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# Oxygen therapy for cystic fibrosis (Review)



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#### [Intervention Review]

# Oxygen therapy for cystic fibrosis

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#### **ABSTRACT**

## **Background**

The most serious complications of cystic fibrosis (CF) relate to respiratory insufficiency. Oxygen supplementation therapy has been a standard of care for individuals with chronic lung diseases associated with hypoxemia for decades. It is common for physicians to prescribe oxygen therapy for people with CF when hypoxemia occurs. However, it is unclear if empiric evidence is available to provide indications for this therapy with its financial costs and often profound impact on lifestyle.

#### **Objectives**

To assess whether oxygen therapy improves the longevity or quality of life of individuals with CF.

#### Search methods

We searched the Cochrane Cystic Fibrosis and Genetic Disorders Group Trials Register, comprising references identified from comprehensive electronic database searches and handsearches of relevant journals and abstract books of conference proceedings.

Most recent search of Group's Trials Register: April 2005.

### Selection criteria

Randomized or quasi-randomized controlled trials comparing oxygen, administered at any concentration, by any route, in people with documented CF for any time period.

#### Data collection and analysis

Two authors independently assessed study quality and extracted data.

#### **Main results**

Nine published studies (149 participants) are included in this review, of which only one examined long-term oxygen therapy (28 participants). There was no statistically significant improvement in survival, lung, or cardiac health. Four studies examined the effect of oxygen supplementation during sleep by polysomnography. Although oxygenation improved, there were no demonstrable improvements in qualitative sleep parameters and modest hypoventilation was noted. In three studies, oxygen supplementation was evaluated during exercise. Hypoxemia was prevented, but mild hypercapnia resulted. Work performance was not improved, as measured in one study, but was improved in a second study. Furthermore, in two studies, exercise duration was enhanced by oxygen supplementation. In the study examining the impact of oxygen supplementation after exercise, recovery time was enhanced.



#### **Authors' conclusions**

There are no published data to guide the prescription of chronic oxygen supplementation to people with advanced lung disease due to CF. Short-term oxygen therapy during sleep and exercise improves oxygenation but is associated with modest and probably clinically inconsequential hypercapnia. During exercise, there are improvements in exercise duration and peak performance. There is a need for larger, well-designed clinical trials to assess the benefits of long-term oxygen therapy in people with CF administered continuously or during exercise or sleep or both.

#### PLAIN LANGUAGE SUMMARY

The pulmonary manifestations of cystic fibrosis result in progressive lung damage and ultimately hypoxemia for which oxygen therapy is often prescribed

Only one study has evaluated long-term oxygen use in people with CF and showed no apparent improvement in mortality or alleviation of symptoms. Oxygen supplementation improved exercise capacity in three studies and allowed for quicker recovery in one study. Four studies examining oxygen supplementation during sleep showed improvement in oxygenation and a slight increase in carbon dioxide. Thus, no published studies indicate that long-term oxygen use in cystic fibrosis decreases mortality, but it appears that short-term use of oxygen may improve sleep and exercise.