Systemic corticosteroids for acute exacerbations of chronic obstructive pulmonary disease (Review)

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Systemic corticosteroids for acute exacerbations of chronic obstructive pulmonary disease

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ABSTRACT

Background
COPD is a common condition, mainly related to smoking. Acute exacerbations of COPD, usually related to superimposed infection, occur commonly and systemic corticosteroids are widely used in their management in combination with other treatments including antibiotics, oxygen supplementation and bronchodilators.

Objectives
To determine the efficacy of corticosteroids, administered either parenterally or orally, on the outcomes of acute exacerbations of COPD.

Search strategy
Searches were carried out using the Cochrane Airways Group COPD RCT register with additional studies sought in the bibliographies of randomised controlled trials and review articles. Authors of identified randomised controlled trials were contacted for other published and unpublished studies. The last search was carried out in August 2008.

Selection criteria
Randomised controlled trials comparing corticosteroids, administered either parenterally or orally, with appropriate placebo control. Other interventions e.g. bronchodilators and antibiotics were standardised. Clinical studies of acute asthma were excluded.

Data collection and analysis
Data were extracted independently by two reviewers. Data measured but not reported were sought from authors of included studies. Trials were combined using Review Manager for analyses.

Main results
Eleven studies (n=1081) fulfilled the inclusion criteria and 10 studies contributed data for analyses (n=1051). There were significantly fewer treatment failures within thirty days in patients given corticosteroid treatment, Odds Ratio (OR) 0.50; 95% confidence interval (CI) 0.36 to 0.69 and Hazard Ratio 0.78; 95% CI 0.63 to 0.97. It would have been necessary to treat 10 patients (95%CI 7 to
16) with corticosteroids to avoid one treatment failure in this time period. Duration of hospitalisation was significantly shorter with corticosteroid treatment, mean difference -1.22 days; 95% CI -2.26 to -0.18. For FEV1 there were significant treatment benefits with mean differences at the early time point (to 72 hours), 140 ml; 95% CI 90 to 190 ml and at end of treatment (up to 15 days) 80 ml; 95% confidence interval 10 to 160. There was a significant improvement in breathlessness and blood gases at both time points. There was no significant effect on mortality but an increased likelihood of an adverse event associated with corticosteroid treatment, OR 2.33; 95% CI 1.60 to 3.40. Overall one extra adverse effect occurred for every 5 people treated (95% CI 4 to 9). The risk of hyperglycaemia was significantly increased, OR 4.95; 95% CI 2.47 to 9.91.

**Authors' conclusions**

Treatment of an exacerbation of COPD with oral or parenteral corticosteroids significantly reduces treatment failure and the need for additional medical treatment and shortens hospital stay. It increases the rate of improvement in lung function and dyspnoea and the improvement continues during treatment, but there is a significantly increase in the risk of an adverse drug event occurring. The optimal dose and length of treatment regime needs to be better defined.

**PLAIN LANGUAGE SUMMARY**

**Systemic corticosteroids for acute exacerbations of chronic obstructive pulmonary disease**

People with Chronic Obstructive Pulmonary Disease (COPD), sometimes called emphysema or chronic (obstructive) bronchitis, have episodes of deterioration which may need a hospital stay. Such exacerbations are often caused by infections. Treatment with corticosteroids, such as prednisolone, prednisone or cortisone, has become common. This review found that corticosteroids help improve symptom such as breathlessness, improve lung function, shorten hospital stays and reduce the need to seek extra medical attention. There are some short lived side effects. The optimal corticosteroid regime has not been defined.