TITLE: A Method to Reduce Allogeneic Blood Exposure and Hospital Costs While Preserving Clotting Factor Concentration After Cardiopulmonary Bypass.

AUTHORS: Riley JB, Beckmann SR, Samolyk KA.

AFFILIATION: The Ohio State University, Columbus OH and Salem Hospital, Salem OR, and Global Blood Resources LLC, Somers CT.

INTRODUCTION: Recent data linking allogeneic blood use to increased morbidity and mortality after cardiopulmonary bypass (CPB) warrants the study of new methods to reduce allogeneic blood exposure and preserve proteins and clotting factors after CPB. The Hemobag® technology allows the open-heart team to safely concentrate the residual CPB circuit contents and quickly return a high volume of clotting factors and blood cells back to the patient.

METHODS: After IRB approval in a community hospital setting, sixty-six (66) patients were randomly selected to receive the Hemobag® (HB) therapy. A concurrent control group of 66 non-Hemobag® (NHB) patients were matched to the HB group patient-by-patient according to surgeon, procedure, age, BSA, Body weight and CPB time. Techniques to conserve blood, the Cell Saver® and pre-CPB whole blood sequestration (ANH), were employed in both treatment groups. Post-CPB cell-washing of the bypass circuit contents was additionally employed in the control (NHB) group.

RESULTS: There were no significant differences between the two groups in regard to patient morphology, pre-op cell concentrations, distribution of surgeons and procedures, pump and ischemic times, or risk scores. The average HB volume returned to the patient was 852 +/- 197 ccs (1 SD). The HB contained an average platelet count of 238 +/- 73 K/mm^3, fibrinogen concentration of 451 +/- 174 mg/dl, total protein of 8.2 +/- 1.9 gm/dl and hematocrit of 44 +/- 6 %. Factor VII levels in three HB contents averaged a 259% increase. HB patients received significantly less RBC transfusions, experienced lower ventilator times, had a higher hematocrit nadir, and higher post-op platelet counts. Total donor exposures per patient and the cost of the blood products were lower in the HB group.

CONCLUSION: Infusion of the CPB circuit residual blood concentrate appears to safely recover proteins, clotting factor and cell volume for all types of cardiac procedures which leads to reduced patient donor exposures, improved outcomes and reduction in the related costs.