

Category : **Renal: failure**

## **A93 - Individual contributions of the KDIGO AKI care bundle's components for the prevention of postoperative acute kidney injury (AKI)**

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### **Introduction:**

The incidence and severity of postoperative acute kidney injury (AKI) can be reduced by implementing an AKI care bundle as developed by the Kidney Disease Improving Global Outcomes (KDIGO) guidelines. However, the impact of each individual component of this bundle was unclear and was therefore investigated in this analysis.

### **Methods:**

Data of the two PrevAKI-trials were combined, together including 554 cardiac surgery patients at high risk for AKI, as identified by elevated urinary biomarkers TIMP2\*IGFBP7 (1, 2). Patients were randomized to standard of care versus implementation of the care bundle. Univariate logistic regression of the bundle's components was performed as a risk factor analysis of the whole cohort. Following this, individual treatment effects were analyzed, using the same method for the intervention group only.

### **Results:**

Hypotension, low cardiac index, and use of radiocontrast agents significantly increased the risk for AKI. Similarly, optimizing the hemodynamic situation (i.e. avoiding hypotension or a low cardiac output state) was the most important individual component for the prevention of AKI. However, this was not the case for avoidance of radiocontrast. Avoidance of nephrotoxic drugs was identified as an important component in the individual treatment effect analysis, however this finding showed wide confidence intervals.

### **Conclusion:**

Our findings demonstrate the importance of maintaining adequate systemic blood pressure and cardiac output. If hypotension or low cardiac index occurs, timely hemodynamic optimization should be performed to prevent AKI. Whilst our analyses suggested a possible role for radiocontrast agents and nephrotoxic drugs, these factors had wide confidence intervals, indicating low certainty of these findings. Besides hemodynamic optimization, other bundle components had little or no impact on the bundle's overall effectiveness.

### **References:**

- (1) Meersch, M, et al., Intensive Care Medicine (2017)
- (2) Zarbock, A, Küllmar, M, et al., Anesthesia and analgesia (2021)

### **Table:**

Analysis:	Risk factor (intervention + control; n=554) Odd's Ratio (95% CI), p-value	Individual treatment effect (intervention; n=274) Odd's Ratio (95% CI), p-value
Hypotension MAP < 65mmHg twice or < 60mmHg once	2.30 (1.61 - 3.27), p < 0.05	2.37 (1.41 – 3.98), p < 0.05
Cardiac index < 3.0 l/min/m <sup>2</sup>	1.93 (1.10 - 3.38), p < 0.05	1.97 (1.11 – 3.52), p < 0.05
Hyperglycemia	1.44 (0.99 - 2.10), p = 0.056	1.07 (0.64 – 1.77), p = 0.80
ACEi/ARBs	1.19 (0.75 - 1.90), p = 0.46	0.85 (0.41 – 1.76), p = 0.86

Radiocontrast agents	3.57 (1.55 - 8.24), p < 0.05	2.57 (0.81 – 8.18), p = 0.11
Nephrotoxic drugs	1.58 (0.91 - 2.73), p = 0.11	8.19 (1.86 – 36.02), p < 0.05

*Univariate logistic regression analysis of the KDIGO AKI care bundle's individual components*