



## Translation of Medical Terminology Using Commercial Translation Software

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## Introduction

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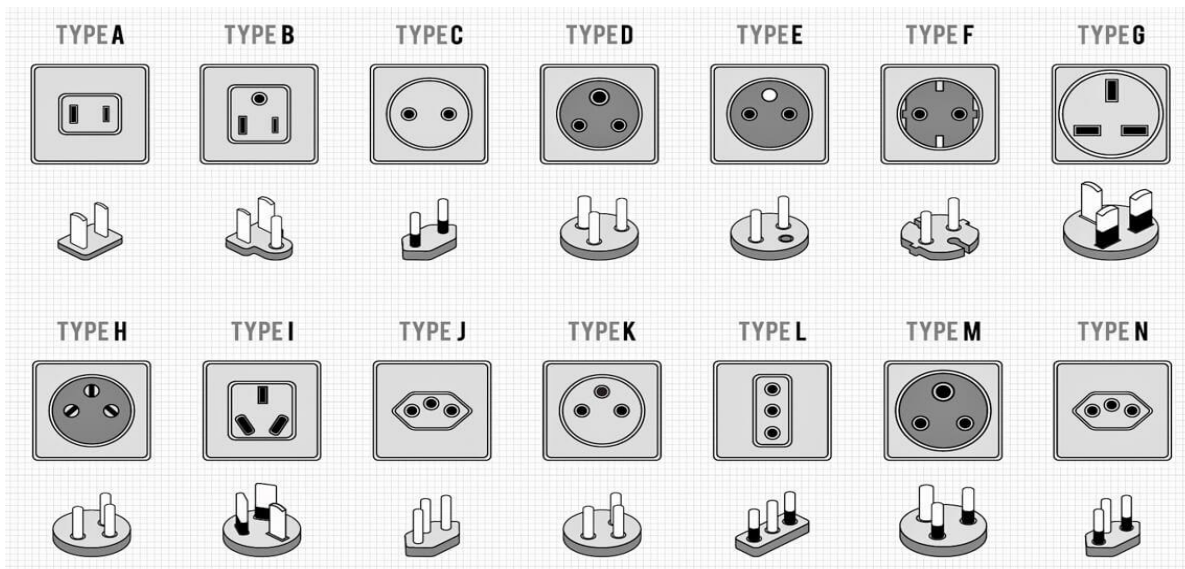
Definition of standardized medical terminologies:

Systematized collections of terms used in medicine to describe, code, and classify medical concepts and clinical information.





## Non standardized





## Standardization

Fatigue



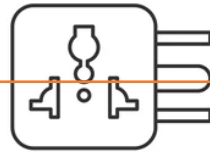
Tired



Tiredness



HP:0012378





## Standardized medical terminologies

SNOMED CT DELIVERED BY SNOMED International



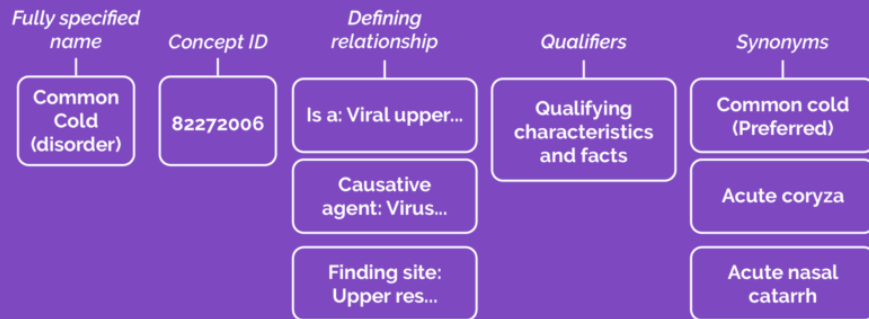
**LOINC**<sup>®</sup>  
*from Regenstrief*





## Example: SNOMED CT

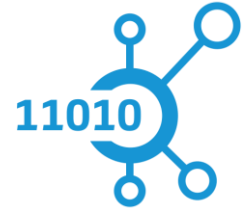
### Examining the SNOMED CT hierarchy





## Translation of terminologies

Why is the translation of these terminologies important?

