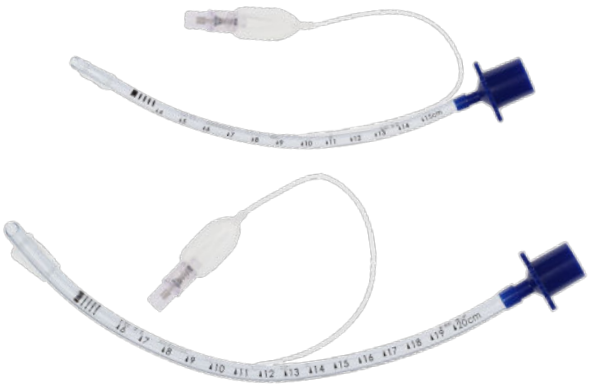
MICROCUFF® PEDIATRIC ENDOTRACHEAL TUBE

COMMON CONCERNS WITH CONVENTIONAL PEDIATRIC ENDOTRACHEAL TUBES

- Short, sensitive pediatric airways
- Laryngeal and tracheal damage due to inappropriate tube size
- Selecting the correct tube size, risk of repeated re-intubation
- Ensuring correct tube placement
- Accidental tube dislocation
- Ineffective ventilation due to excessive air leak
- Inadequate airway seal for ventilation
- Cuff pressure-induced laryngeal and tracheal trauma



"In the hospital setting, a cuffed endotracheal tube is as safe as an uncuffed tube for infants (except the newborn) and children... Evidence has accumulated that cuffed tubes can be safely used in children" [6] — 2005 American Heart Association Guidelines for CPR and ECC

MICROCUFF® BENEFITS

- Seals with a cuff membrane in the trachea instead of rigid tube shaft in the cricoid
- Low rate of re-intubation[1] which reduces patient trauma, procedural time, and material costs
- Reduces need to replace oversized tracheal tubes
- Sealed airway allows for use of minimal and low flow anesthesia
- Sealing with a cuff compensates for different size and shaped airways

