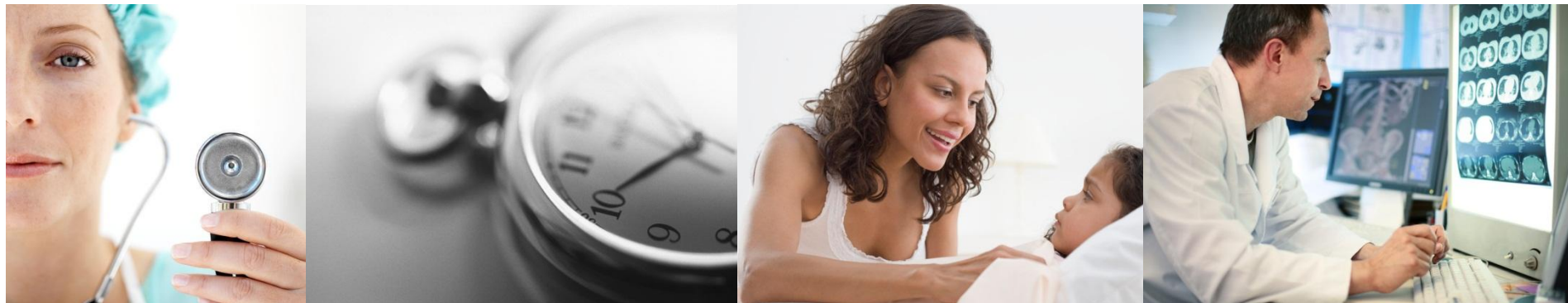# LOINC – SNOMED CT
Cooperation on Content

SNOMED International Business meetings - OIMP
Bratislava, Slovakia, October 17
Farzaneh Ashrafi and Suzanne Santamaria

Release Update

- The Production release of the LOINC - SNOMED CT® Cooperative package was released on 31 August as part of the SNOMED Core July 2017 derivative.
- All files are distributed on the "SNOMED International Releases" page, [MLDS](#):
  - LOINC Term to SNOMED CT Expression Reference Set (for 21889 LOINC terms)
  - LOINC Part to SNOMED CT Reference Set (for 6627 LOINC parts)
  - Associated documentation on linkage guidelines
- The next release is currently scheduled to be published as part of SNOMED July 2018 derivative (on or before September 30, 2018)

Issues submitted to the OIMP

Coagulation processes

- **Process observables attributes - Coagulation processes**
    - "Inheres In" or a new attribute?
        - Use of other attributes such as Relative to and Relative part
        - 50410-0 Coagulation dilute Russell viper venom induced/Coagulation dilute Russell viper venom induced.excess phospholipid:Ratio:Pt:PPP:Qn:Coag
        - 75884-7 Coag   Coagulation surface induced.lupus sensitive/Coagulation surface induced.lupus sensitive.excess phospholipid:Ratio:Pt:PPP:Qn:Coag
    - To be discussed as a [general topic](#).

Age: Property or Process?

- **Previous OIMP discussions**
- **Modelling options with examples of use of additional attribute-values:**
  - Quality observable with age as property

    | Observable | :

    | Property | = | New | Age |,

    | Inheres in | = | Patient | / | Human being | OR | Human oocyte donor (person)

    | OR | Specimen |,

    | Precondition | = | New | At time of diagnosis |,

    | Techniques | = | Calculation Technique|

  2. Process Observable with property = Duration

     | Observable | :

     | Property | = | New | Duration |,

     | Characterizes | = | Life |, |Gestation/Development|, |Sample degradation|

     | Inheres In (similar attribute?) = | Patient | / | Human being | OR | Human oocyte donor (person) | OR | Specimen |,

