# Effectiveness of an Intranasal Flu Vaccine in Healthy Adults

*Nichol KL, Mendelman PM, Mallon KP, Jackson LA, Gorse GJ, Belshe RB, et al. Effectiveness of live, attenuated intranasal influenza virus vaccine in healthy, working adults: a randomized controlled trial. JAMA 1999;282:137–44.*

## Study Overview

Objective. To evaluate the safety and effectiveness of intranasally administered trivalent, live, attenuated influenza virus (LAIV) vaccine in healthy, working adults.

Design. Randomized, double-blind, placebo-controlled trial.

Setting and participants. 4561 healthy adults between 18 and 64 years of age who worked at least 30 hours per week outside the home and were enrolled at 1 of 13 health care centers across the United States. The participants were recruited through health insurance plans, at work sites, and from the general population and were followed from September 1997 through March 1998.

Main outcome measures. Self-reported episodes of febrile illness, severe febrile illness, febrile upper respiratory tract illness, work loss, health care use during both the peak and total influenza outbreak periods, and adverse events. Febrile illness was defined as persistence of symptoms (eg, fever, chills, headache, runny nose, sore throat, cough, muscle aches, tiredness/weakness) for at least 2 consecutive days, with fever on at least 1 day and at least 2 symptoms on 1 or more days. Febrile upper respiratory tract illness was defined similarly but focused only on upper respiratory tract symptoms (eg, runny nose, sore throat, cough). Severe febrile illness was defined as persistence of symptoms for at least 3 consecutive days, with fever on at least 1 day and at least 3 symptoms on 1 or more days.

Main results. LAIV vaccine recipients ($n$ = 3041) were as likely to experience 1 or more febrile illnesses as placebo recipients ($n$ = 1520) during peak outbreak periods (13.2% for vaccine versus 14.6% for placebo; $P$ = 0.19). However, vaccine recipients had significantly fewer episodes of severe febrile illness (18.8% reduction; 95% confidence interval [CI], 7.4% to 28.8%) and febrile upper respiratory tract illnesses (23.6% reduction; 95% CI, 12.7% to 33.2%). They also had fewer days of illness across illness syndromes (22.9% reduction for febrile illnesses; 27.3% reduction for severe febrile illnesses), fewer days of work lost (17.9% reduction for severe febrile illnesses; 28.4% reduction for febrile upper respiratory tract illnesses), and fewer days with health care provider visits (24.8% reduction for severe febrile illnesses; 40.9% reduction for febrile upper respiratory tract illnesses). Use of prescription antibiotics and over-the-counter medications was also reduced among vaccine recipients. Vaccine recipients were more likely to experience runny nose or sore throat during the first 7 days after vaccination. There were no serious adverse events attributed to receipt of either vaccine or placebo. The match between the vaccine type A (H3N2) strain and the predominant circulating virus strain (A/Sydney/05/97/[H3N2]) for the 1997–1998 season was poor, suggesting the LAIV vaccine provided substantial cross-protection against this variant influenza A virus strain.

## Conclusion

Intranasal trivalent LAIV vaccine was safe and effective in healthy, working adults in a year in which a drifted influenza A virus predominated.

## Commentary

Each year 10% to 20% of the U.S. population develops influenza due to influenza type A and B viruses [1], resulting in increased health care utilization and significantly reduced work productivity [2]. Yet national authorities recommend targeting only children and the elderly for routine annual vaccination [3]. This policy is based on studies that have shown routine vaccination to be cost-effective from the societal perspective in children and the elderly but not in healthy adults. Unfortunately, the authors of this study do not demonstrate whether the vaccine they assessed is cost-effective. An explicit cost-analysis of the vaccine based on the results obtained in this trial would be welcome.

*"Outcomes Research in Review" is edited by Chris L. Pashos, PhD, Executive Director of Pharmacoeconomics and Outcomes Research, Abt Associates Clinical Trials, Cambridge, MA, and Associate Editor, Health Policy,* Journal of Clinical Outcomes Management. *Dr. Pashos selects, summarizes, and provides the commentary on the studies that appear in this section.*