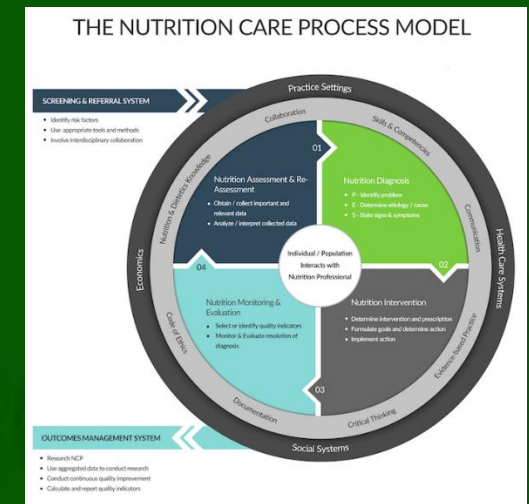


Leveraging standardized nutrition terminology through SNOMED CT

Constantina (Tina) Papoutsakis, PhD, RD
Senior Director,
Nutrition and Dietetics Data Science Center
Research, International, and Scientific Affairs
Academy of Nutrition and Dietetics (AND)



Constantina (Tina) Papoutsakis, PhD, RD

Disclosures

- Senior Director, Nutrition and Dietetics Data Science Center
Research, International, and Scientific Affairs
Academy of Nutrition and Dietetics (AND)
- Member of the Executive Committee of European Federation
of Associations of Dietitians (EFAD)
- Chair, Professional Practice Committee of EFAD

Meet the NCP Terminology Leads



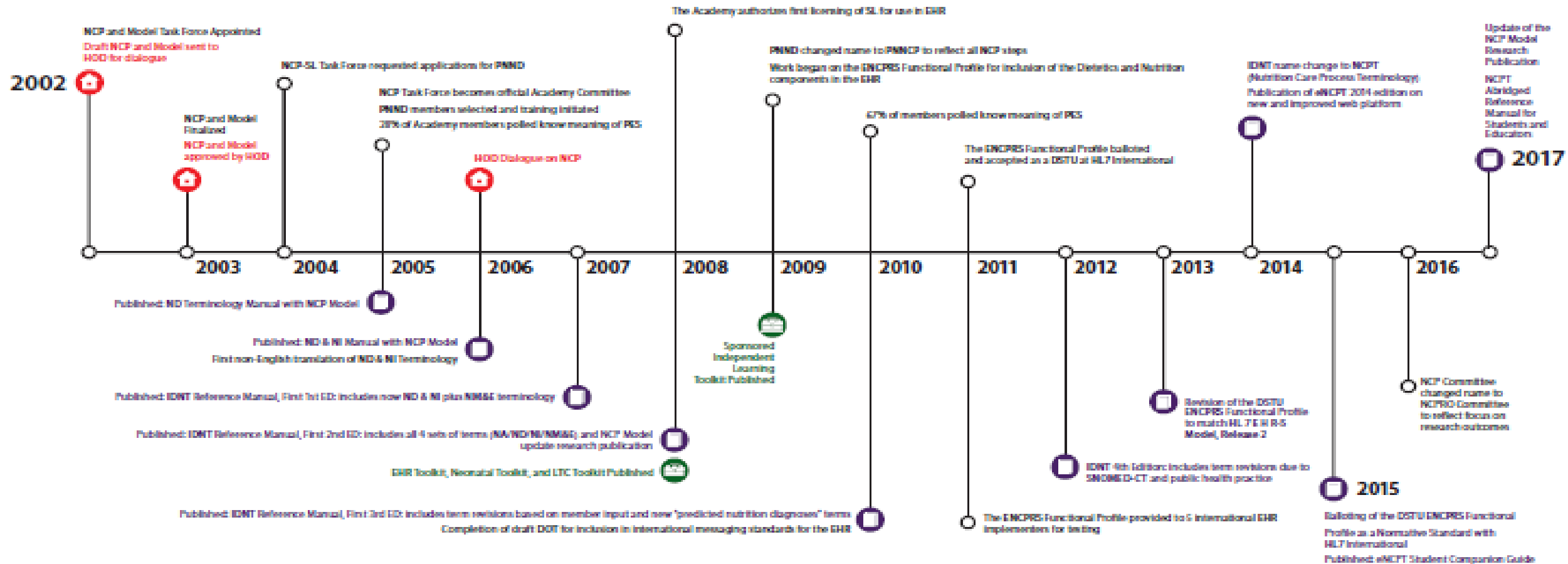
Lee Unangst, MS, RD



Donna G. Pertel, MEd, RD

- Describe the development of a nutrition terminology used in countries around the world
 - Discuss the challenges and wins of international collaboration
 - Present the opportunities already envisioned using SNOMED CT as the resource that promotes data sharing across borders
-

