Category :**Respiratory: airway management/CPAP**

A135 - ***Airway shield: a novel barrier mouthpiece to reduce the risk of aerosol and droplet exposure during endotracheal intubation***

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Introduction:

Endotracheal intubation (ETI) is an aerosol-generating procedure with high risk of clinician exposure and infection by SARS-CoV-2. Protective barrier enclosures have been found to complicate ETI and prolong intubation times, posing a potential threat to patient safety. We designed a novel barrier mouthpiece (Airway Shield) for use during ETI, to reduce risk of clinician exposure to airborne pathogens without complicating the procedure. Our study aims to demonstrate Airway Shield's efficacy in reducing airborne particle exposure in a preclinical model.

Methods:

We performed a preclinical simulation trial of ETI using a C-Mac videolaryngoscope in manikin models to evaluate laryngoscopist exposure to airborne particles (droplets (>5 microns) and aerosols (<5 microns)) with and without 3-D printed prototypes of Airway Shield. A self-contained clinical simulation lab and a manikin (AirSim, TruCorp®) with droplet and aerosol-generating equipment using normal saline were used for simulation. Airborne particle generation during intubation was measured in 2 clinical scenarios (CPR and high-flow nasal oxygen (HFNO)) during induction, initial laryngoscopy, and endotracheal tube placement. ImageJ software was used to estimate airborne particle dispersion using automatic pixel quantification applied to manually selected polygonal areas. Student's T-test was used to compare averages. A p-value of <0.05 denoted statistical significance.

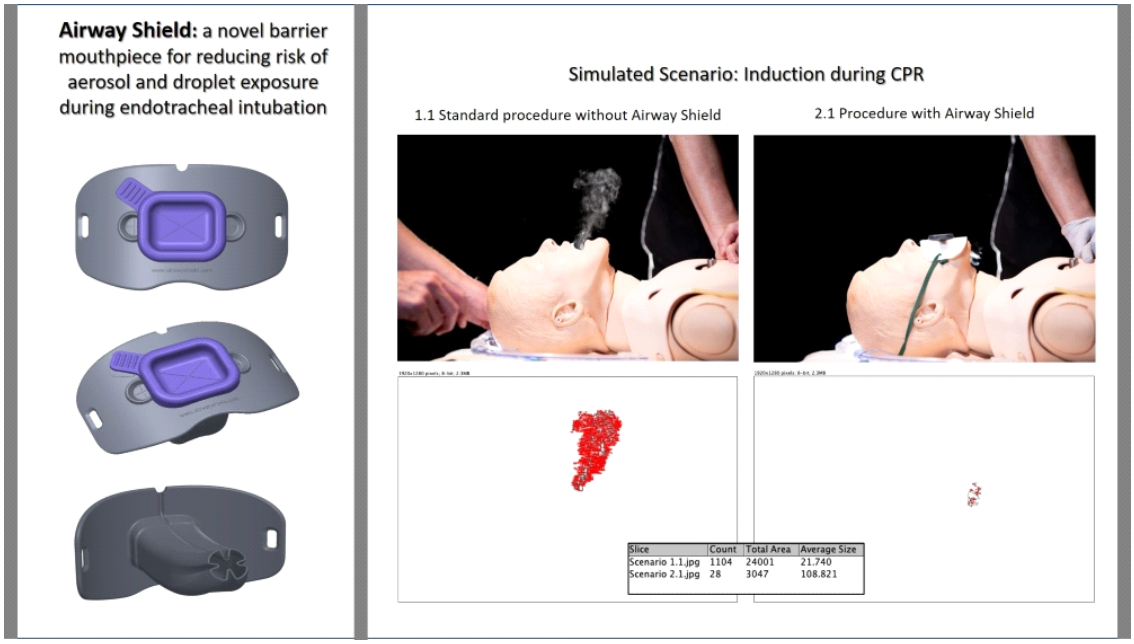
Results:

The highest risk of exposure to airborne particles for all scenarios was observed during induction. Overall, Airway Shield demonstrated significant average reduction of airborne particles compared with standard intubation (6108 vs 122027; P =0.0149). The greatest reduction in aerosol counts was seen during induction in the CPR scenario (3047 vs 24001) and during induction in the HFNO scenario (78 vs 37142) for droplet counts.

Conclusion:

In a preclinical model, Airway Shield proves effective at reducing the risk of clinician exposure to droplets and aerosols during ETI.

Image :



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