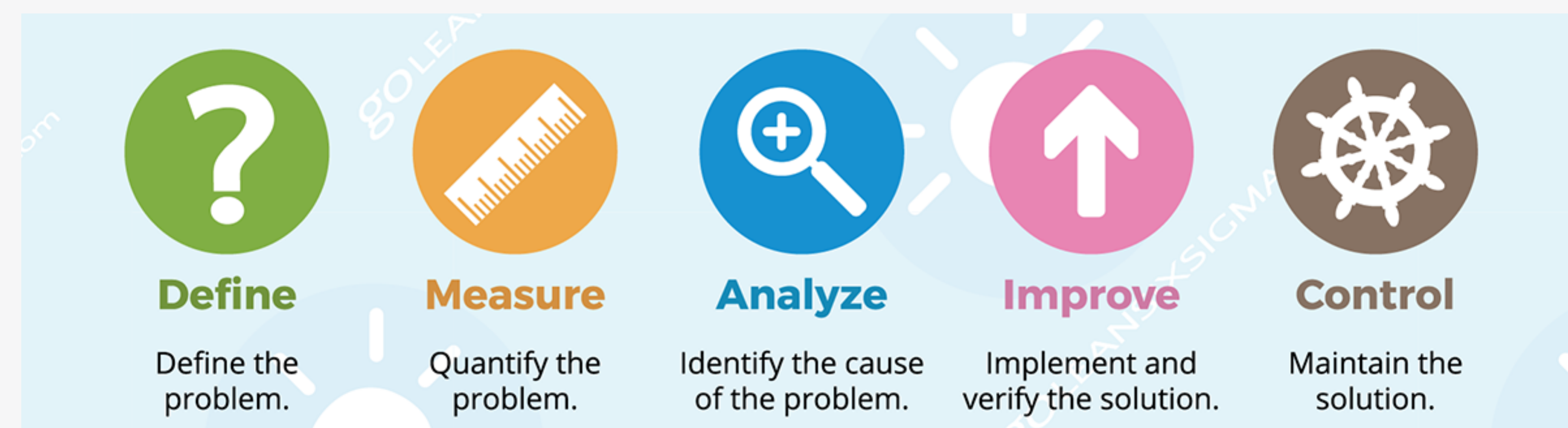
Phased approach

Phase 1: Mapping from CCI to SNOMED CT® using web-based mapping tool

CCI's alphabetical index terms, inclusion terms and a subset of the most-used CCI code and rubric descriptions were mapped to SNOMED CT® using a web-based mapping tool (this tested the tool's ability to find lexical matches in SNOMED CT® for fully specified names and acceptable synonyms).

Mappers graded each map according to the quality and equivalency of the match:

- Lexical match (conceptual equivalence)
- Partial match
- No match

CCI rubric/code	Description	Index/tabular entry	SCT match	Map grade
1DF53	Implantation of internal device, tympanic membrane	Myringotomy with intubation		No match
		Tympanostomy	Tympanostomy (procedure)	Lexical match
		Insertion of ventilation tube into tympanic membrane		No match
1DF53JATS	Implantation of internal device, tympanic membrane, of ventilation (grommet) tube using external approach			No match

Define — Define the problem.
Measure — Quantify the problem.
Analyze — Identify the cause of the problem.
Improve — Implement and verify the solution.
Control — Maintain the solution.

Phase 2: Mapping from SNOMED CT® to CCI — Manual process

Example 1

SNOMED CT Fully Specified Name	CCI Rubric Description
236242002 Fixed suspension procedure of bladder neck (procedure)	1.PL.74.^^ Fixation, bladder neck

Example 2

SNOMED CT Fully Specified Name	CCI Code Description
176288003 Transurethral laser prostatectomy (procedure)	1.QT.87.BA-AG Excision partial, prostate endoscopic per orifice approach [transurethral] using laser

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Phase 1: Mapping from CCI to SNOMED CT® using web-based mapping tool

Using alphabetical index and inclusion terms found in CCI (e.g., colectomy, partial; subdural stimulation; neurolysis of wrist)

# maps reviewed	513
# maps found by mapping tool	152 (29%)
# maps confirmed by mapper	99/152 (65%)
# additional maps manually found in SCT browser	218 (42%)

Using CCI rubric descriptions (intervention and anatomy site) (e.g., Radiation stomach; Destruction ureter; Fixation elbow joint)

# maps reviewed	511
Lexical match	165 (32%)
Partial match	79 (15%)
No match	267 (52%)
# additional maps manually found in SCT browser for partial and no matches	55/346

Using full CCI code descriptions (approach, device, tissue) (e.g., Control of bleeding nose using per orifice approach and packing)

# maps reviewed	809
Lexical match	103 (13%)
Partial match	163 (20%)
No match	543 (67%)
# additional maps manually found in SCT browser for partial and no matches	312

