# BLOODLESS SURGERY IMPROVES OUTCOMES IN CARDIAC SURGERY – EXPERIENCE AND EVIDENCE

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Cardiac surgery continues to be one of the major reasons that people in the United States receive blood transfusions. Beyond the typical blood loss associated with surgery there are several issues that make blood conservation challenging. First, the entire procedure is performed with the patient fully heparinized and activated clotting times of at least 480 seconds. There is an obligatory hemodilution above the typical situation with IV fluid because of the prime volume of the heart lung machine.

Cardiopulmonary bypass, particularly the blood air interface can damage red cells. Some of the cardiac diseases can cause clotting defects such as Aortic stenosis which causes qualitative platelet defects. Right heart dysfunction can cause clotting defects secondary to liver dysfunction. Lastly, many of these patients are on anticoagulation medication as well as antiplatelet therapy preoperatively.

Minimizing or eliminating blood product transfusion in cardiac surgery requires a team based multimodality plan that includes preoperative assessment and optimization, intraoperative techniques, and postoperative management that emphasizes a tolerance for normovolemic hemodilution.

The steps to success are:

1. Identify anemic patients at entry to the process
2. Define the cause (mainly iron deficiency)
3. Treat the cause (on site IV iron therapy)
4. Hematology support readily available
5. Intraoperative and Postoperative Techniques
    a. Hemodilution
    b. Retrograde autologous prime
    c. Sequester venous prime
    d. Meticulous hemostasis
    e. Non blood product correction of defects DDAVP, K Centra
    f. Early reop of bleeding patients
    g. Minimize postoperative blood draws
    h. IV iron as needed
    i. On time discharge to home

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