

# Detection of Failed Ventilation post-CPB

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## Background

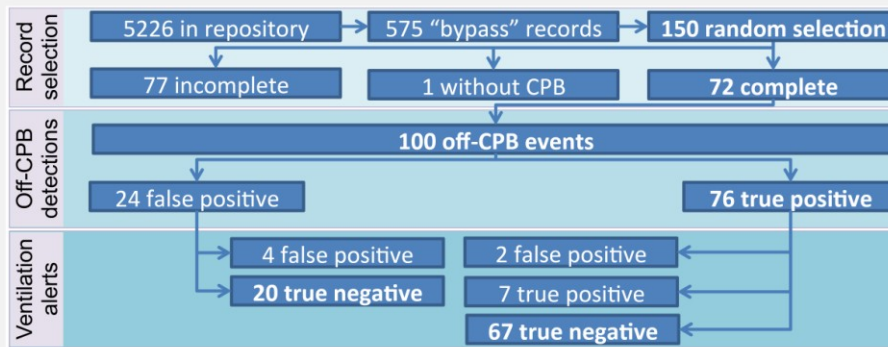
To err is human. Anaesthetists may be involved in a variety of different tasks at the cessation of cardiopulmonary bypass (CPB) and it is possible that reinstatement of ventilation may be overlooked. The purpose of this study was to determine the sensitivity and specificity of a novel ventilator alarm for detecting failed ventilation post-CPB.

## Methods

With ethical committee consent, a repository of anaesthesia records<sup>1</sup> was searched for "bypass". Changes from on- to off-CPB in complete records were identified by an EBMi algorithm<sup>2</sup>. Ventilatory parameters were assessed following each off-CPB event. If the respiratory rate  $<6 \text{ min}^{-1}$  or  $\text{EtCO}_2 <3 \text{ kPa}$  at 5 minutes post-CPB an alert was generated. Output was confirmed by expert opinion.

## Results

The figure below shows the record selection, off-CPB detections, and ventilation alerts with associated sensitivity and specificity results.



Overall, alert generation had a sensitivity of 1 and a specificity of 0.94

## Discussion

Some false alerts were associated with atypical physiological values in the records, when some monitoring may have been discontinued. The novel ventilator alarm nevertheless should detect failed ventilation post-CPB well.

## References

1. Cumin D (2010) Simulation in Anaesthesia. PhD thesis, University of Auckland, New Zealand p146-8;
2. Evidence Based Monitoring (interactive) [www.custos.co.nz](http://www.custos.co.nz)

