Abstract

Introduction: during the storage of transfusion blood, it may undergo a series of cellular changes that in speculation could be the reason behind the risk of using prolonged stored blood. It's important therefore to monitor the cellular changes that may reduce its survival and function. The objective was to assess the cellular changes in whole blood stored for transfusion at Bungoma county referral hospital.

Methods: a single center, prospective and observational study design involving 20 randomly selected donor blood units in citrate phosphate dextrose adenine (CPDA-1) anticoagulant was employed, cellular changes were evaluated for 35 days. The changes were tested using the Celtac F Haematology analyzer. Statistical Analysis of variance was employed in the descriptive statistics. All the investigation was executed using statistical package for social sciences (SPSS V.23). Results were regarded as significant at $P<0.05$. Results were presented in tables and charts.

Results: at the end of the 35 days blood storage at blood bank conditions, WBC, RBC, platelets counts and MCHC decreased significantly ($P<0.0001$, $=0.0182$, <0.0001, $=0.0035$). The MCV, HCT and MCH increased significantly ($P <0.0001$, $=0.0003$, $=0.0115$) while HGB had insignificant variance ($P =0.4185$).

Conclusion: platelets, WBC, RBC counts, and indices are significantly altered in stored blood especially when stored over two weeks based on most of the cellular components analyzed in this study. The study, therefore, recommends the utilization of fresh blood to avoid the adverse outcome of cellular changes of reserved blood.