

Flu Shot May Not Prevent Pneumonia in Elderly

BY FRAN LOWRY
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Influenza vaccination was not associated with a significantly reduced risk of community-acquired pneumonia in people aged 65 and older, according to the results of a population-based study.

In the study of 1,173 cases and 2,346 controls, flu vaccine was associated with an 8% lower risk of community-acquired pneumonia among immunocompetent

seniors during influenza season.

The finding stands in contrast to a number of observational studies that suggest that vaccination substantially reduces the risk of hospital admission due to pneumonia in elderly adults. But these studies have not differentiated between healthy, mobile, immunocompetent seniors and frail seniors of advanced age or seniors with severe comorbidities or chronic health conditions, who are known to benefit from influenza vaccine. As a result,

these studies have overestimated how well the vaccine actually works in older individuals in general, the investigators wrote.

To challenge these observations, they conducted a nested case-control study of immunocompetent individuals aged 65-94 years who were enrolled in Group Health, a health maintenance organization in Seattle, during 2000, 2001, and 2002.

To ensure that they were removing any bias in their results, the researchers looked at both the preinfluenza and influenza pe-

riods of each year, reasoning that any benefit from the flu vaccine that was seen in the preinfluenza season could not be due to the protective effects of the vaccine.

They found that in the preinfluenza season, there was an apparent strong benefit of the vaccine, with a 40% reduction in the risk of pneumonia. But after controlling for the presence of frail and sick seniors, they found essentially no effect of influenza vaccine during preinfluenza periods, reported the researchers, led by Michael L. Jackson, Ph.D., of the Group Health Center for Health Studies, Seattle (*Lancet* 2008;372:398-405).

They then looked at the effect of the flu vaccine during influenza periods. Before they did so, they selected subjects who were immunocompetent and had no serious comorbidities, based on a careful scrutiny of the subjects' medical records.

The age- and sex-adjusted odds ratio for the association between influenza vaccination and risk of community-acquired pneumonia was 1.04, but after adjustment for the confounding factors that were identified in the preinfluenza periods, the influenza season odds ratio was 0.92.

In an interview, Dr. Jackson said that the findings are consistent with there being no link between flu vaccine and pneumonia risk in seniors. However, this does not mean that the elderly should forego their annual flu shot.

"Randomized trials, which are the gold standard for public health-related evidence, have found that influenza vaccine reduces the risk of influenza infection in young—that is, 75 years and younger—healthy seniors. So they should still get their flu shots," he said.

He added that more work needs to be done to understand how well the vaccine prevents serious complications of the flu, such as pneumonia, in older seniors and those with chronic health problems.

In an accompanying editorial, Dr. Edward A. Belongia of the Marshfield (Wis.) Clinic Research Foundation, and Dr. David K. Shay of the influenza division, Centers for Disease Control and Prevention, agreed with the need for additional studies about the causes of pneumonia in elderly adults, particularly in highly vaccinated populations (*Lancet* 2008;372:352-4).

Calling the study by Dr. Jackson and his colleagues "well designed," they added that standard methods of comparing the effectiveness of flu shots in different seasons and in different populations are also needed.

The commentators also suggested that future studies of vaccine effectiveness should include other flu-related acute illnesses besides pneumonia and use sensitive and specific diagnostic tests, such as the polymerase chain reaction, for influenza.

"More studies that use laboratory-confirmed outcomes and adjust for a broad range of confounding variables will provide valuable information about the effects of antigenic match and other factors that affect vaccine effectiveness," they wrote.

One of the authors of the study disclosed she is a paid consultant to Sanofi Pasteur and to Novartis, manufacturers of the influenza vaccine. The other authors declared they had no conflict of interest. ■



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