The Laboratory Services Reform Programme

ADVICE NOTE

Reporting Units for Results of Laboratory Investigations

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Clinical Practice Guidance Document Cover Sheet

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1 Recommendations

The Laboratory Services Reform Programme makes the following recommendations to HSE clinical laboratories and to HSE funded clinical laboratories:

1.1 Advice for Laboratories

1. HSE and HSE funded laboratories should report results of laboratory investigations in SI (International System) units whenever practical to do so.

2. An acceptable deviation from this principle is the use of mass units for reporting drug concentrations or for substances where clinical thresholds and targets for treatment are based on conventional units. (See 2.1 below).

3. HSE and HSE funded laboratories should harmonise reference intervals for reporting of laboratory investigations to the greatest extent that is practical. It may be most practical and most important to achieve harmonisation within each Health Region, as this is likely to address most situations in which an individual may have sequential tests performed in different laboratories.

1.2 Advice for eHealth Systems

1. eHealth systems should promote the configuration of their laboratory systems or laboratory result enabled system to display results of laboratory investigations in SI (International System) units where practical to do so and in the absence of a clear clinical reason to use alternative units.

2 Background

The Health Service Executive and HSE associated agencies provide an extensive range of clinical laboratory services from more than 40 clinical laboratories throughout Ireland. These services are very valuable in providing support to healthcare practitioners in delivering care to people. Results of useful laboratory tests must be interpreted and applied by healthcare practitioners in the context of other relevant clinical information.

There is significant clinical risk associated with the results of analytes being reported with different units and reference ranges. This risk is magnified by the transmission of results from different laboratories into e Health Practice Systems on the same patient where different units are used.

The introduction of a single laboratory information system, currently in progress, will require standardisation of reporting units where practicable.

The National Clinical Programme for Pathology has previously published two recommendations in 2016 ‘The Irish Reference Interval Harmonisation Project’[1], investigated the possibility of producing similar common Reference Intervals for the Republic of Ireland for ten analytes. SI units were used for each of the 10 analyses surveyed.

The report notes:

'It is well recognised that having different reference intervals for the same analyte measured in different laboratories is a source of confusion and annoyance for users of laboratory services and could constitute a risk for misdiagnosis. For some analytes there are valid technical reasons for different ranges but for others that does not apply.'

The 'Standardisation of Reporting Units for extended Full Blood Count in Haematology'[2] was clear in its recommendation.

'It seems logical to synchronise the potential change in reporting units to the timescale for the National MedLIS project roll-out, which represents both an opportunity to introduce standardisation of reporting units for the FBC and an obligation to make a choice regarding which reporting units to adopt, since only one type of unit can be used for each parameter of the FBC.'

The SI reporting units for the extended blood count recommended is the ICSH guideline[3]

2.1 Reporting Drug Concentrations

There are a few issues to consider with TDM. Levels of toxicity, treatment nomograms, clinical decision points etc. Many of these may be defined and used according to conventional reporting units.

The Royal College of Pathologists in Australia issued recommendations in 2010, published in 2013,[4] as follows:

- *"mass units should be used for reporting therapeutic drug concentrations in Australia and New Zealand;*
- *the litre (L) should be used as the denominator when expressing concentration. Examples of these units are mg/L and µg/L.*

Exceptions to these principles include:

- *drugs for which there is current uniformity of reporting and supporting information using molar units, notably lithium (mmol/L) and methotrexate (µmol/L);*
- *drugs that are also present as endogenous substances, where the units used routinely should continue to be used.*
  This applies to many substances, including minerals (eg, iron; µmol/L), vitamins (eg, vitamin D; nmol/L) and hormones (eg, thyroxine; pmol/L).
- *drugs for which the denominator is not a volume of fluid and there is international uniformity of reporting (eg, thiopurine metabolites; per 109 red blood cells)."*

References

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