

## **Preoperative Determinants of Transfusion and their Effects on Transfusion Rates in Cardiac Surgery**

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Preoperative anemia is a major determinant of perioperative transfusion. Data is presented on cardiac surgery patients seen in 2010.

In CABG patients seen by the Transfusion Coordinator, 23.2% were transfused vs 32.4% if not seen. Transfusion rates were affected by gender and age, hemoglobin (Hb) levels, lead times prior to surgery, and by preoperative treatment of anemia. Women were twice as likely to be transfused (50.6% vs 22.9%). Mean initial Hb was 128+15 and 142+13 g/L in women and men respectively: in those transfused, mean initial Hb was 129 and 121 g/L, in contrast to 143 and 133 g/L in nontransfused men and women respectively). Transfusion rates were 56% when initial Hb <130 g/L, 17% when >130 g/L and 10% when >140 g/L. Transfusion rates were inversely proportional to lead time and were 40.7% when <7 days, 25.7% when 7-15 days and 20.3% when >14 days. As lead time increased, there was increasing use of preoperative blood conservation. 4.4% of CABG patients, 13% of CABG+valve, 15% of valves, and 7% of minimally invasive cardiac surgery patients received erythropoietin (EPO; mean dose 100,000 IU and mean Hb increase was 14.9 g/L); mean Hb increase with IV iron was 10.6 g/L. Patients treated with EPO and/or IV iron had lower transfusion rates than those not treated. Length of stay and infection rates were significantly lower in nontransfused patients and thrombotic events were not higher in those who received EPO. Transfusion rates have decreased progressively since program inception (60.1% in CABG in 2002 vs 23.6% in 2010) and transfused patients receive fewer units (0.6 units in 2010 versus 2.0 units in 2002).

While other factors, including intra- and post-operative patient blood management measures, education and 'culture change', also play important roles, appropriate anemia management can significantly reduce transfusion rate and improve quality of care.