Nutrition Care Process Path to Success



Key:

- House of Delegates
- Publication
- Toolkit

- DOT** Diet order taxonomy
- DSTU** Draft Standard for trial use
- EHR** Electronic Health Record
- ENCPRS** Electronic Nutrition Care Process Record System
- eNCPT** Electronic Nutrition Care Process Terminology
- HL7** Health Level seven

- IDNT** International Dietetic and Nutrition Terminology
- LTC** Long Term Care
- NA** Nutrition Assessment
- ND** Nutrition Diagnosis
- NCP** Nutrition Care Process
- NCPRO** Nutrition Care Process Research Outcomes
- NCPT** Nutrition Care Process Terminology

- NI** Nutrition Intervention
- NM&E** Nutrition Monitoring and Evaluation
- RES** Problem, Etiology, Signs/Symptoms
- PNNPC** Peer Network for Nutrition Care Process
- PNND** Peer Network for Nutrition Diagnosis
- SL** Standardized Language
- SNOMED-CT** Systematized Nomenclature of Medicine Clinical Terms

Use Worldwide

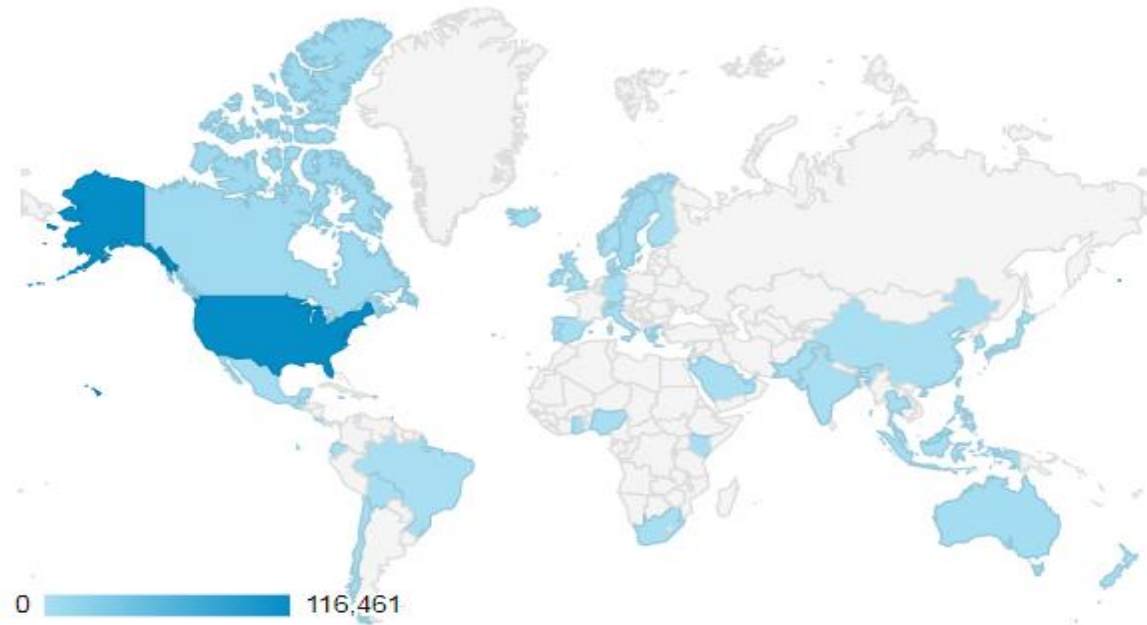
Online Translations of terms Now Available in 7 Languages

Current Translations

- Danish (Denmark)
- French (Canada)
- German (Switzerland)
- Norwegian (Norway)
- Swedish (Sweden)
- Simplified Chinese (China)
- Traditional Chinese (Taiwan)

Coming Soon

- Portuguese (Brazil)
- Spanish (Mexico)



Translating Terminology for the Nutrition Care Process: The Swedish Experience (2010-2016). McGreevy J, Orrevall Y. J Acad Nutr Diet. 2017 Mar;117(3):469-476. doi: 10.1016/j.jand.2016.06.366. Epub 2016 Aug 8.

