

In adults with asthma, does long term use of common pharmacological antiasthmatic agents reduce rates of exacerbations?

**METHODS**

**Data sources:** Medline, EMBASE/Excerpta Medica, and the Cochrane databases (all from 1980 to April 2004); bibliographies of relevant articles; and experts.

**Study selection and assessment:** randomised controlled trials (RCTs) (published in English) that lasted >3 months, evaluated common pharmacological treatments for adults (>19 y of age) with asthma, and reported relevant outcomes. Study quality was assessed using the Jadad scale.

**Outcomes:** exacerbation rates and forced expiratory volume in 1 second (FEV1).

**MAIN RESULTS**

4 categories of pharmacological medications were evaluated. Meta-analyses were done using a random effects model when significant data heterogeneity was detected. (1) Inhaled corticosteroids (ICSs) v a control group of placebo or short acting β2 agonists (SABAs). Exacerbation rates were lower in the ICS group than in the control group (table). (2) Long acting β2 agonists (LABAs) v a control group of placebo or SABAs. Exacerbation rates were lower in the LABA group than in the placebo group (table). The LABA and SABA groups did not differ for exacerbation rates (p>0.05). When LABAs were added to ICSs, exacerbation rates were lower in the combination group than in the ICS group (table). Furthermore, exacerbation rates were lower in the combination group than in the ICS group with an increased dosage (usually doubled) (table). (3) Leukotriene pathway modifiers/receptor antagonists (LPMs/RAs) v placebo or ICSs. Exacerbation rates were lower in the LPM/RA group than in the placebo group (table). However, exacerbation rates were greater in the LPM/RA group than in the ICS group (relative risk increase 72%, 95% CI 28 to 131). (4) Monoclonal anti-IgE antibodies v placebo in patients receiving ICSs. Exacerbations were lower in the anti-IgE antibody group than in the placebo group (table). For all comparisons, a reduction in exacerbation rates was associated with a corresponding improvement in lung function.

**CONCLUSION**

In adults with asthma, long term use of common pharmacological antiasthmatic agents reduce rates and improves lung function.

**Commentary**

Asthma exacerbations are important because of the associated personal (eg, decreased quality of life and ability to work) and societal costs (eg, increased use of healthcare services), and the increased risk of death. The review by Sin et al is an important contribution to the knowledge base on asthma management because it provides an evaluation of the long term effects of several classes of pharmacological agents on exacerbations and lung function.

Strengths of the review include the thorough search for studies, albeit only English language studies, and the inclusion of studies with a Jadad score ≥3, indicating good methodological quality. As the authors acknowledged, the review had several limitations. It was not possible to address whether current smoking, obesity, race, or other risk factors modified treatment effects of the various asthma medications. Similarly, the effects of asthma medications on mortality and long term adverse outcomes could not be determined because the studies were too short in duration or had inadequate power. In some studies, ICSs have been associated in a dose-dependent manner with adverse effects such as bone demineralisation, hip fractures, cataracts, glaucoma, and adrenal suppression. 1, 2 Given that ICSs are the single most effective agents and the first line treatment for patients with persistent asthma, it will be important to confirm the existence of any such causal relations. In the meantime, to minimise exposure to potential adverse effects, patients need to be taught ways to protect against systemic absorption including proper inhaler technique, use of a spacer, and mouth rinsing after each inhalation.

In addition, nurses should continue to consider other aspects of asthma care, including education to facilitate self-management, control of the environment to minimise exposure to allergens, and a healthy lifestyle, in particular, non-smoking and maintenance of a healthy weight.

Sandra Small, RN, MScN  
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**Effectiveness of common pharmacological medications for asthma in adults at 3–39 months***

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Comparison</th>
<th>Number of trials (n)</th>
<th>RRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of exacerbations</td>
<td>ICSs v placebo or SABAs</td>
<td>11 (9418)</td>
<td>54% (38 to 66)†</td>
</tr>
<tr>
<td></td>
<td>LABAs v placebo</td>
<td>9 (2854)</td>
<td>25% (12 to 36)</td>
</tr>
<tr>
<td></td>
<td>ICSs plus LABAs v ICSs</td>
<td>7 (3886)</td>
<td>26% (9 to 39)</td>
</tr>
<tr>
<td></td>
<td>ICSs plus LABAs v doubled dosage of ICSs</td>
<td>10 (5680)</td>
<td>14% (4 to 24)</td>
</tr>
<tr>
<td></td>
<td>LPMs/RAs v placebo</td>
<td>7 (4375)</td>
<td>41% (29 to 51)</td>
</tr>
<tr>
<td></td>
<td>ICSs plus anti-IgE antibodies v ICSs</td>
<td>3 (1388)</td>
<td>45% (34 to 55)</td>
</tr>
</tbody>
</table>

*ICSs = inhaled corticosteroids; SABAs = short acting β2 agonists; LABAs = long acting β2 agonists; LPMs/RAs = leukotriene pathway modifiers/receptor antagonists. Other abbreviations defined in glossary; RRR and CI calculated from data in article.

†Calculated using a random effects model.
Review: long term use of common medications for asthma reduces exacerbations in adults

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