

COPD and Corticosteroids

Are oral steroids useful in COPD?

◆ Although treatment of COPD with oral and inhaled steroids is common, their exact role and usefulness is controversial. Part of the problem is that COPD is a heterogeneous group of diseases characterized by airflow obstruction that is irreversible or only partially reversible. In patients with chronic stable COPD very few will benefit from corticosteroid therapy; a meta-analysis performed over a 38 year period found that only 10% of patients have clinically significant improvements in spirometry with oral corticosteroids.¹ Responders generally have more reversible disease present in about 20% of COPD patients² or underlying asthma found in about 10% of cases.³ Although inflammation is also involved in COPD, it is very different from that in asthma and this may also explain the variable response. Inflammation in asthma is eosinophilic and affects the airways (but not the parenchyma) causing bronchial hyperreactivity. In "pure" COPD, the inflammation is predominantly neutrophilic with parenchymal damage leading to irreversible airway obstruction. Eosinophilic inflammation in asthma can be markedly suppressed by steroids but they have little effect on COPD inflammation or progression of the disease.⁴

When should oral steroids be considered in COPD?

◆ Generally oral steroids are considered 3rd line in patients failing to respond adequately to other therapies and may be considered an option in patients who remain symptomatic despite optimum bronchodilatory treatment. A clinical trial to test for efficacy is recommended and should be initiated during an exacerbation free period when the patient's disease and lung function are stable. Prednisone 30-50mg daily for 2 weeks is given with monitoring of FEV1 values before and after the trial. If an improvement in post-bronchodilator FEV1 of >20% and at least a 200ml increase is observed, the patient can be considered a steroid responder and remain on some form of corticosteroid therapy.² Response must be carefully assessed as many patients will report *subjective improvement without observable objective improvements in pulmonary function*; such symptomatic responses to steroids probably reflect their potent metabolic and mood-elevating effects. Clinicians must consider whether the benefits of such therapy outweigh the risks...this is particularly pertinent in the COPD population who are generally older and at greater risk for adverse effects.

For acute exacerbations of COPD especially those requiring hospitalization, corticosteroids are useful in managing inflammation and ameliorating respiratory failure. Dosing is similar to that for acute asthma. Once a patient is able, oral prednisone 40-60mg can replace IV corticosteroids and should be discontinued in 7-14 days if possible in order to avoid significant suppression of the HPA axis. If therapy must be prolonged or chronic, the lowest effective dose should be given (ideally <10mg/day) preferably on an alternate day schedule.

What about inhaled steroid therapy?

◆ Most expert reviewers have found **no definitive role** for inhaled corticosteroids in the treatment of **most** COPD patients. In patients with stable COPD who have not responded previously to oral corticosteroids, inhaled steroids appear to be of little benefit; they may be considered for patients in whom oral steroids are contraindicated or not tolerated. In patients who have responded to oral steroids, attempts should be made to switch to inhaled steroids whenever possible as the systemic effects are substantially fewer and less severe than with long-term oral steroids. However, effectiveness is also reduced...less than 50% of patients switched to inhaled steroids are able to achieve or maintain even 50% of the benefit they had on oral steroids.⁵

¹ Callahan C et al. Oral corticosteroid therapy for patients with stable COPD; A Meta-analysis. Ann Intern Med 1991; 114: 216-23.

² Guidelines for the Treatment of Chronic Obstructive Pulmonary Disease (COPD). The Canadian Respiratory Review Panel, Nov, 1998

³ Barnes P. Inhaled corticosteroids are not beneficial in COPD. Am J Respir Crit Care Med. 2000; 161: 343.

⁴ Barnes P. Mechanisms in COPD; differences from asthma. Chest. 2000; 117: Suppl 10S-4S.

⁵ Bourbeau J et al. A double blind study of inhaled budesonide in patients with steroid-responsive COPD. Am Rev Resp Dis 1993; 147: A317.