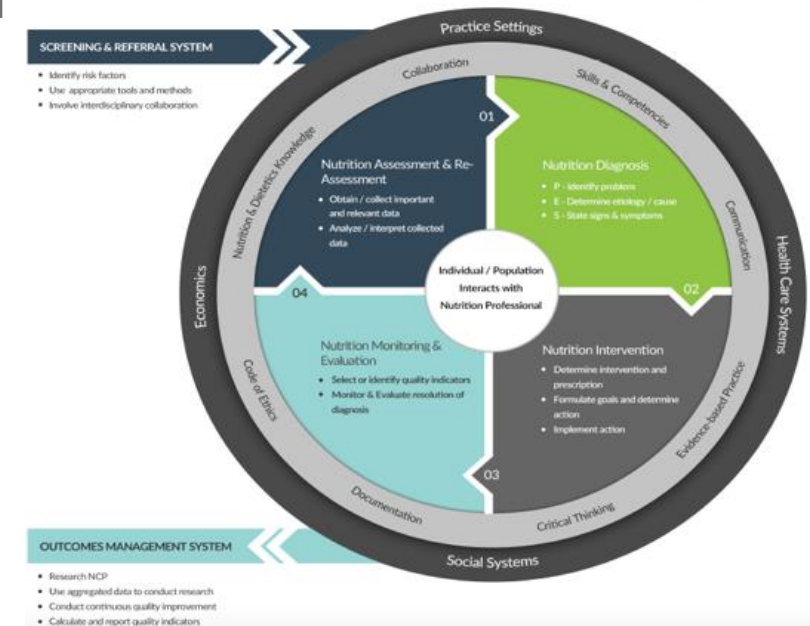
Nutrition Care Process (NCP)

- Problem solving framework
- Practice documentation and research

NCP Terminology (NCPT)

- Nutrition Care Process and Research Outcomes Committee
- Diagnosis and intervention

THE NUTRITION CARE PROCESS MODEL



Nutrition Care Process and Model Update: Toward Realizing People-Centered Care and Outcomes Management. Swan WI, Vivanti A, Hakel-Smith NA, Hotson B, Orrevall Y, Trostler N, Beck Howarter K, Papoutsakis C. J Acad Nutr Diet. 2017 Dec;117(12):2003-2014. doi: 10.1016/j.jand.2017.07.015. Epub 2017 Oct 5.

Nutrition Care Process (NCP) Update Part 2: Developing and Using the NCP Terminology to Demonstrate Efficacy of Nutrition Care and Related Outcomes. Swan WI, Pertel DG, Hotson B, Lloyd L, Orrevall Y, Trostler N, Vivanti A, Howarter KB, Papoutsakis C. J Acad Nutr Diet. 2019 May;119(5):840-855. doi: 10.1016/j.jand.2018.10.025. Epub 2019 Jan 16.

Welcome to the Nutrition Care Process Terminology Clinical Project Group space

This project group has been established to undertake the following:

- Quality assurance of promoted NCPT related terms from US extension (685 concepts)
- Review and confirm remaining NCPT content for addition to the SNOMED CT International release (approx. 1000 concepts)
- Prepare and model 100 concepts for initial pilot for addition to the SNOMED CT International Release
- Review the outcomes of the initial pilot to inform next steps
- Prepare and model the remaining content for addition to the SNOMED CT International Release
- Agree on updating process and maintenance plans, in line with NCPT developments
- Project times scales:
 - To be confirmed based on a detailed project plan agreed with SNOMED international

The screenshot shows a Zoom meeting window with two participants: Constantina Papo and Jane Millar. The main content is a Confluence page titled "Nutrition Care Process Terminology Clinical Project Group". The page includes a welcome message, a list of project objectives, and a section for project timescales. The objectives listed are:

- Quality assurance of promoted NCPT related terms from US extension (685 concepts)
- Review and confirm remaining NCPT content for addition to the SNOMED CT International release (approx. 1000 concepts)
- Prepare and model 100 concepts for initial pilot for addition to the SNOMED CT International Release
- Review the outcomes of the initial pilot to inform next steps
- Prepare and model the remaining content for addition to the SNOMED CT International Release
- Clinical review of resulting refset
- Agree on updating process and maintenance plans, in line with NCPT developments

The project timescales section states: "To be confirmed based on a detailed project plan agreed with SNOMED international".



