

Can a Colorimetric CO₂ Detector Identify Extubation During Transport?

Colorimetric detection of exhaled CO₂ has become the standard of care for confirming endotracheal tube placement in children and adults. These investigators evaluated whether the Capno-Flo™ resuscitator, a resuscitation bag with a built-in colorimetric end-tidal CO₂ detector (supplied by the manufacturer), could be used to detect inadvertent extubation of critically ill children during transport, when other detection techniques (e.g., radiography or listening to breath sounds) might not be feasible.

All patients intubated and transported by one transport team during an unspecified period were eligible for the study. The investigators surveyed transport nurses or respiratory technicians upon arrival at the accepting hospital. Data were collected for 39 intubations in 38 patients (28 males; age range, 1 day to 19 years; 68% transported by rotorcraft and 32% by ground). Initially, all intubations (37 tracheal, 2 esophageal) were correctly identified by the device. The survey revealed that color change with ventilation ceased after an undefined amount of time in 36 patients (95%); the color remained yellow (consistent with tracheal intubation) in 34 and remained purple (consistent with esophageal intubation) in 2. An advantage of the device is that the CO₂ detector is a permanent part of the ambu-bag, and a disadvantage is that the occlusive-type reservoir does not permit high-flow oxygen during preoxygenation.

Comment: This simple study provides evidence against the usefulness of colorimetric detectors for ongoing confirmation of exhaled CO₂, despite manufacturers' claims to the contrary. Ongoing monitoring of endotracheal-tube position during transport must rely on quantitative CO₂ measurement or oxygen saturation (though desaturation will be a late finding in patients receiving oxygen).

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