Improving manual ventilation with a new device (Sotair®) and educational intervention

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Introduction

- Improper bag-valve mask (BVM) technique can lead to stomach insufflation and complications, including aspiration and lung barotrauma
- Sotair®, (SafeBVM Corp., Massachusetts) can improve BVM delivery. Developing educational interventions for the proper use of Sotair® is necessary to improve performance and optimize outcomes

Sotair Training

Sotair FAQs

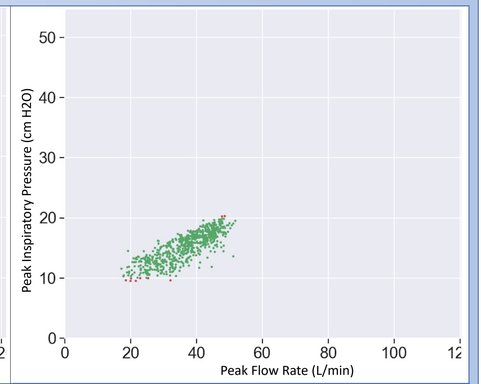
Objectives

- Expand upon video and printed educational interventions for Sotair® in order to improve performance with the device
- Create and validate the utility of video and printed materials for proper use of Sotair®

Methods

- Recruitment of EMS providers (n=32)
- Record each individual manually ventilating a simulated adult male lung for 2 minutes
- Apply educational intervention, attach Sotair® and repeat
- Primary outcome: peak pressure; Secondary outcomes: volume, flow, rise time, and inspiratory/expiratory ratio

Figures 1 . Ventilation with standard BVM



Figures 2. Ventilation with BVM+Sotair™

Results

- Significantly lower PIPs by an average of 4.06 cmH_2O (19.32 ± 5.80 across 791 breaths vs 15.26 ± 2.44 across 686 breaths; T-value 17.06; $p < 0.0001$). Minute ventilation was also lower by 1238.06cc (7550.47 vs 6312.41)
- 36.54% of breaths delivered by BVM crossed the 20 cmH_2O threshold for gastric insufflation compared to 0.25% of breaths delivered with the Sotair®

Limitations

- Power, generalizability, use of simulation

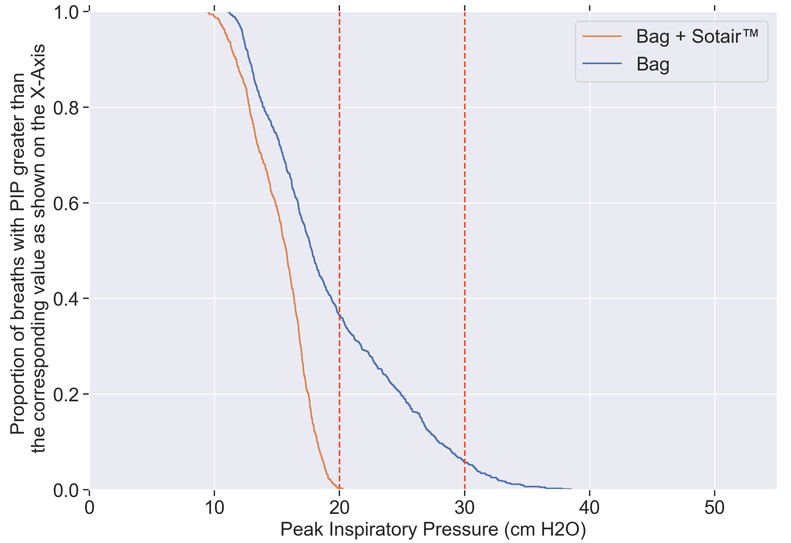


Figure 3. Proportion of delivered breaths with PIP greater than X-axis value for standard BVM and BVM+Sotair™

Conclusions

- Our data demonstrates the effectiveness of implementing a brief educational intervention that leads to safer delivery of breaths using the Sotair® feedback about the educational materials was 65.6% positive and 34.4% neutral