Review: regular inhaled short acting β_2 agonists improve lung function in stable chronic obstructive pulmonary disease

Ram FS, Sestini P. Regular inhaled short acting β_2 agonists for the management of stable chronic obstructive pulmonary disease: Cochrane systematic review and meta-analysis. *Thorax* 2003;58:580–4.

Q Is regular treatment with inhaled short acting β_2 agonists (ISABAs) effective for stable chronic obstructive pulmonary disease (COPD)?

METHODS

Data sources: Cochrane Collaboration trials register up to and including May 2002 and reference lists of review articles and retrieved studies.

Study selection and assessment: randomised, placebo controlled trials of ISABAs given to patients with stable COPD for ≥ 7 days. Individual study quality was assessed on the basis of allocation concealment.

Outcomes: forced expiratory volume in 1 second (FEV₁), forced vital capacity (FVC), peak expiratory flow rate (PEFR), breathlessness (visual analogue scale), treatment failure, and patient preference.

MAIN RESULTS

13 crossover trials met the selection criteria ($n = 237$, age range 56–70 y). Patients were primarily men, and study duration ranged from 1–8 weeks. Drugs assessed were isoproterenol, terbutaline, and salbutamol; most were administered using pressurised metered dose inhalers or other hand held inhalers. Meta-analysis showed that patients who received ISABAs had improved post-bronchodilator FEV₁, FVC, morning and evening PEFR, and breathlessness scores; and fewer treatment failures (table). Patients preferred ISABAs to placebo (table).

CONCLUSION

Regular inhaled short acting β_2 agonists for ≥ 7 days improve post-bronchodilator lung function and reduce breathlessness in patients with stable chronic obstructive pulmonary disease.

A modified version of this abstract appears in *ACP Journal Club*.

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Source of funding: the Netherlands Asthma Foundation.

Commentary

β_2 agonists are frequently used as a first line treatment for COPD to maximise bronchodilation and minimise dyspnoea.¹ The use of short acting versus long acting β_2 agonists remains somewhat controversial because bronchodilators cause only small increases in FEV₁. These drugs improve symptoms by reducing hyperinflation and thus reducing dyspnoea, but often with little effect on spirometry measurements.² The review by Ram and Sestini attempted to clarify the effects of ISABAs compared with placebo.

Only 13 trials met the inclusion criteria. All were randomised crossover trials that assessed ISABAs alone or in combination with other drugs. Anticholinergic drugs such as ipratropium bromide have generally been considered more effective for treatment of COPD because they have fewer side effects, slower onset of action, and longer duration of action.³ Ram and Sestini suggest that ISABAs offer an inexpensive and effective treatment for the management of stable COPD, although the practical issue of the effectiveness of ISABAs compared with other bronchodilators (eg, long acting β_2 agonists) remains unanswered. However, many patients with COPD have specific intolerances and contraindications that require customising COPD management using a stepwise approach based on severity of airway symptoms. Thus, primary care providers should continue to tailor selection of bronchodilators for treatment of COPD based on the individual requirements of patients. Use of any treatment should, of course, include close monitoring of patient symptoms, FEV₁, exercise tolerance, oxygen saturation, and responses to bronchodilator treatment.

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1 Celli BR. Standards for the optimal management of COPD: a summary. *Chest* 1998;113:283S–287S.

2 Barnes PJ. Chronic obstructive pulmonary disease. *N Engl J Med* 2000;343:269–80.

3 Liesker JJ, Wijkstra PJ, Ten Hacken NH, et al. A systematic review of the effects of bronchodilators on exercise capacity in patients with COPD. *Chest* 2002;121:597–608.

Regular inhaled short acting β_2 agonists for ≥ 7 days v placebo for stable chronic obstructive pulmonary disease*

Outcomes at 1–8 weeks	Number of trials (n)	Weighted mean difference (95% CI)
FEV ₁ (l)†	6 (196)	0.14 (0.04 to 0.25)
FVC (l)†	4 (116)	0.30 (0.02 to 0.58)
Morning PEFR (l/min)†	{4 (124)}§	29.17 (0.25 to 58.09)
Evening PEFR (l/min)†	{3 (86)}§	36.75 (2.56 to 70.94)
Standardised mean difference (CI)		
Breathlessness (100 mm visual analogue score)	4 {94}§	1.33 (1.01 to 1.65)
RRR (CI)		
Treatment failure‡	5 (198)	51% (27 to 67)
RBI (CI)		
Patient preference for β_2 agonists over placebo	4 (158)	{507% (198 to 1135)}§
{3 (2 to 3)}§		

*FEV₁ = forced expiratory volume in 1 second; FVC = forced vital capacity; PEFR = peak expiratory flow rate. Other abbreviations defined in glossary.

†Post-bronchodilator; positive numbers favour β_2 agonists.

‡Treatment failure = number of dropouts because of worsening symptoms.

§Information provided by author.

|| Calculated from relative risk and control event rate in article.