Pilot Test

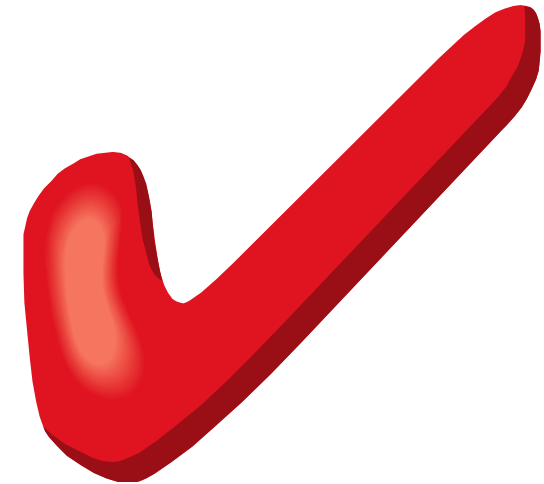


SNOMED Submissions

- Use cases
- NCPT concepts (with and without SNOMED CT mappings)
- Observables
- CPG role
- Progress
- Queries for submissions

Pilot Test Process

- Four typical nutrition use cases
 - Gestational diabetes mellitus
 - Overweight/obesity
 - Gastrointestinal cancer
 - Heart failure
- Nutrition Care Process Terminology
Clinical Project Group (CPG) Approval



Pilot Test Process

103 NCPT Concepts

Examples:

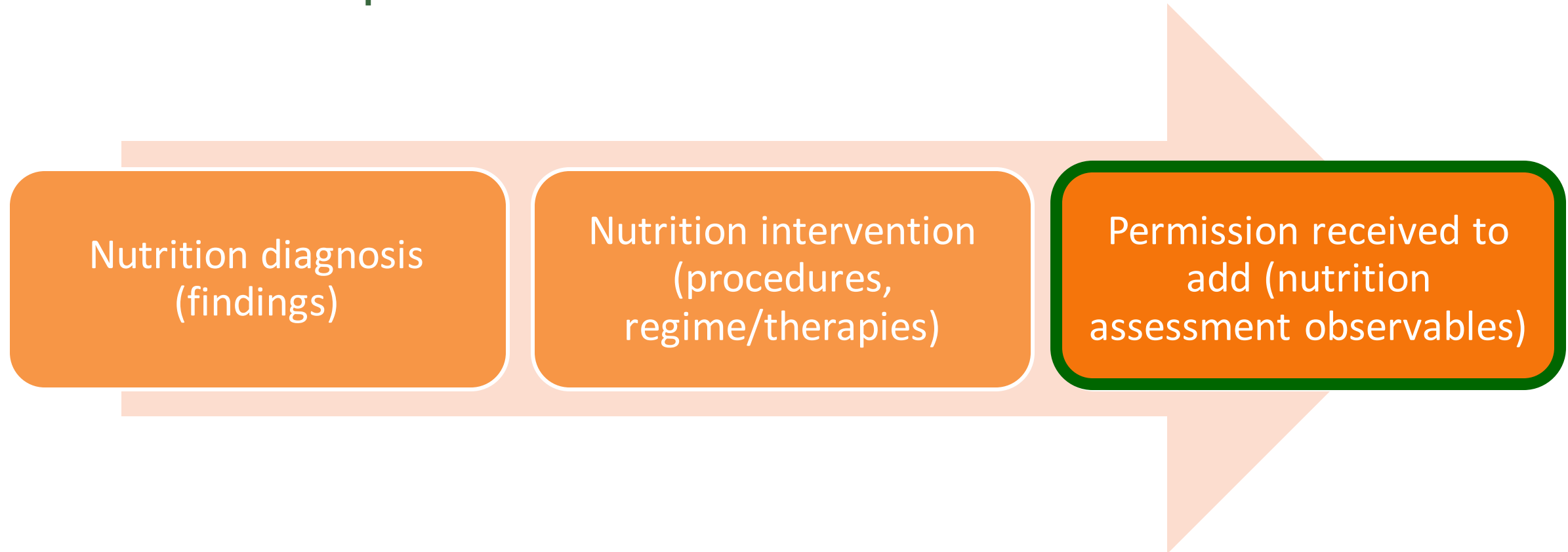
- Ankle edema SCT ID 26237000
- Excessive mineral intake (sodium)
SCT ID 440921000124100
- Temporal wasting SCT-ID 719185000
- Inadequate energy intake SCT ID 430176006
- Inadequate protein intake SCT ID 430183004



