

CADTH Reference List

Nasal Cannula Combined With Non-Rebreather Masks for Delivery of Oxygen

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Authors: Holly Gunn, Melissa Severn

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Key Messages

- No relevant literature was found regarding the clinical effectiveness of running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source.
- No evidence-based guidelines were identified regarding running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source.

Research Questions

1. What is the clinical effectiveness of running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source?
2. What are the evidence-based guidelines regarding running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the international HTA database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were oxygen via nasal prongs and oxygen via a non-rebreather mask. No filters were applied to limit the retrieval by study type. The search was also limited to English language documents published between January 1, 2016 and April 21, 2021. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open access full-text versions of evidence-based guidelines were reviewed when abstracts were not available, and relevant recommendations were summarized.

Table 1: Selection Criteria

Criteria	Description
Population	Patients requiring supplemental oxygen
Intervention	Running oxygen via nasal prongs (cannula) from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source
Comparator	Q1: No comparator; running oxygen from 1 source (e.g., low flow oxygen from nasal prongs or a non-rebreather mask; simple mask) Q2: Not applicable
Outcomes	Q1: Clinical effectiveness (reduction of symptoms, safety, reduction in hypoxemia or hypoxia, stabilization of patients, maintenance of oxygenation, infection control [i.e., prevention of infection of staff due to aerosol generation]) Q2: Recommendations regarding the use of oxygen via nasal prongs simultaneously with oxygen via a non-rebreather mask, recommendations regarding additional procedures required to ensure safety of providers, recommendations regarding the generation of aerosol due to this procedure
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, a non-randomized studies, evidence-based guidelines

Results

References of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

Overall Summary of Findings

No relevant literature was found regarding the clinical effectiveness for running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source. Additionally, no relevant evidence-based guidelines were identified for running oxygen via nasal prongs from 1 oxygen source simultaneously with running oxygen via a non-rebreather mask from another oxygen source; therefore, no summary can be provided.

References

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Guidelines and Recommendations

No literature identified.

Appendix 1: References of Potential Interest

Randomized Controlled Trials

Alternative Intervention

1. Brown DJ, Carmichael J, Carroll SM, April MD. End-Tidal Oxygen Saturation with Nasal Cannula During Noninvasive Positive Pressure Ventilation: A Randomized Crossover Trial. *J Emerg Med.* 2018 10;55(4):481-488. [PubMed](#)
2. McQuade D, Miller MR, Hayes-Bradley C. Addition of Nasal Cannula Can Either Impair or Enhance Preoxygenation With a Bag Valve Mask: A Randomized Crossover Design Study Comparing Oxygen Flow Rates. *Anesth Analg.* 2018 04;126(4):1214-1218. [PubMed](#)
3. Hayes-Bradley C, Lewis A, Burns B, Miller M. Efficacy of Nasal Cannula Oxygen as a Preoxygenation Adjunct in Emergency Airway Management. *Ann Emerg Med.* 2016 08;68(2):174-180. [PubMed](#)

Non-Randomized Studies

Alternative Intervention – High-Flow Nasal Oxygen

4. McDonough G, Khaing P, Treacy T, McGrath C, Yoo EJ. The Use of High-Flow Nasal Oxygen in the ICU as a First-Line Therapy for Acute Hypoxemic Respiratory Failure Secondary to Coronavirus Disease 2019. *Crit.* 2020 Oct;2(10):e0257. [PubMed](#)

Clinical Practice Guideline

5. Nova Scotia Health Authority. Airway Management Guidelines for Patients with Known or Suspected COVID-19 Infection; 2020. <http://www.cdha.nshealth.ca/system/files/sites/documents/airway-management.pdf>. Accessed April 26, 2021.
See: Section 4.8.2 "Change from nasal prongs or non-rebreathing mask to a more effective pre-oxygenation modality"