

## What Are the Risks of Using Inhaled Long-Acting Beta-Agonist Medications for the Relief of Asthma?

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The full report is titled “Meta-Analysis: Effect of Long-Acting  $\beta$ -Agonists on Severe Asthma Exacerbations and Asthma-Related Deaths.” It is in the 20 June 2006 issue of *Annals of Internal Medicine* (volume 144, pages 904-912). The authors are S.R. Salpeter, N.S. Buckley, T.M. Ormiston, and E.E. Salpeter.

### What is the problem and what is known about it so far?

Asthma is a disease that is usually caused by inflammation of the bronchial tubes. Inflammation makes the muscle cells that surround the bronchial tubes tighten up and narrow the bronchial air passages, making it difficult for an asthmatic person to breathe. A type of inhaled medicine known as long-acting beta-agonists provides prolonged (12 hours) bronchial muscle relaxation. Some studies have suggested that even though long-acting beta-agonists provide symptomatic relief for asthmatic patients, they can be harmful with long-term use.

### Why did the researchers do this particular study?

To find out whether long-acting beta-agonists affected risk of hospitalization for asthma-related causes, risk for life-threatening asthma attacks, and risk for asthma-related death.

### Who was studied?

The researchers reviewed all of the available articles on the subject that had been published in medical journals between 1966 and 2005. They did not study any new patients with asthma.

### How was the study done?

The researchers did a computer-based search of the medical literature and collected all of the articles that reported on testing the effects of long-acting beta-agonists in asthmatic patients. To be included in this study, the articles had to report that patients were assigned to a group that received a long-acting beta-agonist or to a group that received placebo (an ineffective substance used in place of the active medicine). Assignment to one group or the other had to be done completely by chance. In addition, the study had to have lasted at least 3 months. After retrieving the articles, the researchers judged the quality of each study. They then analyzed the pooled results from all the patients they had been able to gather from all the studies combined and calculated the proportion of patients who had had 1 of the complications listed earlier.

### What did the researchers find?

Nineteen studies that involved 33,826 patients fulfilled the researchers' criteria for quality. Patients receiving long-acting beta-agonists were more than 2.5 times more likely to be hospitalized and about 2 times more likely to have life-threatening asthmatic attacks than those receiving placebo. Death from asthma occurred relatively rarely. However, asthma-related deaths occurred about 3.5 times as often in patients receiving long-acting beta-agonists as in those receiving placebo.

### What are the limitations of the study?

The small number of deaths that occurred in these studies, added to the fact that some of the studies did not even report if deaths occurred, makes the assessment of risk for death unreliable.

### What are the implications of the study?

Symptomatic treatment of asthma with long-acting beta-agonist medications carries with it some significantly increased risks, including severe asthma attacks, hospitalization, and even death. These risks require reevaluation of how and even whether doctors should use these medications for their asthmatic patients.

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