

Using split sample technique for quality control in a clinical laboratory

Elvar Theodorsson^a

*^aClinical Chemistry, Department of Clinical and Experimental Medicine, Faculty of Health Sciences, Linköping University, Department of Clinical Chemistry, County Council of Östergötland, Linköping, Sweden;
email – elvar.theodorsson@liu.se*

Internal- and external quality control has been and is the backbone of Clinical Chemistry since the 1950ies. A typical laboratory measures in the order of 150 and 600 different components and produces in the order of 2 and 6 million results each year. Computerized routines are crucial, and the importance of the minimization of measurement uncertainty self-evident.

Elimination of measurement bias is crucial for comparability of measurement results. Clinical laboratories handle a large number of patient samples which are destroyed after the normal measurement procedure. They can be used to estimate bias e.g. from matrix effects in case they – after measurement – are sent to a “mentor laboratory” for comparison. A mentor laboratory is one of the laboratories amongst a conglomerate of laboratories, usually within the same organization, and connected by the same laboratory information management system. This mentor laboratory has especially well calibrated and controlled methods and well educated and dedicated personnel for the purpose of calibration and quality control. The relative contribution of bias and random error of individual methods and measurement instruments to the measurement uncertainty can then be conveniently estimated.

1. Theodorsson, E. Validation and verification of measurement methods in clinical chemistry. *Bioanalysis* 4(3):305-320, 2012
2. Norheim S. Computer support simplifying uncertainty estimation using patient samples (2008).
<http://liu.diva-portal.org/smash/record.jsf?pid=diva2:417298>