



TITLE: Continuous Positive Airway Pressure for Acute Respiratory Failure in the Pre-Hospital Setting: Guidelines

DATE: 18 June 2014

RESEARCH QUESTION

What are the evidence-based guidelines regarding the use of continuous positive airway pressure (CPAP) for the management of acute respiratory failure in the rural pre-hospital setting when intubation cannot be performed?

KEY MESSAGE

One systematic review was identified regarding the use of CPAP for the management of acute respiratory failure in the pre-hospital setting; no evidence-based guidelines for this setting were identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, 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, 2009 and June 6, 2014. 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.

Disclaimer: The Rapid Response Service is an information service for those involved in planning and providing health care in Canada. Rapid responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. Rapid responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

Copyright: This report contains CADTH copyright material and may contain material in which a third party owns copyright. **This report may be used for the purposes of research or private study only.** It may not be copied, posted on a web site, redistributed by email or stored on an electronic system without the prior written permission of CADTH or applicable copyright owner.

Links: This report may contain links to other information available on the websites of third parties on the Internet. CADTH does not have control over the content of such sites. Use of third party sites is governed by the owners' own terms and conditions.



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 evidence-based guidelines.

One systematic review was identified regarding the use of CPAP for the management of acute respiratory failure in the pre-hospital setting. No health technology assessments or evidence-based guidelines for this setting were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review and meta-analysis¹ included five studies on the use of CPAP in the pre-hospital setting, for patients with acute respiratory failure. The included studies demonstrated that the use of CPAP resulted in fewer intubations and lower mortality compared with no use of CPAP. However, the authors stated that conduction of large randomized controlled trials would be necessary to confirm these findings before CPAP is routinely used by ambulance services.

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Williams TA, Finn J, Perkins GD, Jacobs IG. Prehospital continuous positive airway pressure for acute respiratory failure: a systematic review and meta-analysis. *Prehosp Emerg Care* [Internet]. 2013 Apr-Jun [cited 2014 June 17];17(2):261-273. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/?term=23373591>

Guidelines and Recommendations

No literature identified.

PREPARED BY:

Canadian Agency for Drugs and Technologies in Health

Tel: 1-866-898-8439

www.cadth.ca

APPENDIX – FURTHER INFORMATION:**Randomized Controlled Trials**

2. Roessler MS, Schmid DS, Michels P, Schmid O, Jung K, Stober J, et al. Early out-of-hospital non-invasive ventilation is superior to standard medical treatment in patients with acute respiratory failure: a pilot study. *Emerg Med J.* 2012 May;29(5):409-14.
[PubMed: PM21951764](#)

Non-Randomized Studies

3. Cheskes S, Turner L, Thomson S, Aljerian N. The impact of prehospital continuous positive airway pressure on the rate of intubation and mortality from acute out-of-hospital respiratory emergencies. *Prehosp Emerg Care.* 2013 Oct;17(4):435-41.
[PubMed: PM23805890](#)
4. Garuti G, Bandiera G, Cattaruzza MS, Gelati L, Osborn JF, Toscani S, et al. Out-of-hospital helmet CPAP in acute respiratory failure reduces mortality: a study led by nurses. *Monaldi Arch Chest Dis.* 2010 Dec;73(4):145-51.
[PubMed: PM21434561](#)
5. Warner GS. Evaluation of the effect of prehospital application of continuous positive airway pressure therapy in acute respiratory distress. *Prehosp Disaster Med.* 2010 Jan;25(1):87-91.
[PubMed: PM20405469](#)

Review Articles

6. Williams B, Boyle M, Robertson N, Giddings C. When pressure is positive: a literature review of the prehospital use of continuous positive airway pressure. *Prehosp Disaster Med.* 2013; 28(1): 52-60
[PubMed: PM23140660](#)
7. Simpson PM, Bendall JC. Prehospital non-invasive ventilation for acute cardiogenic pulmonary oedema: an evidence-based review. *Emerg Med J.* 2011 Jul;28(7):609-12.
[PubMed: PM21076052](#)