### Need

57% of complications in pediatric intubation involve **pre-existing airway or craniofacial abnormalities** \(^1\)

**Nasotracheal Path:**

Sharper angle of pathway in child makes pediatric nasal intubation extremely difficult

**Objective:** Create an **easily removable** assistive device for pediatric nasal fiberoptic intubation especially in challenging, difficult airways.

### Solution

**Design**

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**Solution Statement:** Develop a removable assist device to guide the fiberscope by adding pre-manufactured perforations along the length of a pre-existing nasal trumpet

### Testing Results

**Tensile tearing test (R4):** Find the max force required to tear along perforations

- **Requirement:** \(<14.3 \text{ N}\)
- **Result:** \(=13.5\text{ N}\)

**Bending stiffness test (R5):** Cantilever bending test for non-perforated and perforated trumpet

- **Requirement:** \((4.5\times10^{-4} \text{ Nm}^2)\)
- **Result:** \((3.4\times10^{-4} \text{ Nm}^2)\)
- **p=0.09**

### Conclusion and Societal Impact

**Impact:** Benefits physicians, anesthesiologists, and patients by improving nasal intubation via fiberoptic guidance in emergencies

**Future Plans:** Manufacture device using injection molded Medical Grade Neoprene and scale for other sizes.

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\(^1\) Bai W, et al.; “Evaluation of emergency pediatric tracheal intubation by pediatric anesthesiologists on inpatient units and the Emergency Department.” (2016)