

Abstract 4:

Use of retained patient samples to assure internal quality control (IQC) of full blood count (FBC) in hospital setting

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Background:

FBC is the commonest haematological investigation. It's precision and accuracy directly affects clinical decisions. Therefore good quality control is mandatory. IQC is performed using costly commercial samples but various conditions affect their stability and timely delivery hence introducing a reliable in-house method is timely.

Objectives:

Identifying the feasibility of using retained patient samples to monitor IQC.
Identifying most stable parameters of FBC over prolonged storage; Identifying problems and drawbacks; Comparing precision among analyzers.

Method:

FBC was repeated in three analyzers (Coulter-LH500, Mindray-BC3000+, Mindray-BC3000+) using random patient samples daily in ½, 5-6 and 48hours, stored at 4-8°C in-between. Differences of values from the initial for haemoglobin (Hb), haematocrit (Hct), red cell count (RBC), mean corpuscular volume (MCV), white cell count (WBC) and platelet count (Plt) were plotted in Levy-Jennings charts. Mean and standard-deviation calculated using first 20 results. Adherence to pre-defined Westgard IQC rules was observed. Stability of sample and inter-analyzer comparison were performed using results.

Results:

Method was quick and feasible after initial calculations and charts designed. Causes for violation of rules identified including a technical error in one machine.
Repeat FBC in same analyzer within 1/2hour didn't show a statistically significant difference for all parameters (P-values: Hb0.378, Hct0.087, RBC0.120, MCV0.578, WBC0.818, and Plt0.508).
Comparing values among analyzers, only red cell parameters were precise. WBC and platelets gave statistically significant difference of means. When repeated after 5-6 and 48hours all parameters except WBC (P-value: 0.38) didn't give statistically significant difference of mean.

Conclusion:

This method is feasible. Only red cell parameters are precise between analyzers. Red cell parameters and platelets remain stable for 48hours of optimal storage. Stability of white cells not guaranteed over prolonged storage.