

Influenza vaccine prevented influenza infection in health care workers

Wilde JA, McMillan JA, Serwint J, et al. **Effectiveness of influenza vaccine in health care professionals. A randomized trial.** *JAMA.* 1999 Mar 10; 281:908-13.

Question

In young, healthy, health care workers (HCWs), does influenza vaccine reduce influenza infection, respiratory illness, and absenteeism?

Design

3-year randomised (concealed), double-blind, placebo-controlled trial.

Setting

2 hospitals in Baltimore, Maryland, USA.

Participants

264 health professionals (physicians, nurses, and respiratory therapists) who were < 50 years of age, in good health, and willing to report illness during the influenza epidemic period. Exclusion criteria were reaction to influenza vaccine or egg products, allergy to the control vaccines, pregnancy, or chronic disease that would place the person at high risk for complications from influenza infection. Some HCWs volunteered for > 1 winter, which made data available for 361 person-winters.

Commentary

The study by Wilde and colleagues presents important data for all HCWs and those concerned with disease transmission in health care settings. Beyond the primary outcomes, several additional findings emerge from this study: 1) HCWs in this study reported to work even when they were ill; 2) unvaccinated HCWs had a 14% risk for developing influenza (shown by serology) each year; and 3) influenza infection increased the risk for a febrile respiratory illness and for work absence each by 4-fold ($P < 0.001$ and $P = 0.006$, respectively). In turn, these observations have obvious implications for the health and well-being of the patients we serve, because immunisation of HCWs, at least in the long-term care setting, has been shown to protect patients from influenza (1).

The only methodological concern is the probable type 2 error in finding no statisti-

Intervention

In October and November 1992, HCWs were allocated to influenza vaccine, 0.5 mL as an intramuscular injection ($n = 52$), or meningococcal control vaccine ($n = 50$); in 1993 to influenza vaccine ($n = 51$) or pneumococcal control vaccine ($n = 52$); and in 1994 to influenza vaccine ($n = 78$) or saline placebo ($n = 78$).

Main outcome measures

Serologic evidence of influenza infection during influenza season, respiratory illness, and absenteeism.

Main results

Influenza vaccine was more effective than control vaccines in preventing influenza A ($P = 0.001$) and influenza B ($P = 0.02$) infection (Table). HCWs who received control vaccine and had serologic evidence of influenza infection ($n = 24$) had a greater rate of febrile respiratory illness ($P < 0.001$) and absence

from work ($P = 0.006$) than those without influenza infection. Of the 3 HCWs who received influenza vaccine and became infected, none reported febrile respiratory illness or work absence. Differences between the influenza and control vaccine groups, however, were not significant for days of febrile respiratory illness (relative reduction 29%, 95% CI -22 to 59, $P = 0.57$) or days of work absence (relative reduction 53%, CI -56 to 86, $P = 0.41$).

Conclusion

In young, healthy, health care professionals, influenza vaccine reduced influenza infection.

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Influenza vaccine vs control vaccines for influenza A and B infection in health care workers from 1992 to 1994*

Outcomes	Influenza vaccine	Control vaccines	RRR (95% CI)	NNT (CI)
Influenza A	1.1%	8.9%	88% (47 to 97)	13 (8 to 27)
Influenza B	0.6%	5.0%	89% (14 to 99)	23 (11 to 75)
Influenza A or B	1.7%	13.9%	88% (64 to 96)	9 (6 to 14)

*Abbreviations defined in Glossary; NNT and CI calculated from data in article.

cally significant differences between influenza and control vaccine groups in days of febrile respiratory illness (29% relative reduction) and days of work absence (53% relative reduction). However, larger studies of HCWs found clinically important and statistically significant decreases in illness, costs, and work absence associated with influenza vaccine receipt (2, 3).

The findings of this study beg the question "Why do health care workers fail to get vaccinated for influenza?" Surprisingly, fear of side effects or injections and misconceptions about the vaccine play the largest roles (4). The bottom line: It is time for hospitals, clinics, physician offices, and long-term care facilities to get serious about protecting patients at risk for illness and death caused by influenza by starting with immunisation of the HCWs who care for these patients (5).

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