Leading healthcare
terminology, worldwide

Pilot Test Process

Observables Gap



Pilot Test Process

SNOMED Hierarchy

CPG Role

- Decisions for placement of nutrition observable concepts

- Nutrient
- Energy
- Food
- Fluid
- Water
- Breastmilk

Pilot Test Process

SNOMED Hierarchy

Result

- Requested deprecation of 364386000 | Endocrine, nutritional and metabolic observable (observable entity)

Parents

- Endocrine, nutritional and metabolic observable (observable entity) ←
- Nutritional observable (observable entity)
- Dietary intake (observable entity)
- Nutrient intake (observable entity)
- Mineral intake (observable entity)

Dietary potassium intake (observable entity) ☆ ⓘ No attributes

SCTID: 282029009

282029009 | Dietary potassium intake (observable entity) |

en Dietary potassium intake

en Dietary potassium intake (observable entity)

Children (0)

No children

Parents

- Clinical history/examination observable (observable entity)
- Nutritional observable (observable entity) ←
- Nutrient intake (observable entity)
- Mineral intake (observable entity)

Potassium intake (observable entity) ☆ ⓘ Characterizes → Intake process
Process output → Potassium

SCTID: 788479004

788479004 | Potassium intake (observable entity) |

en Potassium Intake

en Potassium intake (observable entity)

Children (0)

No children

Pilot Project Process



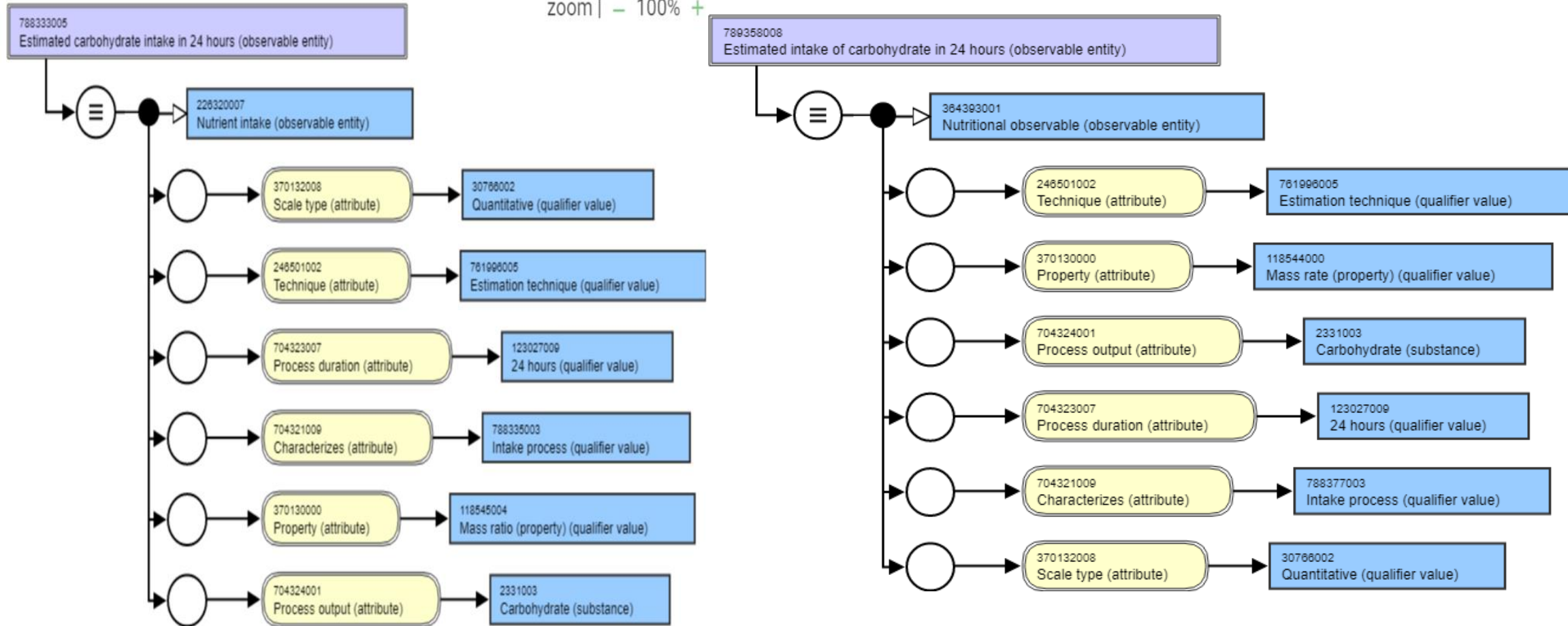
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terminology, worldwide

