

PREOPERATIVE HEMOGLOBIN IS KEY INDICATOR FOR MORTALITY IN CARDIOTHORACIC SURGERY

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Purpose of study In the over 900,000 cardiac surgeries performed each year the 30-day mortality is 3.4%. Most risk factors are non-modifiable with a significant exception being pre-operative anemia. This study seeks to understand if pre-operative anemia is a key indicator in patient outcomes following cardiothoracic surgery.

Methods used A retrospective case cohort study with 2,104 patients who underwent cardiac surgery between Jan 2011 and Nov 2020 was performed. Pre-operative cellular components of blood were analyzed in survivors and compared to non-survivors. 9 separate procedures were included in the study along with the variables of age, gender, hemoglobin, mean platelet volume, red cell distribution width and platelet count. Nominal logistic multivariate regression analysis was performed for mortality.

Summary of results For all variables measured pre-operative hemoglobin has the greatest impact on the mortality of the patient.

Variable	All	Survivors	Non-Survivors	P-Value
Age	60.6 yrs +/- 13.4	60.6 yrs +/- 13.4	61.7 yrs +/- 12.2	0.4051
Hbg	12.2 dl +/- 2.2	12.2 dl +/- 2.2	11.2 dl +/- 2.5	0.0001
RDW	14.6% +/- 2.3	14.6% +/- 2.3	15.9% +/- 2.5	0.0001
Platelet Count	174 x 10 ⁹ /L +/- 83	174 x 10 ⁹ /L +/- 84	150 x 10 ⁹ /L +/- 76	0.0013
MPV	10.3 fl +/- 0.9	10.3 fl +/- 0.9	10.4 fl +/- 0.9	0.2240
Male	72.1%	72.1%	70.0%	.697

Table 1 – Univariate analysis

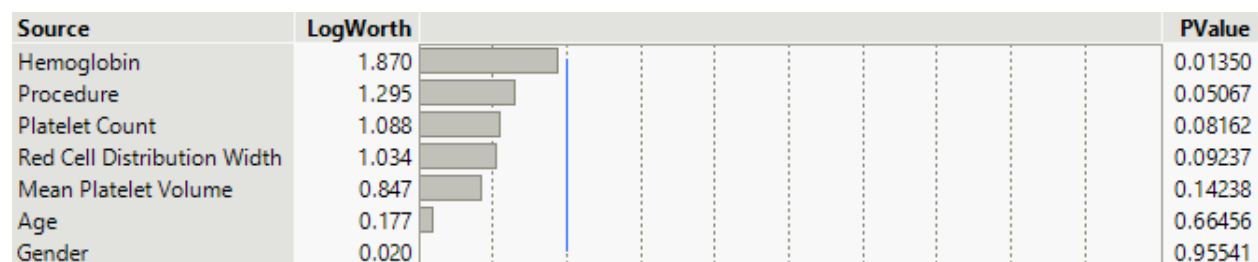


Figure 1 – Multivariate analysis

In a univariate analysis lower Hgb levels, RDW variability and lower platelet counts are associated with mortality. Multivariate analysis indicates that most patients undergoing surgery are anemic, a driving factor behind mortality.

Conclusions Pre-operative anemia levels are often correctable in non-emergent conditions. Given that this variable has the highest amount of influence regarding the mortality of patients it should be corrected in a pre-operative setting.