

## Efficacy of Pooled Sera in Comparison with Commercially Acquired Quality Control Sample for Internal Quality Control at the Nkwen District Hospital Laboratory

**Authors :** Diom Loreen Ndum, Omarine Njimanted

**Abstract :** With increasing automation in clinical laboratories, the requirements for quality control materials have greatly increased in order to monitor daily performance. The constant use of commercial control material is not economically feasible for many developing countries because of non-availability or the high-cost of the materials. Therefore, preparation and use of in-house quality control serum will be a very cost-effective measure with respect to laboratory needs. The objective of this study was to determine the efficacy of in-house prepared pooled sera with respect to commercially acquired control sample for routine internal quality control at the Nkwen District Hospital Laboratory. This was an analytical study, serum was taken from leftover serum samples of 5 healthy adult blood donors at the blood bank of Nkwen District Hospital, which had been screened negative for human immunodeficiency virus (HIV), hepatitis C virus (HCV) and Hepatitis B antigens (HBsAg), and were pooled together in a sterile container. From the pooled sera, sixty aliquots of 150 $\mu$ L each were prepared. Forty aliquots of 150 $\mu$ L each of commercially acquired samples were prepared after reconstitution and stored in a deep freezer at  $-20^{\circ}\text{C}$  until it was required for analysis. This study started from the 9th June to 12th August 2022. Every day, alongside with commercial control sample, one aliquot of pooled sera was removed from the deep freezer and allowed to thaw before analyzed for the following parameters: blood urea, serum creatinine, aspartate aminotransferase (AST), alanine aminotransferase (ALT), potassium and sodium. After getting the first 20 values for each parameter of pooled sera, the mean, standard deviation and coefficient of variation were calculated, and a Levey-Jennings (L-J) chart established. The mean and standard deviation for commercially acquired control sample was provided by the manufacturer. The following results were observed; pooled sera had lesser standard deviation for creatinine, urea and AST than commercially acquired control samples. There was statistically significant difference ( $p < 0.05$ ) between the mean values of creatinine, urea and AST for in-house quality control when compared with commercial control. The coefficient of variation for the parameters for both commercial control and in-house control samples were less than 30%, which is an acceptable difference. The L-J charts revealed shifts and trends (warning signs), so troubleshooting and corrective measures were taken. In conclusion, in-house quality control sample prepared from pooled serum can be a good control sample for routine internal quality control.

**Keywords :** internal quality control, levey-jennings chart, pooled sera, shifts, trends, westgard rules

**Conference Title :** ICCPDMM 2024 : International Conference on Clinical Pathology, Diagnostic Medicine and Management

**Conference Location :** Boston, United States

**Conference Dates :** April 22-23, 2024