Outcomes

- July 2019 release 31 concepts
- Draft observables template

Pilot Project Process

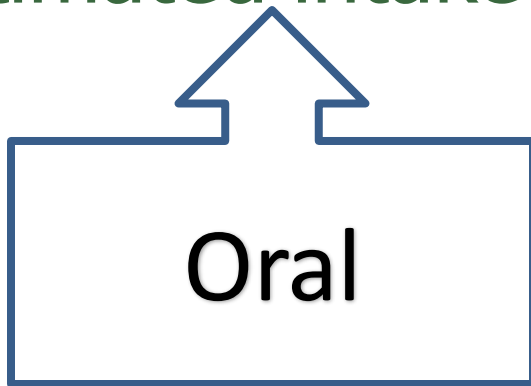
zoom | - 100% +

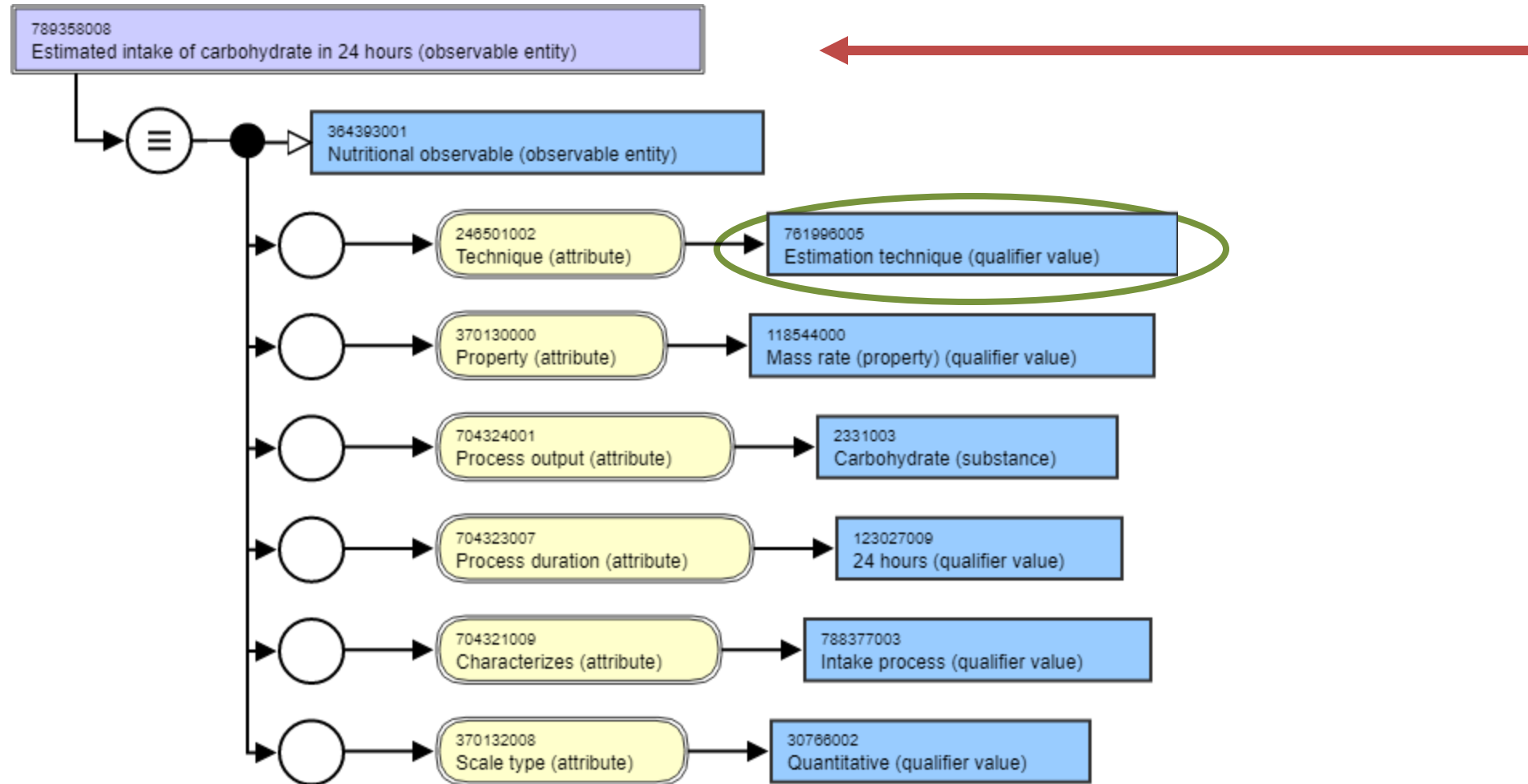


Pilot Project Progress

FROM: Estimated carbohydrate intake in 24 hours (observable)


TO: Estimated intake of carbohydrate in 24 hours (observable)





Pilot Project Progress

Queries

- Excessive fat intake (NCPT concept)
- Parentage included body component  the 'fat substance' was actually a body fat concept
- Fat and oils created in the substance hierarchy
- New step: Involvement in the Observables group meetings

Pilot Project Process

Queries

Concept	Details	Status
Energy	CPG → not a nutrient SNOMED CT → not a substance	SNOMED observable group and Academy consultants now attending meetings.
Vitamin K	NCPT → Vitamin K SNOMED CT → Vitamin K1	Vitamin K and Vitamin K1 not the same substance → Vitamin K and Vitamin K derivatives (new)
Breastmilk and soy milk	CPG → food SNOMED CT → food, but under dairy	In process

Pilot Project Process

Queries

Concept	Details	Status
Fluid	Concept 33463005 Liquid substance (substance) has 'Fluid (substance)' synonym	Consultants reviewed with staff → suited to NCPT concept
Total	SNOMED CT → Prefers to omit 'total' NCPT → Some inconsistent editing <ul style="list-style-type: none"> • 2020 Edition edit • Total concept as synonym for Estimated intake of protein in 24 hours (<i>all routes</i>) 	In process

