



Canadian Agency for
Drugs and Technologies
in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS



TITLE: Supraglottic Airway Devices in Out-of-Hospital Settings: Clinical Evidence and Guidelines

DATE: 10 July 2013

RESEARCH QUESTIONS

1. What is the comparative effectiveness and safety of different supraglottic airway devices in out-of-hospital settings?
2. What is the evidence for ease of use of different supraglottic airway devices in out-of-hospital settings?
3. What are the evidence-based guidelines for use of supraglottic airway devices in out-of-hospital settings?

KEY MESSAGE

One systematic review, one meta-analysis, and 14 non-randomized studies were identified regarding the use of supraglottic airway devices in out-of-hospital settings. No relevant evidence-based guidelines were identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, 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, 2008 and June 26, 2013. 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.

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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, non-randomized studies, and evidence-based guidelines.

One systematic review, one meta-analysis, and 14 non-randomized studies were identified regarding the use of supraglottic airway devices in out-of-hospital settings. No relevant health technology assessments, randomized controlled trials, or evidence-based guidelines were identified. Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Comparative Effectiveness and Safety in the Pre-Hospital Setting

Authors of one meta-analysis¹ pooled the estimates of success rates of alternate airway devices used by pre-hospital personnel. For supraglottic airway devices, success rates ranged from 85.4% for Combitube to 96.5% for King Laryngeal Tube airway, however; the authors indicated that these estimates were calculated based on limited data. A systematic review² compared the use of tracheal intubation by paramedics in pre-hospital setting to the use of alternative airway devices. Due to the observed heterogeneity, data was not pooled between studies. In the individual studies, no statistically significant difference was reported in outcomes between the two techniques.

One non-randomized study³ was included which examined the impact of pre-hospital airway management on outcomes following out-of-hospital cardiac arrest. The odds of neurologically favorable survival were significantly lower for patients managed with endotracheal intubation and supraglottic airways compared with traditional bag-valve-mask airway management.

Ease of Use in the Pre-Hospital Setting

Studies examining the ease of use of supraglottic airway devices⁴⁻¹⁶ are summarized in Table 1. The supraglottic airway devices studied include laryngeal mask airway,^{4,14} intubating laryngeal mask airway,^{12,13,16} laryngeal tube,^{6,7,10,11} laryngeal tube suction,^{8,11} King laryngeal tube,¹⁵ Easytube,⁹ and i-gel.⁵ The devices were used by paramedics,^{5,6,8,10,11,13} emergency physicians,^{5,8,9,11,16} ambulance and emergency response staff,^{7,15} and nurses.¹² All devices were found to be relatively easy to use for intubation and airway management. Further detail is provided in Table 1.

No evidence-based guidelines were identified.

Table 1: Summary of Included Studies Evaluating Ease of Use of Supraglottic Airway Devices

Authors and Year	Type of Device	Users	Results and Conclusions
Bosch et al. 2013 ⁴	LMA-Supreme	Ambulance paramedics	<p>The LMA-S was successfully used in all 50 recorded cases and was successfully used on the first attempt in 49 cases.</p> <p>The paramedics responded positively about the use of the device due to ease of insertion and general use.</p>
Nickel et al. 2008 ¹⁴	LMA CTrach	Not specified	Intubation with LMA CTrach was successful on the initial attempt in 15 of 16 cases.
Busch et al. 2009 ¹²	ILMA Fastrach	Nurses	When used by untrained nurses, intubation with Fastrach for resuscitation of patients experiencing OHCA was successful in 86% of cases.
McCall et al. 2008 ¹³	ILMA	Paramedics	<p>Paramedics were given minimal training in the use of the ILMA. Intubation with the ILMA was successful after the first attempt in 81% of cases and the overall success rate was 92%.</p> <p>Success rate was higher with ILMA than ETI.</p>
Tentillier et al. 2008 ¹⁶	ILMA Fastrach	Emergency physicians	<p>Physicians received theory and practical training in the use of the Fastrach. Intubation with ILMA was successful in 96% of cases.</p> <p>The authors concluded ILMA could be recommended for difficult intubation in the pre-hospital setting.</p>
Muller et al. 2013 ⁶	LT-D	Paramedics not trained in ETI	<p>No significant problems were noted in 93% of cases and, in 66% of cases, no problems regarding insertion of LT-D were reported.</p> <p>The authors suggested that more studies be conducted comparing alternative airway devices to ETI.</p>
Sunde et al. 2012 ⁷	LT	Ambulance services staff	<p>The first LT insertion attempt was successful in 74.4% of OHCA patients. The overall insertion success rate was 85.3%. Insertion-related problems were reported in 53% of patients.</p> <p>The authors suggested the results obtained in manikin studies may not be representative of real world results.</p>
Heuer et al. 2010 ¹⁰	LT-D	Paramedics	<p>LT-D insertion was successful in 33 of 39 patients. The paramedics rated ventilation using LT-D as effective.</p> <p>The authors concluded that LT-D was feasible for airway management of OHCA.</p>
Schalk et al. 2010 ¹¹	LT-D LTS-D	Paramedics, emergency physicians	Intubation with LT-D/LTS-D was successful on the first attempt in 123/152 cases. 61% of users had minimal experience with LT placement.

Table 1: Summary of Included Studies Evaluating Ease of Use of Supraglottic Airway Devices

Authors and Year	Type of Device	Users	Results and Conclusions
			The authors concluded the LT was a reliable tool for initial pre-hospital airway management.
Schalk et al. 2011 ⁸	LTS-D	Paramedics, emergency physicians	Most of the users were inexperienced with the device and 50/57 initial intubation attempts with the LTS-D were successful. The authors concluded that the LTS-D may be a viable alternative to ETI in the pre-hospital setting.
Russi et al. 2008 ¹⁵	King LT	EMS providers	Providers completed a training session on the use of the King LT and were asked to use the device in the field. The device was successfully placed on the first attempt in 12 of 13 patients.
Chenaitia et al. 2010 ⁹	Easytube	Emergency physicians	Easytube was used by emergency physicians with minimal training to manage difficult airways in the pre-hospital setting. Easytube insertion was successful in all patients and insertion was successful on the first attempt in 12 of 14 patients.
Haske et al. 2013 ⁵	i-gel	Paramedics, emergency physicians	The i-gel was assessed for use during pre-hospital CPR. The success rate for insertion on the first attempt was 90%. There was a significant association between ease of insertion and quality of the seal. The authors concluded the i-gel was easy to insert and enables adequate ventilation during CPR.

CPR = cardiopulmonary resuscitation; D = disposable; EMS = emergency medical service; ETI = endotracheal intubation; ILMA = intubating laryngeal mask airway; LMA = laryngeal mask airway; LT = laryngeal tube; LTS = laryngeal tube suction; OHCA = out-of-hospital cardiac arrest.

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

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Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

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Ease of Use

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Guidelines and Recommendations

No literature identified.

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APPENDIX – FURTHER INFORMATION:

Non-Randomized Studies

No comparison of different supraglottic airway devices to each other

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