Intensive Care
Medicine Experimental
a SpringerOpen Journal

## POSTER PRESENTATION

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# Highly sensitive troponin t (hstnt) profile for outcome prediction after cardiac surgery

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*From* ESICM LIVES 2015
Berlin, Germany. 3-7 October 2015

### Introduction
Changes in cardiac mediators remain a subject of research interest. Instantly obtainable biomarkers that are performed routinely, are inexpensive and are characterized by linkages to outcome in cardiac surgery settings are optimum. Post-operative conventional cardiac troponins are linked to short- and middle-length outcomes [1] but highly sensitive troponin T (hsTnT) has not been extensively evaluated in the same settings.
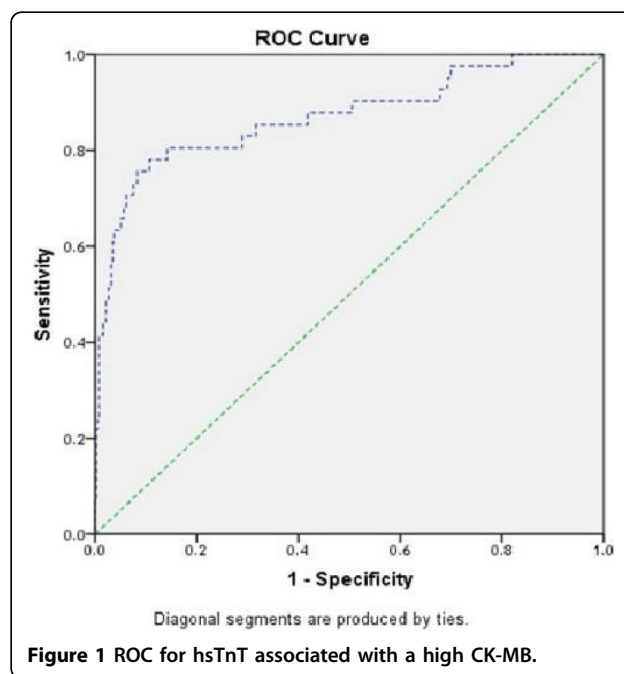
### Objectives
To assess the ability of hsTnT to prognosticate outcomes in cardiac surgery.

### Methods
We conducted a single-center, prospective observational study over 2 years. We analyzed the data from all patients who underwent cardiac surgery. We recruited 413 patients with a mean age of $54.9 \pm 10.9$ years. The patients were divided into two groups based on hsTnT level, which is analogous to creatine kinase MB (CK-MB) and indicates myocardial injury (with and without myocardial infarction) [2]. The receiver operator curve (ROC) was used to determine this relation, retrieving a level of 2309 ng/L and showing an 80% sensitivity and an 86% specificity (figure). We used a *t*-test to compare variables and multivariate analysis was conducted for significant variables.

### Results
Two groups (group A (372 patients) and group B (41 patients)) were both matched for age, body mass index, diabetes mellitus association, serum creatinine, Euroscore, aortic cross clamp and cardiopulmonary bypass

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**Figure 1 ROC for hsTnT associated with a high CK-MB.**

time, and total length of anesthesia. Patients with hsTnT levels of 2309 ng/L or lower had a better outcome in terms of inotropes need, lengths of ventilation (LOV), ICU and hospital stay, and post-operative complications. Multivariate analysis revealed significant relations of the given level with operative emergency (p = 0.001); the level was a predictor for a longer duration of mechanical ventilation (p = 0.01) and post-operative atrial fibrillation (POAF) (p = 0.003) (Table 1). Moreover, 9 patients (21.9%) in group B had perioperative myocardial infarctions.

### Conclusions
Outcome prediction in cardiac surgery in terms of PMI, LOV and POAF could be enhanced by using a set level

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**Table 1. Multivariate logistic regression for hsTnT**

| Variable | Adjusted OR | 95% CI | P-Value |
| --- | --- | --- | --- |
| Operation emergency | 10.21 | 2.5-41.3 | 0.001 |
| LOV | 1.01 | 1.00-1.02 | 0.01 |
| AKI | 0.84 | 0.32-2.20 | 0.72 |
| POAF | 4.79 | 1.7-13.5 | 0.003 |
| Mortality | 3.71 | 0.4-32.9 | 0.24 |

CI: confidence interval; LOV: length of ventilation; AKI: acute kidney injury; POAF: post-operative atrial fibrillation

of hsTnT; this profile serves as a powerful laboratory marker to identify high-risk patients.

## Grant Acknowledgment

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**References**
1.  Buse GAL, Koller MT, Grapow M, *et al*: The prognostic value of troponin release after adult cardiac surgery. A meta-analysis. *Eur J Cardiothorac Surg* 2010, **37(2)**:399-406.
2.  Thygesen K, Alpert JS, Jaffe , *et al*: Joint ESC/ACCF/AHA/WHF Task Force for the Universal Definition of Myocardial Third universal definition of myocardial infarction. *Eur Heart J* 2012, **33(20)**:2551-67.