

Briefing Note

Member Forum/Content Managers Advisory Group - November 2022

Measurement Findings

Modeling and Terming for ‘Reference Range’ Concepts

Purpose:

This briefing outlines the changes that are being made to the content of the hierarchy 118245000 |Measurement finding (finding)| following feedback from the Content Managers Advisory Group, Members Forum and agreed with the Editorial Advisory Group.

These changes will become available as a single release.

Background:

SNOMED International is undertaking a Quality Initiative (QI) project focused on addressing concepts within the hierarchy of Clinical Findings. The purpose of the QI project is to improve the structural consistency of existing content and adherence to Editorial Policy.

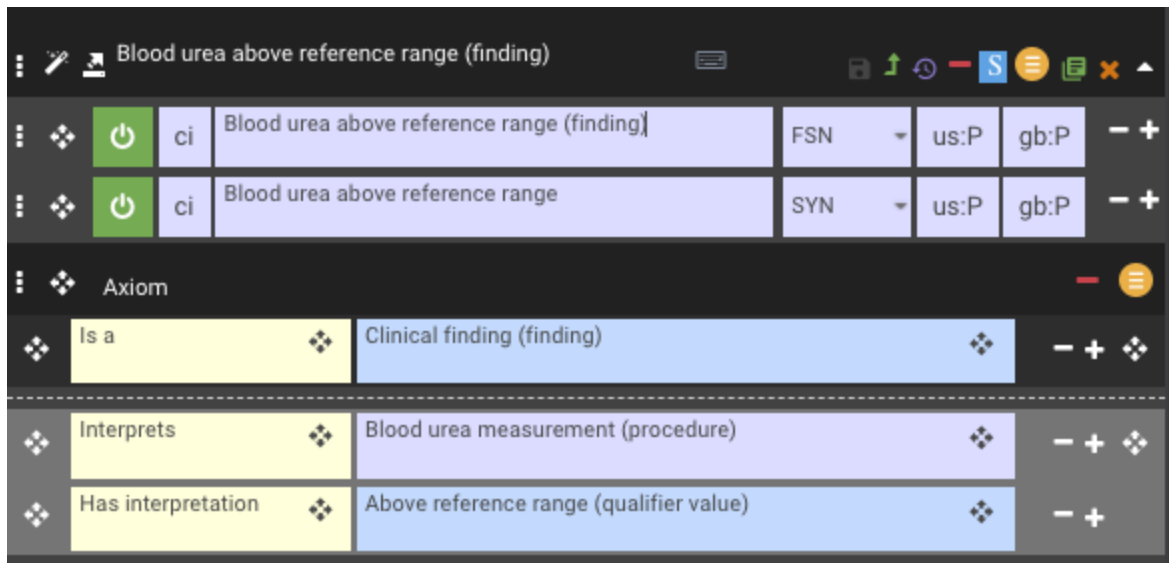
Applying the principles of the QI project to the domain of laboratory findings gives us the opportunity to update the terminology to reflect current laboratory reporting practices and provide a consistent model for the addition of new content.

The remainder of this briefing note documents the consensus of the EAG relating to standardization in the terming and modeling relating to analyte levels.

These changes apply to approximately 1400 concepts within the 118245000 |Measurement finding (finding)| hierarchy.

Modeling ‘reference range’ findings:

The agreed pattern for reference range measurement findings is illustrated below:



...	❖	🔌	ci	Blood urea above reference range (finding)	FSN	us:P	gb:P	- +	
...	❖	🔌	ci	Blood urea above reference range	SYN	us:P	gb:P	- +	
...	❖	Axiom							- ☰
❖	❖	is a	❖	Clinical finding (finding)	❖	- + ❖			
❖	❖	Interprets	❖	Blood urea measurement (procedure)	❖	- + ❖			
❖	❖	Has interpretation	❖	Above reference range (qualifier value)	❖	- +			

Please note that in some instances, where the 363787002 |Observable entity (observable entity)| is not currently available for the specific analyte the 363714003 |Interprets (attribute)| will have a value from the 122869004 |Measurement procedure (procedure)| hierarchy.

Proposal for updating existing content:

The concept represents a finding that is above or below the reference range:

In line with the decision made in 2010 by agreement with the then Chief Terminologist, content that represents a finding that is above or below the reference range should be modeled as follows:

- 363714003 |Interprets (attribute)| = an appropriate procedure/observable
- 363713009 |Has interpretation (attribute)| = either:
 - 281302008 |Above reference range (qualifier value)| OR
 - 281300000 |Below reference range (qualifier value)|

In addition it was agreed that for content in the hierarchy 118245000 |Measurement finding (finding)|, “increased” = “above reference range” and “decreased” = “below reference range”.