Modeling Critical Thinking Elements

- Current concept mapping
- Relationships
- Substance
- Description
- Modeling review
- Unresolved issues



Look for
opportunities for
SNOMED template

Modeling Critical Thinking Elements

- **Current concept mapping**

- Includes review of all parentage
- NCPT: Inadequate iron intake
- SNOMED CT: 430299002 |Inadequate dietary intake of iron (finding)|

- **Relationships**

- Has interpretation → Inadequate
- Interprets → Iron intake

- **Substance**

- 3829006 |Iron (substance)|

Modeling Critical Thinking Example

Parents

- ▶ Finding of nutrient intake (finding)
- ▶ Dietary intake finding (finding)
 - ▶ Endocrine, nutritional and metabolic finding (finding)
 - ▶ Nutritional finding (finding)
 - ▶ Finding of nutrient intake (finding)
 - ▶ Inadequate mineral intake (finding)
 - ▶ Inadequate dietary mineral intake (finding)



Parentage



Inadequate dietary intake of iron (finding) ☆

SCTID: 430299002

430299002 | Inadequate dietary intake of iron (finding) |

en Inadequate dietary intake of iron (finding)

en Inadequate dietary intake of iron

Has interpretation → Inadequate
Interprets → Iron intake



Relationships

Children (0)

No children

Modeling Critical Thinking Elements

■ Description

- Fully specified name, preferred term, synonyms
- NCPT term included—not presently in example

