

CHANGES IN OSMOTIC FRAGILITY OF STORED BLOOD AT REGIONAL BLOOD TRANSFUSION CENTRE ELDORET KENYA.

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ABSTRACT

Background: Transfusion of blood and blood products is an effective regimen for patients with gross deficiencies in either one or more of the hematological indices. In Sub-Saharan countries, 50%-80% of transfusions are administered to children and neonates predominantly for malaria-induced anaemia, exchange transfusion and iatrogenic blood loss. However, the quality of blood dispatched from blood banks at various times from the date of collection to the time of transfusion has not always been assessed for storage lesions.

Methods: This was a pilot study done at RBTC- Eldoret. Thirty Samples from blood donors who met KNBTS donor selection requirements were used. Osmotic fragility of the red blood cells stored in Citrate Phosphate Dextrose Adenine-1 was determined from day 0 to day 35.

Results: T-test and analysis of variance (ANOVA) were used to determine statistical significance. The results showed that the osmotic fragility of the donated blood samples increased with the storage period ($p < 0.05$). Using variance (VAR), donor sample from blood group O RhD negative donor showed the lowest change in osmotic fragility (VAR=0.2584) while donor sample from blood group B RhD positive showed the highest (VAR=0.8826). Relating change in osmotic fragility with the ABO blood groups using ANOVA showed that this correlation was insignificant ($p=0.6182$) at 95% confidence level. O RhD negatives had the lowest while O RhD positive had the highest change.

Conclusion: As the red cells aged *ex vivo*, they failed to withstand higher osmotic stress. Most significant change is seen on day 35. Donor blood units stored for 28 days and beyond in CPDA-1 are unlikely to achieve the expected therapeutic benefit on red cell transfusion dependent patients.