

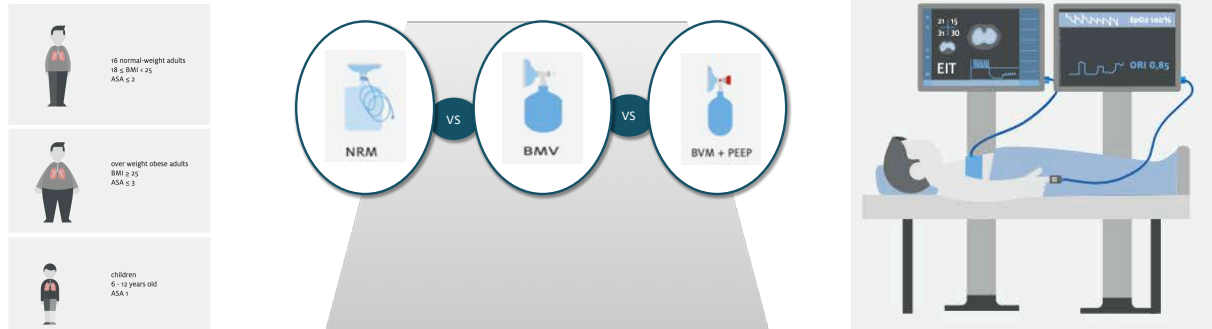
Preoxygenation with and without PEEP in normal-weight adult, obese and pediatric volunteers: A Randomized Crossover Clinical Trial

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BACKGROUND

Optimal preoxygenation is critical in emergency medicine to prevent desaturation during airway management, especially in high-risk populations. Identifying the most effective preoxygenation device across diverse patient groups remains a clinical priority

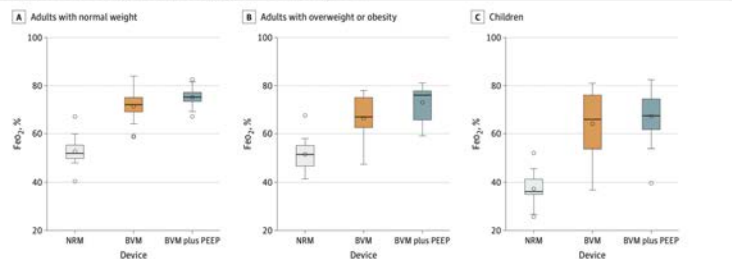
METHODS



RESULTS

FeO₂ was higher with BVM and BVM+PEEP than NRM in all groups ($p < 0.001$)

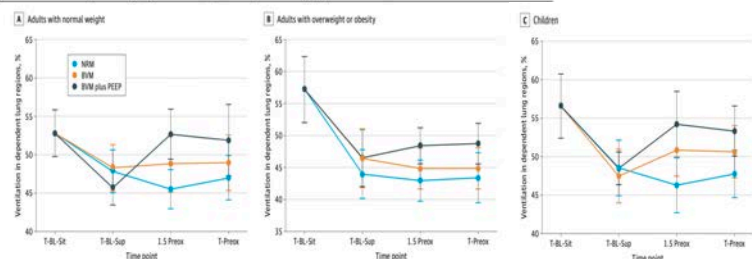
Figure 1. Differences in Expired Oxygen Concentration (FeO₂) at End of Preoxygenation



Results are shown across nonbreather facemask (NRM), bag-valve mask (BMV), and BVM plus positive end-expiratory pressure (BVM plus PEEP) devices in adults with normal weight, adults with overweight or obesity, and children aged 6 to 12 years. Boxes indicate 95% CIs; dots, means; and horizontal bars, median.

Ventilation in dependent lung regions was greater with BVM+PEEP than NRM in adults with normal weight ($p = 0.001$) and children ($p = 0.004$).

Figure 2. Ventilation in the Dependent Lung Regions Measured by Electrical Impedance Tomography at Different Time Points



Data are expressed as mean (95% CI). BMV indicates bag-valve mask; BVM plus PEEP, BVM with positive end-expiratory pressure; NRM, nonbreather facemask; T-BL/Sit, end of baseline in a sitting position; T-BL/Sup, end of baseline in a supine position; T-Preox, end of preoxygenation; and 1.5 Preox, 1.5 minutes into preoxygenation.

CONCLUSION

Preoxygenation with BVM+PEEP was more effective than without PEEP, yielding higher FeO₂ and improved dependent lung ventilation. These findings support prioritizing BVM+PEEP for preoxygenation in emergency settings.