■ Modeling review

- Incorrect concept
- NCPT is all routes → Recommend creating concept (Inadequate iron intake) with proposed parent: |441921000124106 Inadequate mineral intake (finding) |
- Iron substance → discuss with SNOMED CT editor
- Also, recommended deprecation of Endocrine, nutritional and metabolic finding (finding)

Modeling Critical Thinking Elements

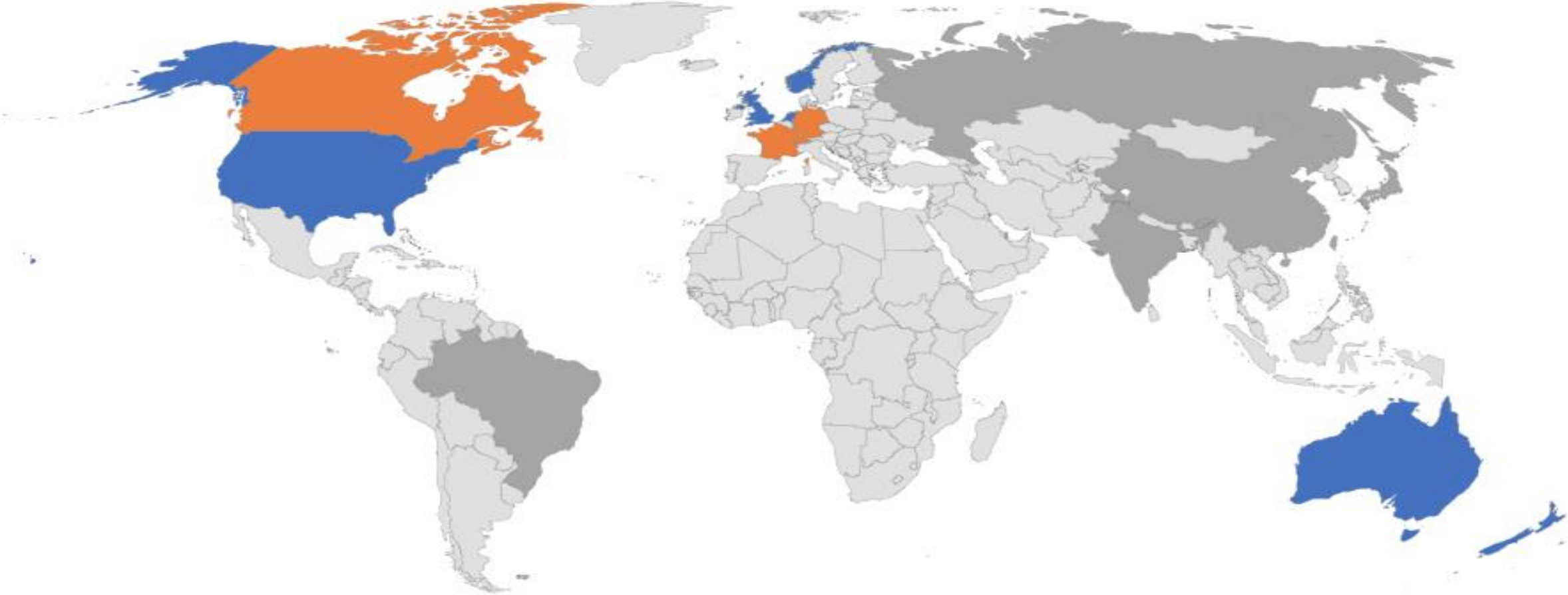
- Progression of any issues
 - CPG decisions regarding Observables hierarchy logic
 - Authoritative sources, for example, evidence guidelines or government resources (eg., Vitamin K)
 - Staff
 - Expert input
 - Items still unresolved, will be brought to CPG for input

- How can we continue to facilitate quality and consistency of work?
 - How can resources continue to be secured to progress with updating the NCPT work and access?
(Goes beyond the NCPT CPG, cannot/should not work)
 - How can we contribute to make the NCPT more international?
-

- Complete NCPT CPG objectives, progress to broad Nutrition SNOMED group
 - Advance research and informatics initiatives
 - Collaborate and support colleagues in implementation
 - Maintain NCPT long-term
-

EHR Global Adoption

■ 100% ■ 75% ■ 50%



<https://www.healthcare-informatics.com/news-item/ehr/survey-infrastructure-interoperability-key-barriers-global-hit-development>

Dialogue
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ncp@eatright.org

