

Cochrane for Clinicians

Putting Evidence into Practice

Home Oxygen Therapy for Treatment of Patients with Chronic Obstructive Pulmonary Disease

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The Cochrane Abstract below is a summary of a review from the Cochrane Library. It is accompanied by an interpretation that will help clinicians put evidence into practice. R. Eugene Bailey, M.D., presents a clinical scenario and question based on the Cochrane Abstract, along with the evidence-based answer and a full critique of the abstract.

Clinical Scenario

A 70-year-old woman has had worsening chronic obstructive pulmonary disease (COPD) for 20 years. She asks if she would benefit from long-term supplemental oxygen therapy. Her resting arterial blood gases show an oxygen (O₂) saturation of 91 percent.

Clinical Question

Should patients with COPD and moderate hypoxemia (i.e., O₂ saturation of 90 to 97 percent) receive continuous home oxygen therapy?

Evidence-Based Answer

There is good evidence that the addition of home long-term continuous oxygen therapy for COPD increases survival rates in patients with severe hypoxemia (i.e., O₂ saturation of less than 90 percent or partial pressure of arterial oxygen [PaO₂] of less than 8 kPa per 60 mm Hg) but not in patients with moderate hypoxemia or nocturnal desaturation.

Cochrane Abstract

Background. Domiciliary oxygen therapy has become one of the major forms of treatment for patients with

hypoxemic COPD.

Objectives. To determine the effect of domiciliary oxygen therapy on survival and quality of life in patients with COPD.

Search Strategy. The authors' searched randomized, controlled trials (RCTs) using the Cochrane Airways Group COPD register and the search term "home OR domiciliary AND oxygen."

Selection Criteria. RCTs of patients with hypoxemia and COPD that compared long-term domiciliary or home oxygen therapy with a control treatment were included.

Data Collection and Analysis. Data extraction was performed independently by two reviewers.

Primary Results. Five RCTs were identified. Data were aggregated from two trials of nocturnal oxygen therapy in patients with mild to moderate COPD and arterial desaturation at night. Data could not be aggregated for the three other trials because of differences in trial design and patient selection. In a study of continuous oxygen therapy versus nocturnal oxygen therapy, there was a significant improvement in mortality rates after 24 months (Peto odds ratio [OR], 0.45; 95 percent confidence interval [CI], 0.25 to 0.81). In a study comparing domiciliary oxygen therapy with no oxygen therapy, there was a significant improvement in mortality rates over five years in the group receiving oxygen therapy (Peto OR, 0.42; 95 percent CI, 0.18 to 0.98). Two studies comparing nocturnal oxygen therapy with no oxygen therapy in patients with COPD and arterial desaturation at night found no difference in mortality rates between treated and nontreated groups; this difference was noted in each trial separately and when data from the trials were aggregated. In a study of long-term oxygen therapy versus no oxygen therapy in patients with moderate hypoxemia, no effect on survival was found in up to three years of follow-up. A search conducted in January 2003 did not identify any additional studies for inclusion in the review.

Reviewers' Conclusions. Long-term oxygen therapy improves survival rates in a select group of COPD patients with severe hypoxemia (i.e., arterial PaO₂ of less than 8 kPa per 60 mm Hg). Long-term oxygen therapy does not appear to improve survival in patients with moderate hypoxemia or in those with only nocturnal arterial desaturation.



These summaries have been derived from Cochrane reviews published in the Cochrane Database of Systematic Reviews in The Cochrane Library. Their content has, as far as possible, been checked with the authors of the original reviews, but the summaries should not be regarded as an official product of the Cochrane Collaboration; minor editing changes have been made to the text (www.cochrane.org).

Practice Pointers