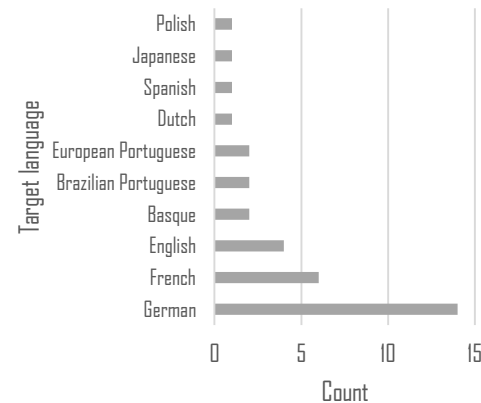
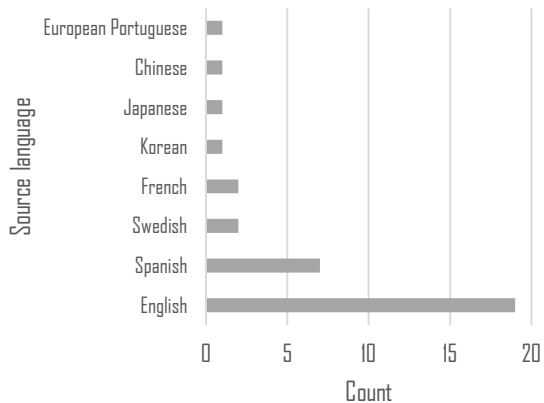


- Promotes uniform and consistent use of terminology across languages and regions.
- Collaboration and sharing of health information across borders is becoming increasingly important.



## Example translations

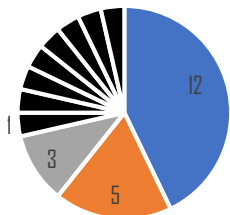
Noll R, Berger A, Frischen L, Boeker M, Storf H, Schaaf J (2023)  
Machine translation of standardised medical terminology using natural language processing: A Scoping Review





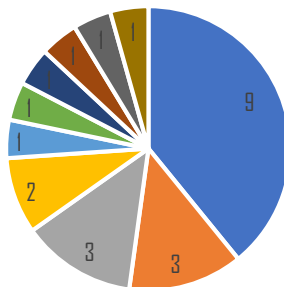
## Example translations

Machine Translation



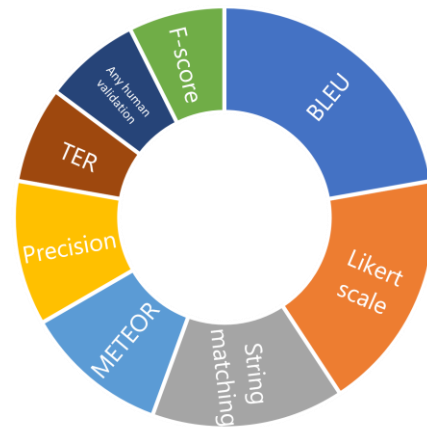
- Google Translate
- Baidu
- Open-NMT
- That
- Moses
- Youdao
- Systran
- fairseq
- DeepL
- Bing
- Matecat

Translated Terminologies



- SNOMED CT
- MeSH
- ICD
- UMLS
- HPD
- Gene Ontology
- RadLex
- Chealth
- HIBA thesaurus
- ICF

Translation quality





## Translation of the HPO

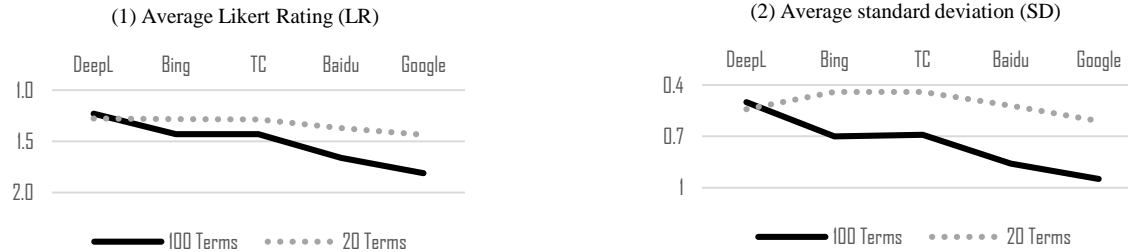
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Machine translation of selected terms from the Human Phenotype Ontology (HPO).

- 12 commercial translators (including Google, Bing, DeepL).
- Evaluation by medical experts using a Likert scale.  
**Experts' favorite:** DeepL.



## HPO translation evaluation



**Figure.** (1) Average Likert Rating of HPO translations (2) Average standard deviation of HPO translations. A low value is aspired to for both the mean and the standard deviation.



## Recent study with GPT

ID: HP:0012378

Term: Fatigue

Synonyms: 'Fatigue', 'Tired', 'Tiredness'

↓ GPT-3.5  
(En - De)

Term: Ermüdung

Synonyms: 'Erschöpfung', 'Müdigkeit'



## Conclusion

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- The availability of terminology in different languages facilitates communication and **reduces the risk of errors** in the transmission of medical information and in the treatment of patients.
- Commercial **machine translators** provide satisfactory results.
- Since incorrect translation can lead to misunderstandings and confusion, **evaluation of translations by medical experts** or automated validation methods should take place.



## Thank you!

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