



Comprehensive Patient Blood Management: PBM 2.0

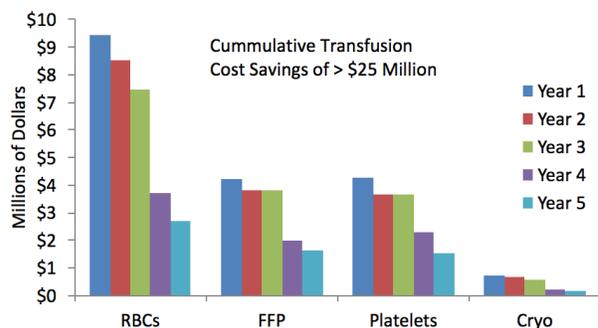


Introduction: Transfusion of blood products in cardiac surgery is associated with pulmonary, renal, cardiac, and neurologic complications and death. We previously and recently described objective laboratory guided transfusion algorithms for transfusing blood components (platelets, fresh frozen plasma, and cryoprecipitate) for excessive bleeding in the operating room and intensive care unit for cardiac surgery patients.

Methods: We prospectively implemented a patient blood management program for all adult patients undergoing cardiac surgery employing cardiopulmonary bypass (CPB) at a single tertiary care institution. The primary components of this program included education, transformational culture change, clinical diagnostic, clinical decision support, and laboratory guided transfusion algorithms. We prospectively intervened from 2009 to present. We compared these results to retrospectively collected outcomes from an index year. Data was electronically collected,

interrogated, and

Financial Impact: Comprehensive Patient Blood Management



Mayo Clinic Experience

The Foundational Work that led to the formation of Transfuse Solutions was completed at Mayo Clinic Rochester Minnesota

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Clinical Decision Support, Analytics, Diagnostics and Champion Coaching

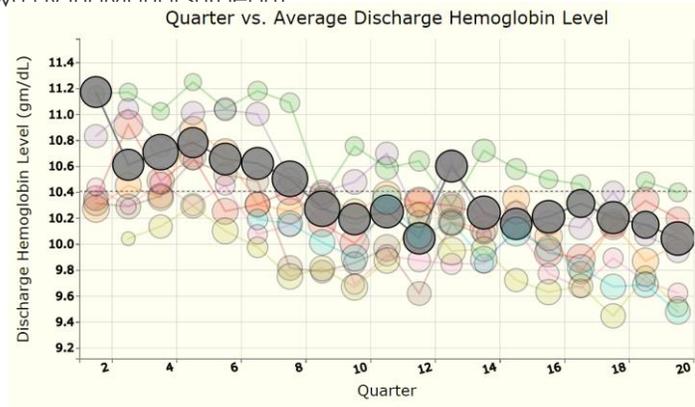


“Blood conservation is one of the few areas in medicine where risk can be reduced, outcomes improved, and costs can be saved all at the same time.”

**Dr. Steve Frank, MD
Dir. Perioperative
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Results: In the four years of the program intervention overall transfusion was reduced by nearly 50%. The percentage of patients transfused with red blood cells, platelets, fresh frozen plasma, and cryoprecipitate declined significantly compared to the index year. The mean number of units transfused was also reduced significantly. Acute kidney injury was reduced, and there was no increase in the incidence of excessive bleeding, morbidity, or mortality. The cost of acquisition of blood products was reduced by > \$9 Million. The estimated total cost of transfusion related expenditures was reduced by > \$25 Million (Figure 1). The average patient discharge hemoglobin

decreased from 11.2 to 10.0 from program inception. (Figure 2, metrics shown by individual surgeon)



Discussion: In this single tier 1 academic institution with over 10,000 patients undergoing cardiac surgery with CPB, a comprehensive patient blood management program consisting of clinician education, transformational culture change, clinical diagnostics, clinical decision support, and laboratory guided transfusion algorithms can provide significantly improved clinical outcomes for patients and great financial benefits to the institution.

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