

## Article

# Effects of Smoking Intervention and the Use of an Inhaled Anticholinergic Bronchodilator on the Rate of Decline of FEV<sub>1</sub> The Lung Health Study

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## Abstract

**Objective.** —To determine whether a program incorporating smoking intervention and use of an inhaled bronchodilator can slow the rate of decline in forced expiratory volume in 1 second (FEV<sub>1</sub>) in smokers aged 35 to 60 years who have mild obstructive pulmonary disease.

**Design.** —Randomized clinical trial. Participants randomized with equal probability to one of the following groups: (1) smoking intervention plus bronchodilator, (2) smoking intervention plus placebo, or (3) no intervention.

**Setting.** —Ten clinical centers in the United States and Canada.

**Participants.** —A total of 5887 male and female smokers, aged 35 to 60 years, with spirometric signs of early chronic obstructive pulmonary disease.

**Interventions.** —Smoking intervention: intensive 12-session smoking cessation program combining behavior modification and use of nicotine gum, with continuing 5-year maintenance program to minimize relapse. Bronchodilator: ipratropium bromide prescribed three times daily (two puffs per time) from a metered-dose inhaler.

**Main Outcome Measures.** —Rate of change and cumulative change in FEV<sub>1</sub> over a 5-year period.

**Results.** —Participants in the two smoking intervention groups showed significantly smaller declines in FEV<sub>1</sub> than

largest benefit. The small noncumulative benefit associated with use of the active bronchodilator vanished after the bronchodilator was discontinued at the end of the study.

**Conclusions.** –An aggressive smoking intervention program significantly reduces the age-related decline in FEV<sub>1</sub> in middle-aged smokers with mild airways obstruction. Use of an inhaled anticholinergic bronchodilator results in a relatively small improvement in FEV<sub>1</sub> that appears to be reversed after the drug is discontinued. Use of the bronchodilator did not influence the long-term decline of FEV<sub>1</sub>. (*JAMA*. 1994;272:1497-1505)

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