

CLINICAL INQUIRIES FROM THE FAMILY PRACTICE INQUIRIES NETWORK

# Do systemic corticosteroids lessen symptoms in acute exacerbations of COPD?

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## ■ EVIDENCE-BASED ANSWER

Systemic corticosteroids improve measures of dyspnea in patients with acute exacerbations of chronic obstructive pulmonary disease (COPD) (strength of recommendation [SOR]: **A**, meta-analysis of 2 small randomized controlled trials). The optimal dose of systemic corticosteroids to achieve these benefits is uncertain. An international consensus panel recommended 30 to 40 mg of oral prednisone daily for 10 to 14 days as a reasonable compromise of efficacy and safety (SOR: **C**, consensus expert opinion).

## ■ EVIDENCE SUMMARY

Three systematic reviews addressing the efficacy of systemic corticosteroids in managing acute exacerbations of COPD found consistent, good-quality evidence supporting short courses of systemic steroids. The improvement in outcomes included decreases in airflow obstruction, treatment failure, and length of hospital stay.<sup>1-3</sup>

The optimal initial doses of systemic corticosteroids to achieve these benefits are uncertain. Variable study designs limit combining study results into a dose-response curve, and there are no comparative trials of high- vs low-dose regimens. A panel consensus judgment from a collaboration of the National Heart, Lung, and Blood Institute and the World Health Organization recommended 30–40 mg of oral prednisone daily for 10 to 14 days.<sup>4</sup>

A Cochrane systematic review analyzed 7 randomized, placebo-controlled trials of systemic steroids for acute exacerbations of COPD.<sup>1</sup> While most of the studies reporting symptom outcomes used disparate methods of measurement, 2 small studies<sup>5,6</sup> reported changes in quality of life using validated visual analogue scales. This

allowed their results to be combined into a summary estimate of the effect of corticosteroids compared with placebo. Combining the visual analogue scales using a standardized mean difference showed a significant improvement of this summary quality of life measure in the steroid-treated group.

Other small randomized controlled trials of systemic steroids<sup>1</sup> demonstrated trends towards improvement in symptom outcomes. A Taiwanese study randomized 138 patients presenting to an emergency department to treatment with 100 mg intravenous hydrocortisone or placebo within 15 minutes of arrival.<sup>1</sup> Using a 6-point scale, patients gave self-assessments of the severity of their attack on arrival and at 6 hours. Compared with placebo, the steroid group showed a 6-hour improvement of uncertain significance.

Similarly, a British trial of 30 mg prednisone vs placebo in 56 inpatients with acute exacerbations of COPD measured a daily composite symptom score based on 7 pulmonary and functional symptoms.<sup>8</sup> There was a nonsignificant trend towards greater improvement in the steroid-treated group.

Finally, a multicenter, 3-armed, placebo-controlled, double-blinded, parallel design study enrolled 199 COPD inpatients, who were randomized to oral prednisone, inhaled budesonide, or placebo treatment groups.<sup>9</sup> Dyspnea was assessed using a validated, modified Borg scale every 12 hours for 72 hours. The reduction in the modified Borg scale rating was of comparable magnitude in the 3 groups, but again there was a nonsignificant greater reduction in the systemic steroid group compared with both the placebo and inhaled budesonide groups. Power calculations were not provided, so it is unclear whether sample size in this study was sufficient to detect important differences in outcomes.

Three randomized controlled trials prospectively measured adverse events rates of systemic steroids in acute exacerbations of COPD.<sup>9-11</sup> Hyperglycemia or glycosuria was more common in the steroid-treated groups. The SCOPE study, the largest of the 3 trials, found hyperglycemia requiring treatment occurred in a greater proportion of the steroid-treated group than placebo (15% vs 4%;  $P=.002$ ; number needed to harm=9).

## ■ RECOMMENDATIONS FROM OTHERS

A recent review provides a concise summary of practice guidelines for the management of acute exacerbations of COPD from widely recognized professional societies.<sup>12</sup> Systemic steroids are endorsed in the evidence-based systematic review guidelines from the American College of Chest Physicians–American Society of Internal Medicine, along with the National Heart, Lung, and Blood Institute with the World Health Organization cosponsored Global Initiative for Chronic Obstructive Lung Disease (GOLD), and the consensus guidelines of the American Thoracic Society.<sup>13</sup>

### CLINICAL COMMENTARY

## Lack of long-term benefits emphasize need for prevention

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It is reassuring to see that there is good evidence to support what most practicing physicians already do—use steroids for acute exacerbations of COPD. Along with inhaled anticholinergics, beta-agonists and (sometimes) antibiotics, short-term measures of patient oriented outcomes seem to be improved. Questions still remain regarding the optimal dosing, route of administration, and length of therapy needed. The lack of evidence of long-term outcome benefits emphasizes, to me, the need for improved efforts at primary and secondary prevention, such as smoking prevention and cessation interventions, annual influenza vaccination, and routine pneumococcal vaccination in our COPD patients.

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