Review: regular inhaled short acting β₂ agonists improve lung function in stable chronic obstructive pulmonary disease


Main question: Is regular treatment with inhaled short acting β₂ 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 β₂ 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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<table>
<thead>
<tr>
<th>Outcomes at 1–8 weeks</th>
<th>Number of trials (n)</th>
<th>Weighted mean difference (95% CI)</th>
<th>Standardised mean difference (CI)</th>
<th>RRR (CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEV₁ (l)†‡</td>
<td>6 (196)</td>
<td>0.14 (0.04 to 0.25)</td>
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<tr>
<td>FVC (l)</td>
<td>4 (116)</td>
<td>0.30 (0.02 to 0.58)</td>
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<tr>
<td>Morning PEFR (l/min)‡</td>
<td>4 (1124)§</td>
<td>29.17 (0.25 to 58.09)</td>
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<tr>
<td>Evening PEFR (l/min)‡</td>
<td>3 (86)§</td>
<td>36.75 (2.56 to 70.94)</td>
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<tr>
<td>Breathlessness (100 mm visual analogue scale)</td>
<td>4 (94)§</td>
<td>1.33 (1.01 to 1.65)</td>
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</tbody>
</table>

Treatment failure‡     | 5 (198)              | 51% (27 to 67)†                 | (5 (3 to 9))§                    |         |         |

RRR (CI) | NNT (CI) |

Patient preference for β₂ 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 β₂ agonists.

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

§Information provided by author.

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