

APIC position paper: Improving health care worker influenza immunization rates

2004 APIC Immunization Practices Working Group

Association for Professionals in Infection Control and Epidemiology

Georgia P. Dash, RN, MS, CIC, Chair, APIC Practice Guidance Team
Loretta Fauerbach, MS, CIC, Chair, APIC Communications Task Force
Jeanne Pfeiffer, RN, MPH, CIC
Barbara Soule, RN, MPA, CIC
Judene Bartley, MS, MPH, CIC
Bonnie M. Barnard, MPH, CIC
Tammy Lundstrom, MD, MPH
Mary Andrus, RN, BA, CIC

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Influenza is a serious infection that causes an average of 36,000 deaths and 114,000 hospitalizations in the U.S. each year.¹

Health care workers* are at high risk for acquiring influenza infection due to their exposure to ill patients, as well as their exposure in the community. Health care workers infected with influenza can spread the virus to patients in their care.²⁻⁴ In fact, research suggests health care workers can be a key source of institutional outbreaks, contributing to increased morbidity and mortality among vulnerable patients.¹

Health care workers encounter patients throughout the influenza season in a variety of settings, including medical practices, general hospitals, specialty hospitals, pediatric hospitals,^{5,6} long-term care facilities,⁷ emergency departments,⁸ ambulatory care settings, rehabilitation facilities and home-care sites.

*The term "health care worker" extends to all personnel who have contact with patients, both medical and non-medical, as all can transmit virus to patients.

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Vaccination is the primary means of reducing transmission and preventing influenza infection, yet immunization rates among health care workers remain low. Only 36 percent of workers who have direct contact with patients are immunized annually, despite long-standing recommendations issued by the Centers for Disease Control and Prevention and APIC as well as other national health care organizations.^{1,9,10}

Greater emphasis needs to be placed on improving influenza immunization rates among health care workers to help ensure patient safety and protection—especially for patients at increased risk of influenza-related complications.⁷ Immunization also provides personal protection for health care workers and minimizes workforce absenteeism during the influenza season.¹¹

Infection control professionals can play an integral role in improving health care worker influenza vaccination rates, thereby reducing institutional influenza outbreaks.

TRANSMISSION

Influenza is transmitted by direct and indirect contact and by droplet contact. There may be an airborne component to transmission as well. Therefore, the virus is easily spread from person to person via coughing, sneezing, and contact with contaminated items/surfaces. The virus can spread rapidly, especially in classrooms, households, offices and medical settings.

Individuals are generally infectious 1-4 days before symptom onset, however, only around 50% of infected persons will develop classical symptoms of influenza, making exclusion of infected health care workers difficult.^{1,12}

Moreover, individuals remain infectious five or more days after symptom onset. Studies show health care personnel are more likely than staff in other areas to work through, or return to work sooner, during illness, thus increasing the likelihood of transmitting the virus to patients.¹³

INSTITUTIONAL INFLUENZA OUTBREAKS

Institutional influenza outbreaks can have serious implications for both the patient and healthcare provider. These events can put patients at risk; result in or exacerbate existing staff shortages; curtail admissions; and increase health care costs.

An outbreak in a tertiary neonatal intensive care unit (NICU) in 2000 included 19 infants, one of whom died. Only 15 percent of staff in the facility had been immunized against influenza. Although investigators could not pinpoint the source of the outbreak, a health care worker was the suspected source, since influenza-like illness was not found in the mothers of these infants.¹⁴

A 2001 report documented an outbreak including four influenza cases among patients in a 12-bed, single-room transplant unit. Three of the four affected patients had no visitors between admission and influenza infection to account for the spread. Investigators concluded that health care workers were the likely source of transmission.¹⁵

A very large outbreak in the early 1990s occurred in a nursing home in New York. Nineteen percent of residents developed influenza; a total of 34 individuals developed pneumonia; 19 were hospitalized and two died. In this facility, only 10 percent of health care workers were immunized.¹⁶

While index cases are not always identifiable, health care workers can easily propagate an outbreak as they move from patient to patient. It is also clear that unvaccinated health care workers can be the index case for influenza in a facility, potentially posing a threat to high-risk patients and other workers.

