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Verification of Endotracheal Tube Placement

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Revised January 2016, April 2009

Originally approved October 2001 replacing “Expired Carbon Dioxide Monitoring” approved September 1994

Confirmation of proper endotracheal tube placement should be completed in all patients at the time of initial intubation both in the hospital and out-of-hospital settings. Physical examination methods such as auscultation of chest and epigastrium, visualization of thoracic movement, and fogging in the tube are not sufficiently reliable to confirm endotracheal tube placement. Similarly, pulse oximetry and chest radiography are not reliable as sole techniques to determine endotracheal tube location.

During intubation, direct visualization of the endotracheal tube passing through the vocal cords into the trachea, especially with the use of a video laryngoscope, constitutes firm evidence of correct tube placement, but additional techniques should be used as objective findings to confirm proper endotracheal tube position.

Use an end-tidal carbon dioxide detector (i.e., continuous waveform capnography, colorimetric and non-waveform capnography) to evaluate and confirm endotracheal tube position in patients who have adequate tissue perfusion.

Esophageal detector devices are not as reliable as the various forms of capnography for the verification of endotracheal tube placement.

For patients in cardiac arrest and for those with markedly decreased perfusion, both continuous and non-waveform capnography may be less accurate. In these situations, if capnography is inconclusive, other methods of confirmation such as an esophageal detector device, ultrasound, or bronchoscopy should be used.

Ultrasound imaging may be used to reliably confirm endotracheal tube placement. However, this should be performed by someone who is experienced in this technique.

Properly placed endotracheal tubes may become displaced due to movement of patients and/or equipment. Continuous assessment of correct endotracheal tube placement with continuous waveform capnography is ideal. Endotracheal tube position should be reconfirmed immediately in all patients when their clinical status deteriorates or at any time there is concern regarding proper location of the endotracheal tube.