SNOMED CT Laboratory Findings
Use of 'Reference Range' for Reporting

Background:

SNOMED International are 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 and adherence to editorial policy of existing content.

One of the domains the QI project will address is laboratory findings in which much of the existing content is based upon inherited content from Read Codes with the addition of more recent content to support the reporting of new and evolving laboratory procedures.

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.

Existing SNOMED CT laboratory findings content:

Much of the existing laboratory findings content is based upon the notion that a given result is either normal, abnormal, increased or decreased e.g.

102659003 | Normal glucose level (finding) |
102660008 |Abnormal glucose level (finding)|
68256003 |Increased glucose level (finding)|
51798006 |Decreased glucose level (finding)|

In addition, we have concepts that state that the level is:
· High
· Raised
· Borderline high
· Low
· Borderline low

The modelling of these concepts also varies, with use of attributes which either use the appropriate adjective or introduce the concept of a result which is in relation to a "reference range".

The ability to record the interpretation of the same result in a number of different ways can lead to confusion, creates difficulty comparing results over time for an individual patient, impedes consistent extraction and analysis and at worst may impact patient safety.

Proposed solution:

It is our understanding that for many laboratories the interpretation of many clinical laboratory tests involves comparing the patient's results with the test's "reference range" for that laboratory.

It would therefore seem appropriate for SNOMED CT to adopt this approach for describing and modelling laboratory findings and where appropriate to update its content to reflect this approach.

In order to achieve this change, it will be necessary to gain consensus from domain experts within the SNOMED CT community of practice at both national and international level on the following issues.

1. Is there a standard set of attribute values which apply to the concept of "Reference range"?

2. Is there a standard form of description e.g. "Clotting time above reference range"?

3. How do we migrate existing content?

4. How do we identify laboratory tests for which this solution would be appropriate?

In order to address these issues each of the participating members are being asked to provide responses to the following questions:

1. Which attribute values should apply to the concept of "Reference range"?

The following attribute values are currently available:

- 281302008 |Above reference range (qualifier value)|
- 371933006 |Upper limit of reference range (qualifier value)|
- 281301001 |Within reference range (qualifier value)|
- 385524004 |Lower limit of reference range (qualifier value)|
- 281300000 |Below reference range (qualifier value)|
- 394844007 |Outside reference range (qualifier value)|

Is this value set sufficient or are there additional values which are required to support clinical/laboratory practice?

Are there any values which should be excluded from the above list?

2. What standard form of description should be used?:

The standard form for the fully specified name is proposed to be:

<Laboratory test> <Reference range interpretation value> (finding) e.g.:

Platelet count below reference range (finding)

There would be a preferred term of "Platelet count below reference range"

Does the group consider these to be appropriate and if not, what would they propose as an alternative?

3. How do we migrate existing SNOMED CT content?

The way in which we address migration is dependent upon whether we believe there is true synonymy between existing content and its proposed replacement. If there is any suggestion of ambiguity it will be necessary to inactivate the existing concept and replace it with a new concept. Therefore, we need to state whether we believe the following are truly synonymous e.g. mean exactly the same.

Please indicate for each of the listed options whether they are considered to be true synonyms or not.

- Does "XXX above reference range" mean the same as:
  - XXX level high
  - High XXX level
  - Raised XXX level
  - Increased XXX level

- Does "XXX at upper limit of reference range" mean the same as:
  - XXX borderline high

- Does "XXX within reference range" mean the same as:
  - XXX level normal
  - Normal XXX level

- Does "XXX at lower limit of reference range" mean the same as:
  - XXX borderline low

- Does "XXX below reference range" mean the same as:
  - XXX level low
  - Low XXX level

- Decreased XXX level

- Does "XXX outside reference level" mean the same as:
  - XXX level abnormal
  - Abnormal XXX level

Where existing content is modelled using the concept of "reference range" these concepts will remain within SNOMED CT unchanged.

Finally, is there a laboratory/clinical requirement to have a concept which states that a measurement is "outside the reference range"?

4. Identify those laboratory tests for which this solution would be appropriate:

A list of existing SNOMED CT laboratory findings concepts can be generated which can then be reviewed by domain experts to establish which would be appropriate to model using "reference range". This list can be provided separately for later review for those members of the group who would be willing to participate.