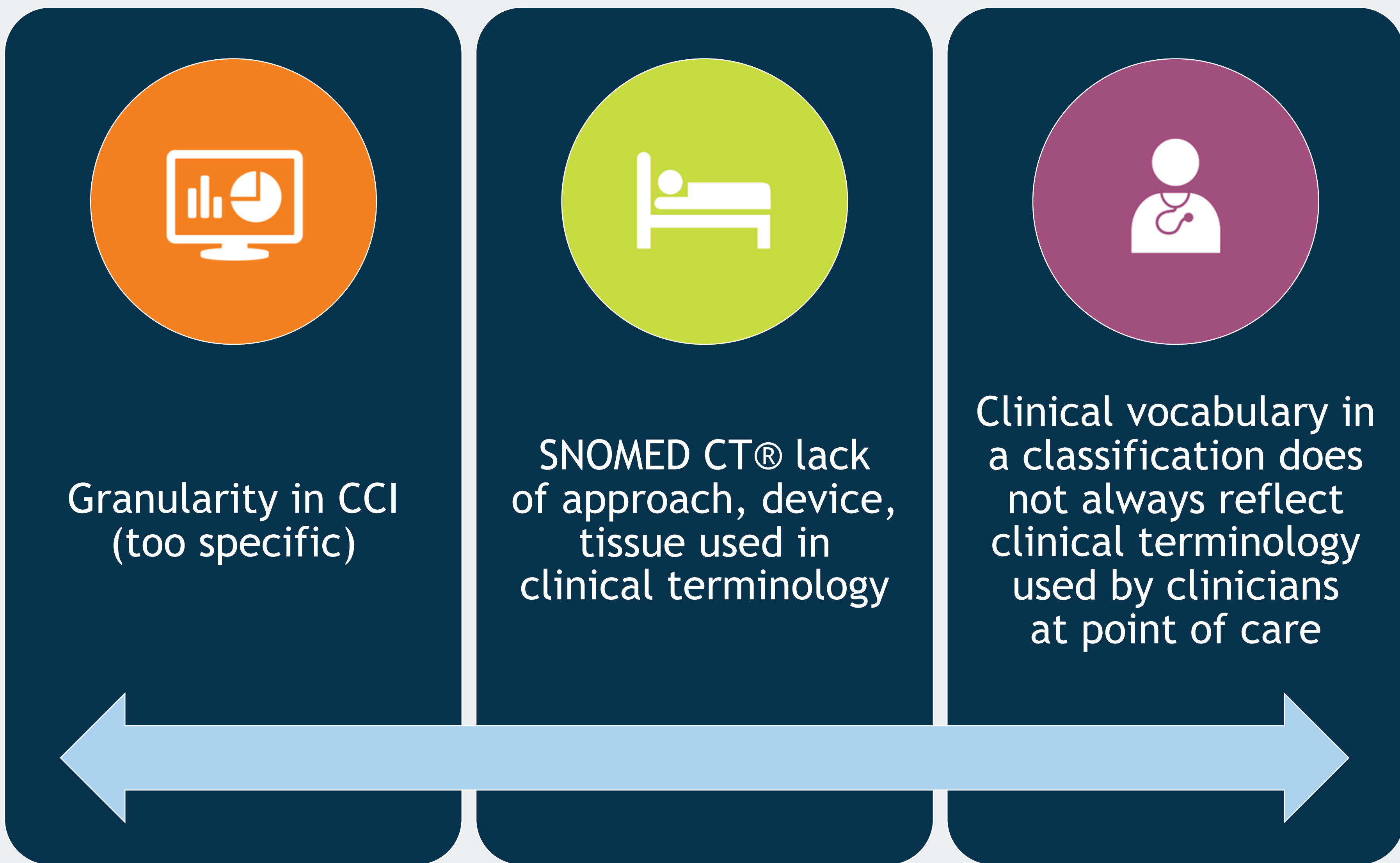## Phase 2: Mapping from SNOMED CT® to CCI — Manual process

# maps reviewed	3,000
CCI code-level match	561 (19%)
Rubric-level match	1,097 (37%)
No match (unmappable)	1,342 (45%)

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Topic

Granularity in CCI (too specific)

SNOMED CT® lack of approach, device, tissue used in clinical terminology

Clinical vocabulary in a classification does not always reflect clinical terminology used by clinicians at point of care

Conclusions

- Mapping clinical terms between a clinical terminology and a classification is difficult. In most cases, automated mapping will be a best fit code and not a comprehensive mapping of an intervention episode of care.

- Lexical map matches are better at the rubric level in CCI.

- CCI identifies approach and device, requiring more than one SNOMED CT® term to capture an intervention.

- In CCI there are multiple synonyms that can describe variations in method and technique, making equivalence difficult to achieve.

Future Directions

- Manually dual-mapping SNOMED CT® to CCI yields many partial matches — these may be fit for use but still require the verification of a coder prior to submission for secondary use to an administrative database.

- There are inferences that in a high percentage of cases, human input would be required for complete and accurate code assignment when mapping SNOMED CT® to CCI.

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