

# 201937 SNOMED CT Support Interoperability in Chinese Cancer Clinical Lab Test Data

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## Summary

Our study aimed to compare the mapping rate of SNOMED CT (Systematized Nomenclature of Medicine-Clinical Terms) and the LOINC (Logical Observational Identifier Names and Codes) in Chinese clinical laboratory data.

## Audience

1. Clinical, Research/academic, Technical

## Learning Objectives

1. The standardization of laboratory test data in real world study
2. Compare the mapping rate of SNOMED CT and the LOINC in Chinese clinical laboratory data
3. How to implement SNOMED CT in Chinese clinical laboratory data

## Abstract

**Background:** Real world study (RWS) provides a powerful weapon for clinical data reuse, especially for the reuse of tumor data. Cancer-related lab test data provide important supports for the RWS in cancer. The standardization of lab test data is an important issue that has not been solved in RWS. There is no uniform medical terminology system for standardization of laboratory data in China.

**Objectives:** Our study aimed to compare the mapping rate of SNOMED CT (Systematized Nomenclature of Medicine-Clinical Terms) and the LOINC (Logical Observational Identifier Names and Codes) in Chinese clinical laboratory data.

**Methods:** We collected 4451 laboratory terms from 4 tumor hospitals. The cumulative frequency of all terms is 59285236. After sorting by frequency, we selected 643 high frequency items with 80% frequency to map to SNOMED



CT and LOINC. Two terminologists manually mapped the 643 terms to LOINC and SNOMED CT based on RELMA mapping tool and SNOMED International Browser. Then a team of two senior terminologists checked the mapping result.

Results: Among the lab test terms, 308 (47%) were complete matched to LOINC and 335 concepts (53%) unmatched. Most terms (92%) were mapped to SNOMED CT, including 180 concepts (28%) mapped to pre-coordinated expression, 411 terms (64%) mapped to post-coordinated expression, 52 terms (8%) unmapped.

Discussion: Standardization of medical data is a prerequisite for medical big data applications, such as RWS and clinical decision support system. LOINC is used for observational data standardization. According to the LOINC semantic model, the naming and encoding of the test item requires at least 5 or 6 aspects of information, including component, property, timing, system, scale and method. But in practice, most of the local test data have only one to three aspects of information, which results in most local elements not being able to accurately mapped to LOINC. SNOMED CT is a clinical term that also contains a large number of test terms. In particular, SNOMED CT has a post-coordination expression function that combines two or more concepts with the medical concepts possessed by SNOMED CT itself to form a new one. In this way, the ability of SNOMED CT to accurately map to real clinical test data is greatly enhanced.

Conclusions: According to the initial mapping experience, we believe that SNOMED CT has good support for the standardization of laboratory data. In review of the fact that the local test data which missing items can't mapped to LOINC accurately, we recommend SNOMED CT in the implementation.