

Traceability and Reference Systems in Laboratory Medicine - Point of View European IVD Industry

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Medical Requirements and Metrological Traceability

- Universally comparable test results would substantially improve the use of laboratory tests in health care
- Tracing back the calibration of routine tests to scientifically sound and globally recognized Reference Measurement Systems is the best way to achieve universal comparability

Metrological Traceability and Legal Requirements

- **The IVD Directive of the EU requires that**
“The traceability of values assigned to
calibrators and/or control materials must be
assured through available reference
measurement procedures and/or available
reference materials of a higher order.”
(Annex I - Essential Requirements (Part A. General Requirements, Clause 3.)

Metrological Traceability and Legal Requirements

- This requirement is a great challenge for the IVD industry but also for all institutions which develop/provide reference materials and reference measurement procedures
- Not everything what is currently offered as “Reference Material” or “Reference Method” is really suitable, and for many of the quantities measured in laboratory medicine appropriate reference measurement systems are still missing

Metrological Traceability

EDMA's point of view

EDMA Documents on Traceability (see www.edma-ivd.be)

General aspects of Medical and Metrological Traceability in Laboratory Medicine (14 March 2001)

Interpretation of the CEN/ISO Standards prEN ISO 17511 and prEN ISO 18153 on metrological traceability of values assigned to calibrators and control materials (14 March 2001)

Metrological Traceability

EDMA's point of view

General Position

- Because of the potential positive effect on the application of laboratory tests in health care, EDMA appreciates efforts to develop and provide reference measurement systems to which the calibration of routine tests can be traced back
- But some points and basic requirements have to be considered in order to achieve the intended effect

Metrological Traceability

EDMA's point of view

Reference Measurement Systems

Reference materials and measurement procedures should be parts of Reference Measurement Systems which comprise

- a clear definition of the analyte in the human samples
- reference measurement procedure(s) which specifically measures the analyte as being defined
- primary and secondary matrix-based reference materials
- reference measurement laboratories which collaborate in networks

Metrological Traceability

EDMA's point of view

Definition of the Analyte

- The definition of the analyte must be related to the intended medical use
- It is important to differentiate between analytes which are well defined chemical entities and are traceable to SI units called type A quantities, and analytes which are rather heterogeneous in human samples and are not traceable to SI units called type B quantities.
- For type B quantities there is a strong need for an international consensus on the definition

Metrological Traceability

EDMA's point of view

Reference Materials (calibrators)

- The uncertainty of the declared value must be known and should be acceptable with regard to the intended clinical application
- For type B quantities reference materials are only surrogates for the analyte measured in human samples. The surrogates must be appropriate with regard to the intended medical application of the test
- For type B quantities only international conventional reference materials are acceptable

Metrological Traceability

EDMA's point of view

Reference Measurement Procedures

- Due to the heterogeneity of the analyte in human samples for type B quantities independent national or regional reference measurement procedures are not acceptable but only international conventional reference measurement procedures

Metrological Traceability

EDMA's point of view

Networks of Reference Measurement Laboratories

- The Reference Measurement Laboratories should collaborate in international networks which are the global centers of excellence for the correct measurement of a given quantity
- The networks should be open for the participation of analytical laboratories from the IVD industry
- The networks should be the preferred partners of the IVD industry

Metrological Traceability

EDMA's point of view

Metrological and Medical Traceability

- The current knowledge about the medical validity of laboratory tests and the decision-making criteria used by the physicians are based on data generated with routine tests which were not calibrated with reference systems.
- Tracing back the calibration of routine tests to newly developed reference measurement systems may invalidate the medical decision-making criteria currently used
- This effect has to be studied, and if necessary, the medical decision-making criteria have to be adjusted. In order to maintain the clinical experience the quantitative relationship to the old world of figures should be established

Metrological Traceability

EDMA's point of view

The Concept of Uncertainty

- The concept is quite new in laboratory medicine, and its implementation requires significant educational efforts.
- The medical meaning is still unclear. The impact of the analytical uncertainty on the medical decision-making should be evaluated. The clinicians should not be confused with total uncertainty figures.
- The current concepts for setting analytical performance goals have to be revised considering the uncertainty concept

Joint Committee on Traceability in Laboratory Medicine

- There are numerous activities in developing reference materials and methods conducted by various bodies such as metrological institutes, scientific organizations, intergovernmental bodies and others. It is a major interest of the IVD industry that all these activities are coordinated.
- JCTL could be the appropriate platform to bring all parties together
- EDMA is prepared to join the JCTLM

Potential Responsibilities/Tasks of the JCTLM

Reference Measurement Systems

- The JCTLM could be the international body for the final approval/endorsement of International Conventional Reference Systems for type B quantities
- The JCTLM could be the international platform for initiating and tuning the development of still missing reference measurement systems in laboratory medicine

Potential Responsibilities/Tasks of the JCTLM

Reference Materials (RMs) and Reference Measurement Procedures (RMPs)

- Setting requirements/criteria which must be met in order to gain the endorsement /approval of JCTLM
- Critical review of the available RMs/RMPs and endorsement of materials which meet the JCTLM criteria
- Identifying gaps and initiating the development of new RMs/RMPs on the basis of medical needs
- Endorsement/approval of newly developed RMs/RMPs
- Providing the international platform for tuning activities in developing new RMs/RMPs

Potential Responsibilities/Tasks of the JCTLM

Reference Measurement Laboratories and Networks of RMLs

- Setting rules/criteria for Reference Measurement Laboratories
- Setting rules/criteria for Networks of Reference Measurement Laboratories
- Approval and Supervising of International Networks of Reference Laboratories in Laboratory Medicine