Med TAIPEI TAIWAN 2025 Info

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Mapping ICD-10 Codes for Oncology Diseases to OncoTree: Lessons Learned

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The 20th World Congress on Medical and Health Informatics

UKSH UNIVERSITÄTSKLINIKUM Schleswig-Holstein

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Present by: Tessa Ohlsen

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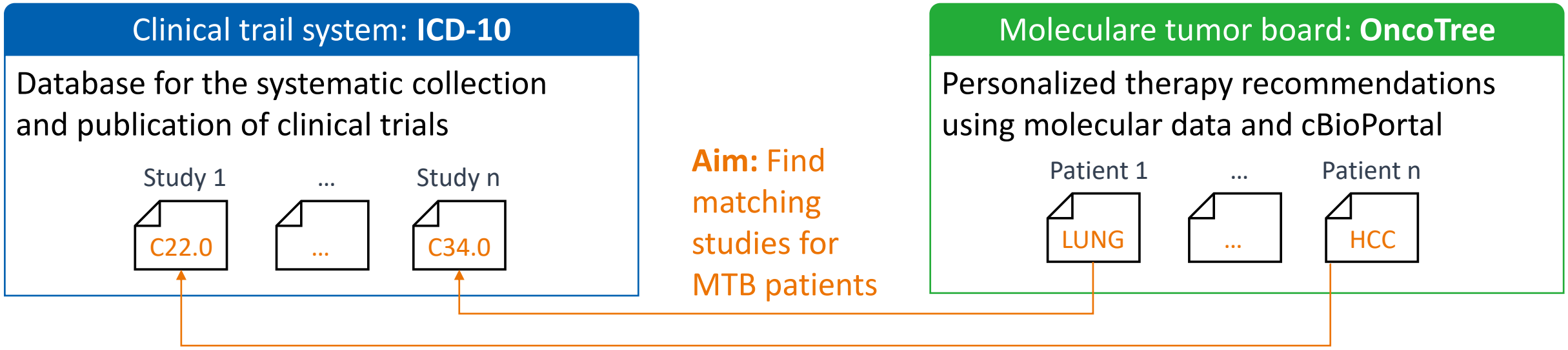
Location: Taipei, Taiwan

1 Initial situation



C22.0 – Liver cell carcinoma
C34.0 – Malignant neoplasm of main bronchus

KIDNEY – Lung
HCC – Hepatocellular Carcinoma (LIVER)

2 Mapping with intermediate step SNOMED CT

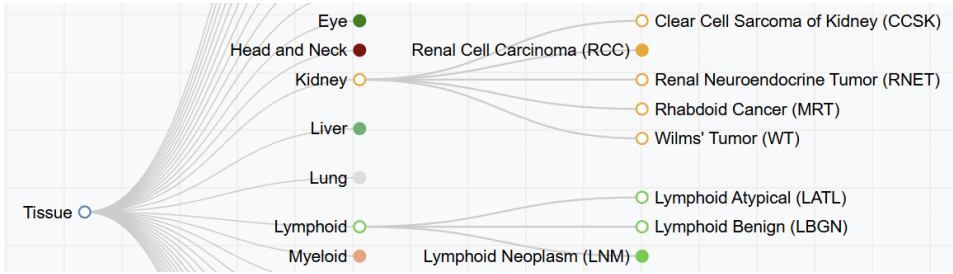
ICD-10

C34	**Malignant neoplasm of bronchus and lung**
C34.0	Main bronchus Carina Hilus (of lung)
C34.1	Upper lobe, bronchus or lung
C34.2	Middle lobe, bronchus or lung
C34.3	Lower lobe, bronchus or lung
C34.8	Overlapping lesion of bronchus and lung [See note 5 at the beginning of this chapter]
C34.9	Bronchus or lung, unspecified
C37	**Malignant neoplasm of thymus**
D36	**Benign neoplasm of other and unspecified sites**
D36.0	Lymph nodes
D36.1	Peripheral nerves and autonomic nervous system *Excl.:* peripheral nerves of orbit (D31.6)
D36.7	Other specified sites Nose NOS
D36.9	Benign neoplasm of unspecified site
D37	**Neoplasm of uncertain or unknown behaviour of oral cavity and digestive organs**
D37.0	Lip, oral cavity and pharynx
D37.1	Stomach
D37.2	Small intestine
D37.3	Appendix
D37.4	Colon
D37.5	Rectum

