Introduction:
Red blood cells (RBC) transfusion is frequently required in cardiac surgery and is associated with increased morbidity and mortality rates. The aim of this study is to identify predictors of RBC transfusion for patients undergoing cardiac surgery, emphasizing the use of bioelectrical impedance analysis (BIA).

Methods:
This was a retrospective study of patients who underwent elective cardiac surgery between years 2013 and 2014 in a tertiary reference center. Patients´ demographic and clinical variables, preoperative BIA measurements and postoperative data were analyzed. The univariate and multivariate logistic regression analyses were used to identify the predictors of postoperative RBC transfusion. All of the calculations were performed with IBM SPSS v. 24.

Results:
Among 642 patients included (67.8% males, median age 66 [range, 59 - 73]), 210 (32.7%) of them received at least one unit of RBC postoperatively. Median number of units transfused was 2 [range, 2 - 4]. Hypertension, stroke, renal failure, preoperative hemoglobin and hematocrit values, BIA provided phase angle, aorta clamp time and cardiopulmonary bypass (CPB) time were associated with risk of RBC transfusion and were included in the final model of multivariate regression analysis. Preoperative stroke (OR=0.394, CI95%: 0.183-0.848, p=0.017), preoperative hemoglobin (OR=0.943, CI95%: 0.928-0.960, p<0.001), low phase angle (OR=0.430, CI95%: 0.250-0.740, p=0.002) and CPB time (OR=1.013, CI95%: 1.008-1.018, p<0.001) were identified as independent predictors.

Conclusion:
Several factors were identified to be significantly associated with postoperative RBC transfusion in patients undergoing cardiac surgery. Among the conventional predictors a value of the BIA provided phase angle was indicated as a potent tool. Further analysis of clinical benefits of these findings is needed.