     | Precondition = | New | At time of diagnosis|

     | Techniques | = | Calculation Technique|

Age Examples in LOINC and SNOMED

- Age in patient:
    - 424144002 | Current chronological age (observable entity) |
    - 30525-0 | Age (Age:Time:Pt:^Patient:Qn)
- Age in someone other than patient:
    - 443443002 | Age of carer (observable entity) |
    - 68327-6 | Egg donor age (Age:Time:Pt:^Egg donor:Qn)
- Age of fetus:
    - 57036006 | Fetal gestational age (observable entity) |
    - 18185-9 | Gestational age (Gestational age:Time:Pt:^Fetus:Qn)
- Age of something:
    - 167816006 | Semen sample age (observable entity) |
    - 49546-5 | Age of Blood specimen (Specimen age:Time:Pt:Bld:Qn)
- Age at X (X is a precondition):
    - 412726003 | Length of gestation at birth (observable entity) |
    - 445872007 | Length of gestation at time of procedure (observable entity) |
    - 63932-8 | Age at diagnosis (Age at diagnosis:Time:Pt:^Patient:Qn)
- Age by Y technique: e.g
    - 123980006 | Bone age (observable entity):
    - 29553-5 | Age calculated (Age:Time:Pt:^Patient:Qn:Calculated)
- Age at X (precondition) by Y (technique)
    - 444135009 | Estimated fetal gestational age at delivery (observable entity) |

Questions and considerations

- Do we need to specify Inheres In as "Patient" when it is not specified in the FSN?
    - It seems to be the default value in SNOMED CT, but
    - If not specified the terms will subsume concepts such as gestational age and egg donor age for quality observables and egg donor age for process observables
    - In LOINC the System is specified as "^Patient".
- The range for Inheres In (or new attribute for process observables) needs to change to include descendants of
    - 125676002 | Person (person)
    - 14679004 | Occupation (occupation) | → e.g. Carer in "Age of carer"
- Gestation not equivalent to Development?
    - See modelling for Gestational age
- Preconditions "at birth" and "at delivery" are equivalent?
    - See modelling for 444135009 | Estimated fetal gestational age at delivery (observable entity) |

Questions and considerations

- Existing concept "424144002 | Current chronological age (observable entity) |"
  - It is equivalent to "age" as suggested by one of the synonyms?
  - Do we need a precondition of "current"?
  - Does the word chronological adds anything that should be defined? Would there be other kinds of "ages" where we would use this same property?
  - Without changes specified above, the term subsumes other terms with age as property and any preconditions: e.g. age at time of diagnosis

Questions and considerations

- Existing concept "105727008 | Age AND/OR growth period (observable entity) |"
  - Currently the concept is the stated parent for all Age concepts
  - Can not be fully defined:
    - As quality observable it will be duplicate of chronological age
    - As process observable, it seems to characterize both life and development/growth
  - Consider retiring this concept and replacing it with new concepts as needed

Duration

- Can we use the same model for specifying duration in LOINC components and/or SNOMED CT observable entity concepts?
  - Duration examples in LOINC:
    - 10587-4   Sexual abstinence duration
    - 1321-9   Transfusion duration
    - 13362-9   Collection duration of Urine
    - 13363-7   Collection duration of Stool
    - 34588-4   Tick feeding duration
    - 85929-8   Salivary gland swelling duration
    - 85933-0   Cough duration
  - Duration in SNOMED CT: 58 Observable entity concepts specifying duration of process or procedure
    - Duration of labor (observable entity)
    - U wave duration (observable entity)
    - Test duration (observable entity)
- How procedures are related to processes: Extend the range of characterizes to include procedures?
- Sexual abstinence duration: Is this a process/procedure?

Likelihood

- OIMP discussion posted [here] and Daniel's review [here]
  - Likelihood as a new property:
    - Likelihood and relationship to Presence
      - p=1 → Present, p=0 → Absent
    - Likelihood and relationship to dispositions
      - p>0 → there is a (pre-)dispostion to X (?)
  - Probability of Disease rather or karyotypic morphologic abnormality?
    - [Angelman syndrome]
    - [Trisomy 21 risk]
    - [22q11.2 deletion risk]
  - Modelling:
    - | Observable | :
      - | Property type | = | Likelihood |, // Likelihood has a precise definition in statistics!
      - | Inheres in | = | Fetus |,
      - Technique | = | estimation of.. |
      - | Component| = | 737542000 | Trisomy 21 (morphologic abnormality) |
      - Or
      - | Towards | = | 41040004 | Complete trisomy 21 syndrome (disorder) | // Not in range