LABORATORY STANDARDIZATION IN HEMATOLOGY

Design of quality assessment system using proficiency testing in hematology and what we can gain from our application in Turkey

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Body of Abstract

Clinical laboratory errors lead to adverse effects on patient diagnosis, therapy and outcomes. Standardization plays an important role in patient care because it contributes to a decrease in the number of errors improving the harmonization of procedures and results comparability between different laboratories. For this reason standardization of haematology laboratory practice plays an important role in patient care and is an obligated practice for the total quality management (TQM), including certification and accreditation. Since the 1970s, spectrophotometer measurements for haemoglobin determination, centrifuge for PCV and diluting pipette for cell counting have been progressively substituted by automated devices performing a complete whole blood count (CBC) and WBC differential in only few seconds. Nowadays, due to the automation of haematology laboratory practice standardization is an essential requirement for improving efficiency and effectiveness as well as for ensuring a Total Quality Assurance (TQA) program. TQA should include the pre-analytical, analytical and post-analytical phases of general laboratory practice. The pre-analytical phase has to evaluate specimen processing variables such as patient identification, transcription of medical requests and quality of primary samples. The analytical phase should measure uncertainty related to bias and imprecision assure commutability of control materials, correct specimen design and handling, effective statistical treatment and communication of data. The post-analytical phase has special relevance in the haematology laboratory because it is always necessary to continuous evaluation of the reporting requirements such as correct reference ranges, comprehensive reports and interpretative comments. Here, it should never be forgotten that one of the targets of the haematology laboratory is to provide a diagnosis orientation and not only crude analytical data, histograms and graphic plots.

In the haematology laboratory, standardization should include the following topics: (a) Evaluation and selection of instrumentation and procedures. (b) Training and certification of personnel, (c) Establishing of quality control protocols, (d) Test protocols, equipment maintenance and troubleshooting records. (e) Protocols for test requisitioning and result reporting, and active review of results by laboratory director or designee and (f) Setting up policies regarding instrument maintenance and supplies.