In late 2007, the quality assurance program at a large urban hospital in the upper Midwest observed that coronary artery bypass graft (CABG)-only patients were receiving disproportionately higher intraoperative blood transfusions when compared to like hospitals on a national basis. In an effort to improve care for these patients, a team of physicians set out to improve blood utilization through a formal cardiac surgery blood management program. As a result of this program, the hospital has experienced a 45% reduction in intraoperative and a 25% reduction in postoperative transfusion from 2007 to 2011.

The Problem

Transfusions today represent the single most common medical procedure in the U.S.\(^1\) Because their efficacy is poorly understood and their application is subjective and not standardized, a recent systematic review of 494 studies illustrates that up to 59% of transfusions are unnecessary.\(^2\) Published studies have also reported blood transfusions to be associated with negative outcomes including:

- Longer length of stay
- Increased rate of infection
- Postoperative complications
- Increased mortality

In addition to being associated with overuse and poor patient outcomes, inappropriate blood transfusions are also a source of increased healthcare costs. Excluding the cost of complications, the total cost of a transfusion is 3 to 4 times the cost of the blood product transfused.\(^3\)

Identifying the Solution

Cardiovascular surgeons and a BloodCenter of Wisconsin physician formed a group chartered by the hospital’s quality management committee to identify and promote best practices related to blood product transfusion for cardiac surgery patients. The group’s objectives were to:

1) Educate physicians and staff about the risks of transfusion, about patient outcomes associated with transfusion, and about blood management principles: providing the right blood product for the right reason, to the right patient, at the right time

2) Increase provider awareness of individual transfusion practices and best practice guidelines for blood component therapy
Implementing the Solution

The team conducted educational symposiums on blood product utilization for medical and allied health staff. In addition, department and physician-specific blood usage reports were developed. These reports were distributed regularly to cardiovascular surgeons and cardiac anesthesiologists with frequent reporting at the hospital’s CV department meeting. Based upon these reports, the key areas of focus included:

- Cardiology and CV surgery collaborated to minimize bleeding potential by developing criteria for a waiting period prior to elective surgery for patients on antiplatelet medications.
- Blood conservation techniques and tools were developed and promoted to ultimately improve patient care including:
  - Universal adaption of perfusion techniques to conserve blood during bypass
  - Improved utilization of Thromboelastography (TEG) point-of-care testing for blood product transfusion decisions
  - Algorithms for intraoperative and postoperative blood product decision-making
- Clinical case studies were developed for training of TEG interpretation and hemostasis in CV surgical patients

The Results

The efforts of this initiative resulted in:

- 45% reduction in intraoperative and 25% reduction in postoperative transfusion from 2007 to 2011
- Decline in blood usage by mean units per case
- In 2011, the percent of patients transfused for CABG only cases met or exceeded national benchmarks for all blood components
- An additional 20% reduction in transfusion-related costs is expected by expanding this program and its successes throughout the system

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