



Non-invasive positive pressure ventilation for acute asthma in children: Very uncertain results

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CLINICAL QUESTION

Asthma is the most common chronic disease in children and accounts for 2.3% of pediatric hospitalizations. This condition has a major medico-economic impact, affecting both children's quality of life and healthcare costs. In 10–12% of cases, intensive conventional treatment based on bronchodilators and corticosteroids is insufficient, and management must be escalated to endotracheal intubation and invasive mechanical ventilation. Some observational studies suggest that non-invasive positive pressure ventilation (NPPV) could reduce the need for intubation.

BOTTOM LINE

To assess the effects of NPPV combined with conventional treatments compared with conventional treatments alone in children with moderate to severe acute asthma, in terms of mortality, occurrence of serious adverse events (SAEs), length of stay in intensive care, and asthma symptom scores during the acute phase.

MAIN RESULTS

No all-cause mortality was reported in either group. Only one randomized study assessed SAEs, namely the intubation rate. Bilevel positive airway pressure (BiPAP) may substantially reduce the intubation rate and appears to shorten the length of stay in intensive care, but these results are very uncertain (very low level of evidence). Acute asthma symptoms score was evaluated in only two studies using different outcome measures, which did not allow meta-analysis. BiPAP may have a beneficial effect on the score, but this result is also very uncertain (very low level of evidence).



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SUBMITTED: 24 FEB 2026

ACCEPTED: 1 MARCH 2026

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PUBLISHED BY NEW HEALTH CONCEPT

PANORAMA.OEM.CLOUD

Source: Korang SK, Baker M, Feinberg J et al. (2024) Non-invasive positive pressure ventilation for acute asthma in children. Cochrane Database Syst Rev. 2024 Oct 2;10(10):CD012067. <https://doi.org/10.1002/14651858.CD012067.pub3>

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How to cite this paper? Auffret Y, Marx T, Jabre P. Non-invasive positive pressure ventilation for acute asthma in children: Very uncertain results. *Panorama of Emergency Medicine*. 2026,4(1). <https://doi.org/10.26738/poem.v4i1.5>

CAVEATS

Current data are limited, with small sample sizes, resulting in very uncertain evidence and preventing a comprehensive evaluation of the benefits and risks of NPPV in children with acute asthma. Large, well-designed randomized controlled trials with low risk of bias are therefore needed.

In the trials included in the review, the positive end-expiratory pressure (PEEP) was relatively low (4–5 cmH₂O), whereas pressures of 8 to 12 cmH₂O may be necessary to compensate for intrinsic PEEP.

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All authors contributed equally and validated the final version of record.

ACKNOWLEDGMENTS

This editorial is a summary of a systematic review previously published in the Cochrane Database of Systematic Reviews (see <https://www.cochranelibrary.com/> for more information). This summary is prepared in coordination with Patricia Jabre, Daniel Meyran, Julie Dumouchel, Yannick Auffret, Nordine Nekhili, Nicolas Cazes, Aurélien Renard et Tania Marx from the Cochrane Pre-hospital and Emergency Care Group.

DECLARATIONS

CONFLICTS OF INTERESTS

The Authors declare that there is no conflict of interest.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REGISTRATION

No registration applicable.

DATA AVAILABILITY STATEMENT

No new data were created or analyzed in this study. Data sharing is not applicable to this article.

ETHICAL APPROVAL

Ethical approval for this study was not required.