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Editorial

Foreword

The Research Centre for Metrological Traceability in Laboratory Medicine (CIRME) was created in 2006 with the scope to promote standardization in the field of the laboratory medicine through the application of the metrological traceability concepts, with the main objective of improving the clinical value of laboratory information and permitting a common global approach to diseases. The 'CIRME traceability revolution manifesto', launched in 2014, well summarizes the main points that are object of attention by CIRME (Table 1). Contributing to this scope is the organization of international conferences on the topic of traceability and standardization in laboratory medicine on a yearly frequency. This series of events, based on discussions of experts and brainstorming fora, started 11 years ago and their contents are freely available on the CIRME website (http://users.unimi.it/cirme/home/index.php?selLivello=3&selCategoria=337&selCategoriaPadre=337) (Table 2).

The 11th CIRME conference, held in November 2017, was entitled "Measurement uncertainty in medical laboratories: friend or foe?" and focused on the topic of measurement uncertainty and its practical influence and utility in the clinical laboratory. In the traceability era, estimating measurement uncertainty and verifying that it fulfils the established uncertainty budget at each level of the selected metrological traceability chain is essential to guarantee the reliability of the laboratory results and to avoid that the measurement error prevails on the associated clinical information. Ultimately, it is matter of patient safety.

All lectures and contributions given during the 2017 conference are published in the present volume of *Clinical Biochemistry*. Experts provide reviews, commentaries, critical opinions and scientific contributions about the benefits of uncertainty estimate, exploring how we might use measurement uncertainty to improve the quality of laboratory information. The idea behind this themed issue has been to highlight the importance of improving clinical laboratory performance by correctly employing the knowledge about measurement uncertainty of laboratory results and provide impetus for the laboratory profession to ascertain if and how much it affects result interpretation.

Table 1
The 'CIRME traceability revolution manifesto'.

- Definition of reference measurement systems and of metrological traceability chains, possibly in their entirety
- Implementation by in vitro diagnostics manufacturers of traceability to such reference systems in a scientifically sound and transparent way
- Definition by the laboratory profession of the clinically acceptable measurement uncertainty for each of the analytes used in the clinical field
- Adoption by External Quality Assessment providers of commutable materials and use of an evaluation approach exclusively based on trueness
- Monitoring of the analytical performance of individual laboratories by the participation in External Quality Assessment schemes that meet metrological criteria and application of clinically acceptable limits
- Abandonment by users (and consequently by industry) of non-selective methods and/or of assays with demonstrated insufficient quality

Table 2
Years and topics discussed during CIRME conferences.

2007 - Standardization of heterogeneous analyte measurements: the example of hemoglobin A1c
2008 - Standardization in clinical enzymology: a challenge for the theory of metrological traceability
2009 - Standardization of protein biomarkers measurements: new initiatives for reference measurement systems
2010 - Rethinking quality control in the traceability era
2011 - Standardization of cardiac troponin I: the ongoing international efforts
2012 - New biologic and analytic issues on hemoglobin A2 and other minor hemoglobins
2013 - Metrological traceability and assay standardization
2014 - Defining analytical performance goals 15 after the Stockholm Conference
2015 - Structuring EQAS for meeting metrological criteria: ready for prime time
2016 - CIRME - Ten years after
2017 - Measurement uncertainty in medical laboratories: friend or foe?

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A special thank goes to Federica Braga who took over the main responsibility of editing these proceedings. We hope that the papers published here provide an update to a broader readership on the topic of measurement uncertainty in laboratory medicine, and facilitate a better understanding of its importance in improving patient care and safety.

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