

# New concept proposal

## Reference Interpretation

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<b>Project</b>	General importance	<b>Contact person</b>	DCC
<b>Dataset release</b>	2024.1	<b>Consulted expert</b>	-

### 1 Rationale

Lab tests often lead to results which can be interpreted based on well-defined reference ranges that are in use across many medical disciplines, allowing physicians to quickly pinpoint potentially pathological test results. Results outside the normal range may trigger additional tests or possible health concerns. As reference ranges vary between populations and individuals, a specific interpretation of a test result is required. Note that it does not have to be a “range”. It can also be a single threshold value that can be used for comparison and interpretation.

From a modelling perspective, a “reference interpretation” can be considered a process where the inputs are a Lab Result which would hold information about the associated Reference Range or Reference Value (new concept in 2024.1). The output is an interpretation, e.g., “within reference range” or “below reference range”, which can also be modelled in the form of a result. This document presents the concept of Reference Interpretation modelled according to the Interpretation concept selected to be included in the 2024.1 SPHN Dataset.

### 2 Comparison to other standards/data models

#### 2.1 SNOMED CT

SNOMED CT provides codes to represent reference interpretation values, such as 281302008 [Above reference range (qualifier value)] or 281301001 [Within reference range (qualifier value)].

### 3 Concept information

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composedOf
concept	Reference Interpretation	process of making sense of a lab result to derive meaningful conclusions in comparison to a reference	Reference Interpretation	process of making sense of a lab result to derive meaningful conclusions in comparison to a reference	Interpretation				
inherited	input	input associated to the concept	interpretation result	result that is being interpreted	Lab Result				0:1
inherited	output	output associated to the concept	interpretation result	the interpretation of the input result in accordance to the reference range or reference value	Result	SNOMED CT	code restricted to: descendant of: 260245000  Finding value (qualifier value)		1:1
inherited	datetime	datetime of the concept	interpretation datetime	datetime when the conclusion was drawn, i.e., the reference interpretation made	temporal				0:1
inherited	standard guideline	standard document associated to the concept	standard guideline	standard document or publication used for	string				0:n

				interpreting the (input) result					
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General concept name	Cardinality for concept to Administrative Case	Cardinality for concept to Data Provider	Cardinality for concept to Subject Pseudo Identifier	Cardinality for concept to Source System
Reference Interpretation		1:1		1:1

## 4 Impact on the SPHN Dataset

No impact on the SPHN Dataset.

## 5 Discussion

The Reference Interpretation extends the Interpretation concept to be more targeted for the representation of interpretations of results that are bound to reference ranges and values.

## 6 Example

### 6.1 Reference Interpretation - example 1

input (Lab Result)

quantity:

value: 149.0

unit: mmol/L

code: -

string value: -

numerical reference (Reference Range)

lower limit:

value: 136.0

unit: mmol/L

upper limit:

value: 145.0

unit: mmol/L

output (Result)

code: 281302008 |Above reference range (qualifier value)|

quantity: -

string value: -

datetime: 03.11.2023 10:57

standard guideline: -

### 6.2 Reference Interpretation - example 2 of a Lab Test Result where the CRP levels of a patient have been tested

input (Lab Result)

quantity:

value: 0.8

unit: mg/dL

code: -  
 string value: -  
 numerical reference (Reference Value)  
 quantity:  
   value: 1.0  
   unit: mg/dL

output (Result)  
 code: 260391006 |Noninflammatory (qualifier value)|  
 quantity: -  
 string value: -  
 datetime: 01.10.2020 11:07  
 standard guideline: -