1042 codes for oncological diseases

SNOMED CT

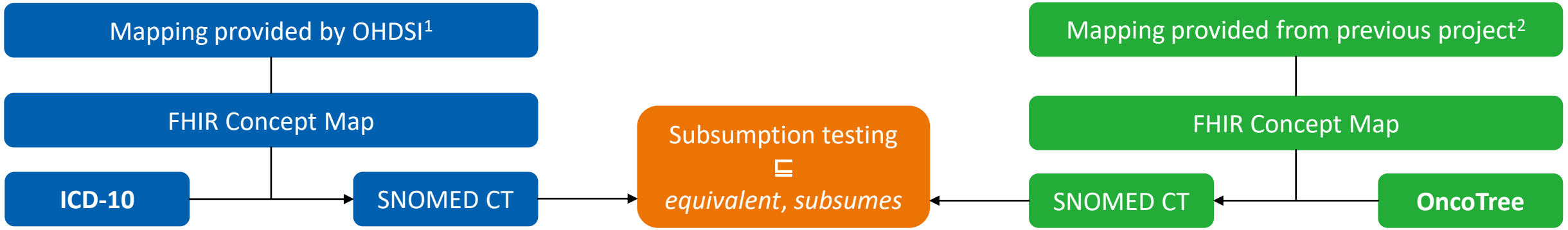
OncoTree



868 tumor codes in 31 tissue classes or the rest class *Other*

Previous work:
Ohlsen T, Kruse V, Krupar R, Banach A, Ingenerf J, Drenkhahn C. Mapping of ICD-O Tuples to OncoTree Codes Using SNOMED CT Post-Coordination. Studies in Health Technology and Informatics. 2022 May 25;294:307–11, doi: 10.3233/SHTI220464.

3 Methods



EXAMPLE:

[1] OHDSI. Athena – OHDSI Vocabularies Repository [Internet]. [cited 2025 Jul 29]. Available from: https://athena.ohdsi.org/search-terms/start

[2] Ohlsen T, Kruse V, Krupar R, Banach A, Ingenerf J, Drenkhahn C. Mapping of ICD-O Tuples to OncoTree Codes Using SNOMED CT Post-Coordination. Studies in Health Technology and Informatics. 2022 May 25; 294:307–11, doi: 10.3233/SHTI220464.

4 Results

- Manual validation by experts

Validation	Results
ICD-10 to SNOMED CT	• Accuracy of 97.81 %
OncoTree to SNOMED CT	• Created in a previous project by a medical PhD student • No critical deviations and already revised
Overall	• 1,042 ICD-10 codes successfully mapped • 79 distinct OncoTree codes used • Accuracy of 86.18 %

5 Discussion

1. **Discrepancies in the structure of the coding systems**
    - OncoTree: Pragmatic clinical design
    - ICD-10 + SNOMED CT: Strict logical hierarchies
    - Example: Bronchus tumors assigned to *LUNG* in OncoTree, but no subtype relation in SCT

5 Discussion

1. Discrepancies in the structure of the coding systems

2. **No Finding site in pre-coordinated SNOMED CT concepts**
    - OncoTree: Post-coordinated with *Finding site* and *Associated morphology*
    - SNOMED CT pre-coordinated concepts: Missing topography, especially in leukemias
    - Possible improvements:
        - Re-check *OTHER*-category ICD-10 codes
        - Temporarily ignore topography in OncoTree
        - Build ICD-10 codes as post-coordinated expressions

5 Discussion

1. Discrepancies in the structure of the coding systems

2. No Finding site in pre-coordinated SNOMED CT concepts

3. **Less precise mapping from ICD-10 to SNOMED CT**
   - Example: *C44.2* (Other and unspecified malignant neoplasm of skin of ear and external auricular canal)
     Mapped to broader *Malignant neoplasm of ear*
     More precise: *Primary malignant neoplasm of skin of ear*
   - Future step: Review and refine existing mappings

5 Discussion

1. Discrepancies in the structure of the coding systems

2. No Finding site in pre-coordinated SNOMED CT concepts

3. Less precise mapping from ICD-10 to SNOMED CT

4. **Comparison: ICD-O vs. ICD-10 mapping**
    - Less specific mapping with ICD-10 due to its broader, less granular structure

6 Conclusion

- Mapping approach effectively assigns ICD-10 codes to OncoTree using SNOMED CT and FHIR service *$subsumes*
- ConceptMap is open source for broader use and sharing
- Identified challenges offer valuable insights for future improvements
- Supports easier patient data integration, personalized therapies, and improved oncology workflows

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