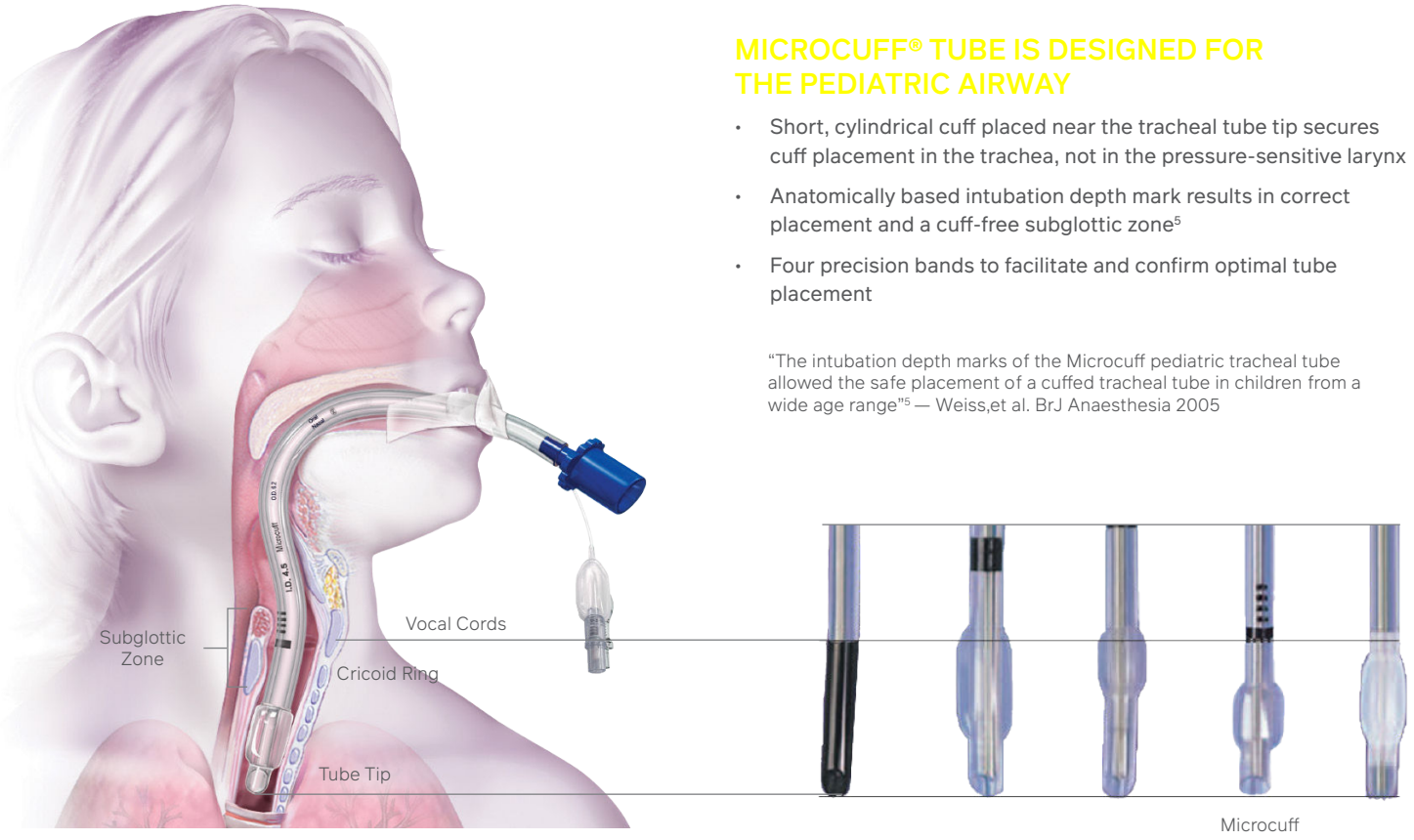
IMPROVES PATIENT CARE

- Positive pressure ventilation with a sealed airway provides constant and efficient minute ventilation
- Sealed airway ensures reliable end-tidal CO_2 lung function and oxygenation consumption monitoring

ALLOWS FOR SAFE TRACHEAL INTUBATION AND SEALING IN CHILDREN

- In a 500 patient study[1]
  - Only 1.6% of patients had to be re-intubated due to incorrect size selection.
  - Only 0.4% of patients experienced post-extubation croup requiring short-term therapy

AirLife®



MICROCUFF® TUBE IS DESIGNED FOR THE PEDIATRIC AIRWAY

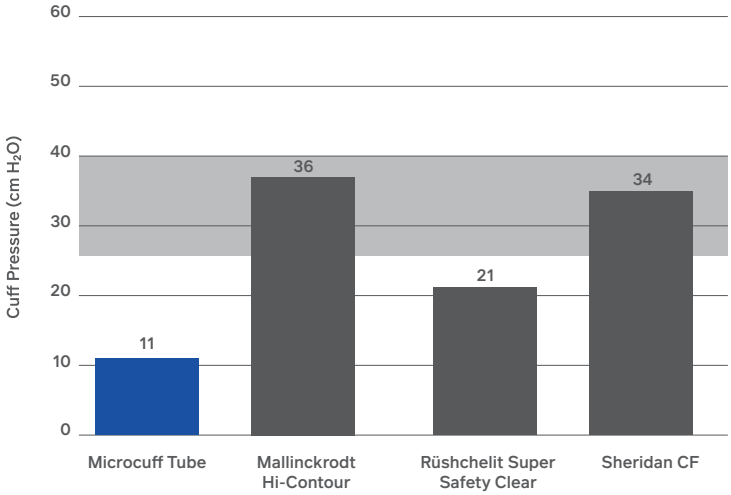
- Short, cylindrical cuff placed near the tracheal tube tip secures cuff placement in the trachea, not in the pressure-sensitive larynx
- Anatomically based intubation depth mark results in correct placement and a cuff-free subglottic zone[5]
- Four precision bands to facilitate and confirm optimal tube placement

"The intubation depth marks of the Microcuff pediatric tracheal tube allowed the safe placement of a cuffed tracheal tube in children from a wide age range"[5] — Weiss,et al. BrJ Anaesthesia 2005

ADVANCED MICROTHIN POLYURETHANE CUFF MEMBRANE SEALS THE AIRWAY AT ULTRA-LOW PRESSURE

- Micro-thin material (10 microns) permits a true high volume, low pressure (HVLP) cuff to reduce cuff pressure
- Microcuff pediatric tubes effectively seal at an average cuff pressure of 11 cm H_2O[1], about half the pressure of conventional tubes
- Microcuff pediatric tubes seal below the commonly presumed capillary perfusion pressure of the pediatric population, diminishing the risk to mucosal tissue[2]
- Ultra-low cuff pressure can reduce the risk of airway trauma
- Micro-thin polyurethane cuff membrane can withstand burst pressures over 800 cm H_2O[3] and has a puncture strength almost double compared to conventional cuffs[3]

MICROCUFF® TUBE SEALS AT A LOWER PRESSURE THAN CONVENTIONAL PEDIATRIC TUBES[4]



Median cuff pressure to seal the trachea in children aged 2 – 4 (n= 4 x 20 patients, ID 4.0 mm). Sealing pressure assessed by ascultation within 5 minutes after intubation.

Capillary perfusion pressure in adults is 27 – 40 cm H_2O;[1,2] considered lower in pediatrics.

1 Dullenkopf A, Gerber AC, Weiss M. Fit and seal characteristics of a new pediatric tracheal tube with a high volume-low pressure polyurethane cuff. Acta Anaesthesiol Scand. 2005;49:232-237.
2 Seegobin RD, van Hasselt GL. Endotracheal cuff pressure and tracheal mucosal blood flow: endoscopic study of effects of four large volume cuffs. British Medical Journal. 1984 March;228:965-968.
3 Data on file. Roswell, GA.
4 Dullenkopf A, Schmitz A, Gerber A, Weiss, M. Tracheal sealing characteristics of pediatric cuffed tracheal tubes. Pediatric Anesthesia. 2004; 14:825-830
5 Weiss M, Gerber AC, Dullenkopf A. Appropriate placement of intubation depth marks in a new cuffed pediatric tracheal tube. British Journal of Anaesthesia. 2004;94:80-7
6 American Heart Association Guidelines for CPR and ECC. 2005;16(4):24

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