



## Implementing LOINC L4CHLAB strategy for laboratory in Switzerland

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### Documentation of the L4CHLAB release

#### L4CHLAB Consortium

HUG (lead), CHUV, Insel Spital, Hôpital du Valais, Hôpital de Fribourg

#### Approach

The approach taken is discussed in the strategy paper. It is based on the LOINC requisites, building on the pre-analytical and analytical phase. This, it focuses on the triplet manufacturer-automata-kit (MAK triplets).

#### Mapping process

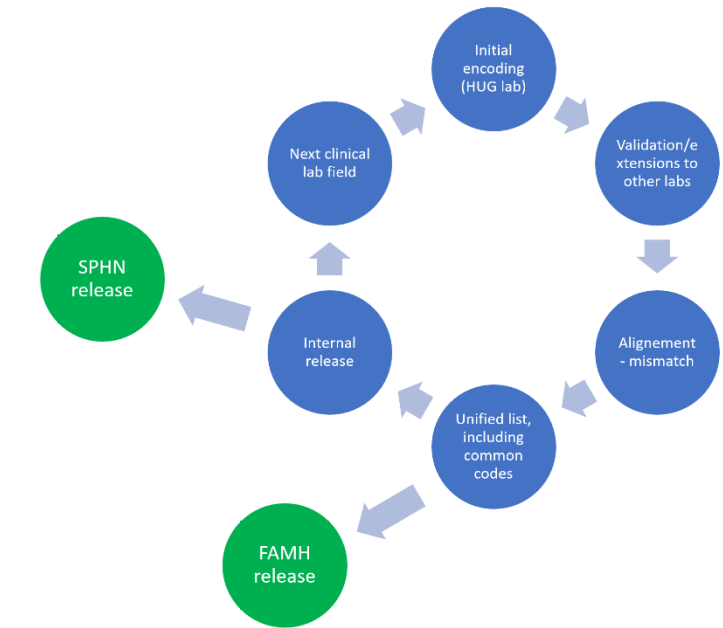
The approach taken is based on centering the coding on the expert of the field, laboratory medicine. Thus, effective LOINC encoding has been made at the clinical laboratories' premises within the consortium members according to LOINC rules. Each laboratory was provided the current state of the encoding to be added/modified/validated, the result to be returned to the alignment team at HUG.

No choices or changes were made on the coding by the group doing the alignment. Ambiguous situations were avoided to save time and maximize the number of analysis covered.

Coding priority has been made based on lab propositions, volumes/ usage frequency of the MAK triplets.

The steps were the following:

1. Creation of a file template for the gathering of those analysis (in the form of an Excel sheet)
2. Distribution of the template to each participating center.
3. Update of the list to participants each time a center provided new codes.
4. Once every center gave their mapping, merging, alignment and cleaning of the file for coherence.
5. Final validation of the mapping file by every center.
6. Release of the file.



### File description

The L4CHLAB release file contains the following parts:

- **Readme:** describes the content of the file
- **Release Notes:** contains the description of the release version of the file
- **Mapping 2019.1:** contains a list of the LOINC codes, labels and automata information of the analysis with the following columns.
  - o **LOINC:** The LOINC code corresponding to this line
  - o **LONG\_COMMON\_NAME:** The label of the LOINC code as in the attribute "long common name" of LOINC.
  - o **Manufacturer:** Manufacturer of the instrument producing the analysis.
  - o **Instrument:** Instrument producing the analysis
  - o **Test kit name (short name) / Kit version:** Test kit used to produce the analysis
- **Shared Unique LOINC all centers:** contains the list of LOINC code that are the same, are unique, and found in all centers
- **Unique LOINC any center:** LOINC codes that are found in at least one center but only once
- **Positive List.** There is another list for the FAMH which is named "positive list" and which is limited to the MAK triplet encoding similar to all members.

### Problem solving, risk mitigation approaches

Problem	Solution	Risk mitigation
Non generalizable mapping	Several labs, university and non university, provide independent mappings	Alignment and identification of mismatches
Mapping not usable in production labs	Applying the MAK triplet approach	Identification of the equipment used by labs
Cost of implementation	The MAK triplet approach allows to apply the coding in a batch of all analysis made with	

	a specific kit on a specific automata	
Sustainability	Labs work with automata and kits. It is always possible, and inexpensive, to add this [automata]-[kit]-[list of analyses] to the mapping file.	Transfer of the maintenance to the <i>Laborprojectgruppe</i> of the FAMH

Building a list of mappings not representing theOne of the risks of this project was to create a mapping file that would not accurately represent the analysis made in practice and therefore would not be useable. This was addressed by letting the responsibility of coding to each hospitals' laboratories. In this way, only experts with access to the automata performing the analysis were habilitated to add elements to the list.

As a result, a second risk of the project was not obtaining feedback from laboratories that sustain a constant pressure for producing analysis and do not necessarily have the time to work on such interoperability project. This risk was mitigated by having a single point of contacts per laboratories and sending regular reminders of the remaining tasks. Moreover, for hospital not having LOINC codes implemented at the beginning of the project, the added value of being helped for this task was a positive incentive.

The list was the result of two main tasks for the hospitals. If the hospital had already integrated LOINC codes to its production environment, the work was mainly extracting those codes with the manufacturer, automata and kit information. If the hospital had no LOINC codes already in use they had to be newly mapped and integrated into the hospital. To mitigate the risk of failing to do this integration, the codes from hospitals already using LOINC were shared to guide and ease the coding in other hospitals.

#### Use of the mapping list in a production laboratory

This list is used in production at HUG and Insel Spital.