

Is Chronic non-invasive ventilation useful for chronic obstructive pulmonary disease?

Clinical Question	How effective is the use of chronic non-invasive ventilation (NIV) at home via face mask in people with chronic obstructive pulmonary disease (COPD)?
Bottom Line	<p>The results of this systematic review provide sufficient evidence for the routine application of chronic NIV in people with severe COPD who have chronic hypercapnic respiratory failure (CHRF), while benefits of its use is uncertain for people who remain hypercapnic shortly after a severe COPD exacerbation.</p> <p>The benefits and goals of chronic NIV seem to differ between different COPD populations. For people initiated in a stable clinical state, significant and relevant improvements in diurnal hypercapnia can be achieved, and oxygenation, health-related quality of life (HRQL) and all-cause mortality might improve. In contrast, people who remain hypercapnic after a severe COPD exacerbation seem to benefit mostly in terms of a reduction in hypercapnia, and a prolonged time to readmission or death, but without relevant improvements in HRQL. Evidence also suggests that the effect of NIV on gas exchange is largest when the NIV is applied with sufficiently high pressures for at least five hours of NIV use per night.</p>
Caveat	<p>The vast majority of studies included participants with chronic hypercapnia; only 61 participants (8%) without hypercapnia were included. We therefore emphasise that the results apply primarily to people with COPD who experience chronic hypercapnia. Most of the studies, especially the larger studies and studies with positive outcomes, have been conducted in Europe. This could limit the generalisability.</p> <p>The quality of the evidence presented was reduced due to the unblinded nature of most of the trials. The extent to which the unblinded nature of the trials influences the outcomes differs; e.g. blood gases, hospitalisations and mortality are unlikely to be affected, whilst participant-reported outcomes are likely affected to a larger extent.</p>
Context	NIV is currently applied as evidence-based therapy for COPD patients admitted to hospital with acute hypercapnic respiratory failure (AHRF) due to an exacerbation. In this situation, NIV reduces the likelihood of endotracheal intubation, complications associated with treatment, duration of hospital stay and in-hospital mortality. There has been much discussion about the need for chronic NIV in stable COPD, mainly because the earlier trials published conflicting results.
Cochrane Systematic Review	Raveling T, Vonk J, Struik FM, Goldstein R, Kerstjens HAM, Wijkstra PJ, Duiverman ML. Chronic non-invasive ventilation for chronic obstructive pulmonary disease. Cochrane Database of Systematic

Reviews 2021, Issue 8. Art. No.: CD002878. DOI:
10.1002/14651858.CD002878.pub3. This review contains 21 trials with a
total of 1429 participants.

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Systematic review link:

<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002878.pub3/full>