TITLE: Waveform Capnography versus Capnometry Devices for End-Tidal Carbon Dioxide Monitoring: Comparative Effectiveness and Accuracy

DATE: 07 July 2011

RESEARCH QUESTION

What is the comparative effectiveness and accuracy of waveform capnography versus capnometry devices for the measurement of end-tidal carbon dioxide in pre-hospital settings?

KEY MESSAGE

Limited evidence suggests that both capnography and capnometry are effective for the measurement of end-tidal carbon dioxide in the pre-hospital setting.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 6), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2001 and June 21, 2011. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials and non-randomized studies.

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Three non-randomized studies were identified regarding the comparative effectiveness and accuracy of waveform capnography versus capnometry devices for the measurement of end-tidal carbon dioxide in urgent clinical settings. No relevant health technology assessments, systematic reviews, or meta-analyses were identified. Non-comparative studies and additional articles that may be of interest are included in the appendix.

OVERALL SUMMARY OF FINDINGS

Two non-randomized studies\textsuperscript{1,3} compared the accuracy of auscultation, capnometry, and capnography for the confirmation of endotracheal tube placement in the pre-hospital setting. Both capnometry and capnography were superior to auscultation for the confirmation of tube placement in patients with head trauma.\textsuperscript{1} The authors suggested auscultation should be combined with either capnometry or capnography. The second study\textsuperscript{3} determined capnometry and capnography were more accurate than auscultation for patients not in cardiac arrest. The author concluded that capnography was the most reliable method for the confirmation of pre-hospital endotracheal tube placement.

A third study\textsuperscript{2} compared the accuracy of portable quantitative capnometers and capnographs in the pre-hospital setting. The authors determined that the capnometers met international accuracy standards; however, the readings could be affected by changes in the ambient temperature. The abstract did not provide a conclusion regarding capnographs.
REFERENCES SUMMARIZED

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses
No literature identified.

Randomized controlled trials
No literature identified.

Non-randomized studies

   PubMed: PM15208251

   PubMed: PM14655228

   PubMed: PM12107674

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APPENDIX – FURTHER INFORMATION:

Meta-Analyses


Guidelines and position statements


Randomized controlled trials – capnography versus capnometry not specified


Non-randomized studies – capnography versus other comparators


Review articles


Product Comparisons