The Fully Specified Name/Preferred Term (FSN/PT) will be updated to fully represent the modeling:

- 166892002 |Random blood sugar raised (finding)

will be updated to

- 166892002 |Random blood sugar above reference range (finding)|.

Existing descriptions will be kept as synonyms e.g. “Random blood sugar raised”.

It is possible that a small number of end users may have interpreted “increased” and “decreased” to indicate that a given result is either above or below the previous result. While it was acknowledged that it may be clinically useful to record findings that are relative to previous results or to indicate a trend it was agreed that at this point in time “relative” findings were out of scope for SNOMED CT.

If local NRCs wish to represent this class of concepts it is advised that they use the following qualifier values: 442387004 |Increased relative to previous (qualifier value)| or 442474009 |Decreased relative to previous (qualifier value)| with an appropriate unambiguous FSN/PT.

The concept represents an interpretation of “within reference range”:

The FSN/PT will be updated to fully represent the modeling:

- 166890005 |Random blood sugar normal (finding)|

will be updated to

- 166890005 |Random blood sugar within reference range (finding)|

The use of “normal” to mean “within reference range” is widely accepted clinically and therefore, a description containing the word “normal” will be retained.

Because the existing FSN/PT does not state that “normal” represents “within reference range” there is a small possibility that some of these concepts have been used to mean “normal” within the context of a particular disorder. For example; “normal” potassium in a patient with kidney disease is likely to be higher than that of a patient without kidney disease.

The EAG agreed that the notion of “normal” is context-dependent and it is expected that laboratories will provide a statement of the reference ranges applicable for the patient accounting for age, gender, ethnicity, and existing known conditions.

Concepts that represent a measurement or level that is “Abnormal”:

Describing a result as “abnormal” is not a true expression of ambiguity but a statement that the result is outside the reference range. However, within the context of measurement findings, it should be interpreted as meaning either above or below the reference range.

The discussion in 2010 included a review of the use of “abnormal” measurement findings. The decision at that time was to allow the use of “abnormal”, meaning “outside reference range” because it is possible to sufficiently define these concepts, and thus all above and below reference range concepts would automatically classify as subtypes of the appropriate abnormal finding.

The FSN/PT will be updated to fully represent the modeling:

- 442545002 |Random blood glucose abnormal (finding)|

will be updated to

- 442545002 |Random blood glucose outside reference range (finding)|

The concept will retain a synonym of “x abnormal”.

These changes will be made to existing content but further additions of “abnormal” measurement findings will only be added by request.

Concepts that represent a “borderline” level:

There are only 42 concepts that use either 442777001 |Borderline high (qualifier value)| or 442779003 |Borderline low (qualifier value)|. The qualifier concept 371932001 |Borderline normal (qualifier value)| has never been used.

The interpretation of these concepts is problematic and ambiguous. What does the concept 165398003 |Hemoglobin borderline low (finding)| really mean? Is it a value that is just within reference range but close to being below the reference range or is it a value that is below the reference range but close to being within the normal range?

Given this ambiguity and the small number of concepts affected there was consensus within EAG that these concepts should be inactivated as follows:

442313006 |Serum folate borderline low (finding)|

Inactivation reason: Ambiguous concept

- Possibly_Equivalent_To : 165649003 |Serum folate within reference range (finding)|
- Possibly_Equivalent_To : 165650003 |Serum folate below reference range (finding)|

Therapeutic medication levels:

Where the measurement findings relate to therapeutic medication levels, new 281299008 |Therapeutic range comments (qualifier value)| values were added and they are being used as values for the 363713009 |Has interpretation (attribute)|:

- 281303003 |Above therapeutic range (qualifier value)|
- 281306006 |Below therapeutic range (qualifier value)|
- 281304009 |Within therapeutic range (qualifier value)|

These will only be used to model finding concepts used to monitor the levels of medications used in the treatment of clinical disorders. The findings related to levels of other drug substances including the concept of a “toxic” level will be the subject of a later briefing note following consultation with the requirements of those who manage substance use disorders.

New content has previously been created to represent above, below and within the therapeutic range for:

- Phenobarbitone
- Serum Carbamazepine
- Serum digoxin
- Serum lithium
- Serum phenytoin
- Serum sodium valproate

All new requests will follow this pattern.

Approvals	Date	Name
Chief Terminologist	2022-09-12	James T. Case
Director of Content and Mapping	2022-09-	Monica Harry

Paul Amos 2022-09-12