OBJECTIVE: The purpose of this study was to assess transfusion requirements in patients undergoing cardiac surgery with and without autologous blood donation and to calculate the costs of predonation from the hospital perspective.

DESIGN: Observational study.

SETTING: Single university hospital.

PARTICIPANTS: Four thousand three hundred twenty-five patients undergoing elective cardiac surgery with and without autologous blood donation. INTERVENTIONS: Eight hundred forty-nine patients (20%) underwent autologous blood donation, whereas 3,476 (80%) did not.

PERIOPERATIVE ALLOGENEIC BLOOD TRANSFUSION WAS RECORDED AS THE PRIMARY ENDPOINT. TO AVOID SELECTION BIAS, PATIENTS WERE STRATIFIED ACCORDING TO THEIR PREOPERATIVE RISK SCORE. A DECISION MODEL WAS DERIVED FROM ACQUIRED DATA FOR THE OPTIMIZATION OF AUTLOGOUS BLOOD DONATION.

MEASUREMENTS AND MAIN RESULTS: Allogeneic blood transfusion rate was 13% in patients with predonation versus 48% without predonation (p < 0.05). This difference remained statistically significant even after risk stratification. The predonation of 1, 2, or 3 units reduced the probability of receiving allogeneic blood to 24%, 14%, and 9%, respectively. An efficient program of predonation within the department of anesthesiology allowed keeping the costs of predonation low.

Decision-tree analysis revealed that predonation of 2 autologous units of
blood saved the most allogeneic blood for the smallest increase in costs. Incremental cost for male patients predonating 2 units was dollars 33 (US), whereas for females predonation could be done at no extra cost in comparison to patients without predonation. CONCLUSION: Autologous blood donation significantly reduces allogeneic blood requirement in cardiac surgery. If adjusted for diagnosis and gender, autologous blood donation is a cost-effective alternative to reduce allogeneic blood consumption.