

# Confirming Endotracheal Tube Placement in Children: The Bulb Works

End-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) detection, usually with a colorimetric device, is the standard of care for confirming tracheal placement of endotracheal tubes (ETTs) after emergency intubation. Other devices, such as the self-inflating bulb, may be useful when CO<sub>2</sub> exchange is insufficient to be reliably detected, as in cases of prolonged cardiac arrest. These authors evaluated the reliability of the self-inflating bulb for detecting ETT placement in children.

Seventy elective-surgery patients (median age, 2 years), weighing between 5 kg and 20 kg, participated in the study. Uncuffed ETTs were placed simultaneously in each patient's trachea and esophagus. An assessor blinded to tube location used the self-inflating bulb on each tube before and after 5 mL/kg of air was insufflated into the patient's stomach. If the bulb expanded within 5 seconds, the tube was considered to be in the trachea. The accuracy rate for detecting tracheal tube placement was 100%. The inaccuracy rate for detecting esophageal tube placement was 4% (5 cases; 2 false negatives -- tube in the esophagus interpreted to be in trachea) with air in the stomach and 3% (4 cases; 0 false negatives) without air .

**Comment:** Colorimetric confirmation of ETT placement is the preferred method in the perfusing patient, and a specific pediatric-sized colorimetric ETCO<sub>2</sub> detector must be used to avoid inaccuracy caused by excessive dead space. In the nonperfusing patient, inability to detect ETCO<sub>2</sub> does not necessarily indicate esophageal intubation. This study shows that the performance of the self-inflating bulb is generally reliable in children weighing between 5 kg and 20 kg, but the device cannot be considered reliable enough to replace ETCO<sub>2</sub> for primary confirmation and should be considered a secondary method for patients in circulatory arrest whose ETCO<sub>2</sub> reading is below threshold.

— *Diane M. Birnbaumer, MD, FACEP*

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Sharieff GQ et al. *The self-inflating bulb as an airway adjunct: Is it reliable in children weighing less than 20 kilograms?* *Acad Emerg Med* 2003 Apr; 10:303-8.