ECONOMIC IMPACT OF OUTBREAKS

Influenza outbreaks are associated with substantial direct and indirect costs. An outbreak in an internal medicine ward of a French hospital in 1999, in which 41 percent of patients and 23 percent of staff were infected, resulted in 14 days of staff sick leave and suspension of all admissions to the ward, including eight that were previously scheduled. The total cost of

the outbreak in this small ward was estimated at \$34,000 (U.S. dollars).¹⁷

Amantadine resistance was documented in a small pediatric NICU outbreak. Oseltamivir, an expensive alternative therapy, was used to halt the outbreak instead. In a bone marrow transplant unit, Oseltamivir was also used in place of prophylactic amantadine during an outbreak because concomitant use of immuno-suppressant therapy and amantadine has been shown to increase the incidence of patient falls, which could have had dire consequences in these patients.¹⁸

Ensuring the health and safety of health care workers has additional implications for patient safety and health care cost containment. Hiring replacement workers often means assuming additional costs beyond those associated with salary. Studies show that using pool staff in place of experienced unit staff increases the incidence of medical errors. On occasions when staff members work a double shift, it has been shown that attention decreases after 12 hours of work.¹⁹

ROLE OF HEALTH CARE FACILITIES

Health care facilities have an important role to play in maximizing influenza vaccination rates in health care workers. Every facility should develop and implement comprehensive influenza vaccination programs for employees.^{8,9}

RECOMMENDATIONS

To facilitate health care worker influenza immunization, APIC recommends the following actions:

1. All health care facilities should prepare a written policy stressing the importance of influenza vaccination among health care workers. This policy should strongly recommend that health care workers receive annual influenza vaccination to prevent spread of the virus to vulnerable patients. Every organization, regardless of size or type, should demonstrate its commitment by creating and distributing the policy to all employees.
2. Influenza immunization programs should be designed and implemented annually to increase vaccination rates. These programs should be designed to:
 - Educate health care workers about the importance of influenza immunization in health care settings and the low risk of adverse events associated with immunization²⁰
 - Increase vaccine demand among health care workers;
 - Reduce barriers to health care worker immunization, by developing programs that increase

access to immunization and reduce cost of the vaccine²¹; and

- Facilitate the influenza vaccination process, such as through the use of standing orders issued by the Occupational Health Program for health care worker influenza vaccination.
3. Monitor annual immunization rates of employees and provide feedback through the infection control and patient safety programs.
 4. Monitor and track health care-associated influenza, in comparison to the health care worker immunization rates. Providing this information may stimulate health care workers to seek vaccination.
 5. Track community incidence of influenza with public health officials using data from emergency rooms, physician offices and clinics. As the incidence increases, infection control and hospital administration should work together to identify pending admissions of potential influenza cases and to establish parameters for visitor restrictions.

Specific interventions that facilities should consider include:

- Holding vaccine clinics in easily accessible locations and at varied times, so that clinics are convenient for workers on all shifts.
- Bringing vaccine to employees, wherever they might be, via a rolling cart. Areas to consider include cafeterias, employee entrances, medical records department, medical wards, grand rounds, etc.
- Educating employees, by a variety of channels (e.g., employee newsletters, e-mails, posters), about the need to be vaccinated, and dispelling myths (e.g., inactivated influenza vaccine can cause the flu). Employees should be educated about prevention of transmission, as well as benefits of vaccination.
- Removing all costs associated with vaccination. As a patient safety measure, institutions should provide employees with influenza vaccination just as it does other infection control interventions, such as personal protective equipment and hand hygiene products (e.g., soap or alcohol hand rubs, etc.)
- Conducting a public health campaign with media coverage.
- Adding influenza immunizations to the standard curricula in teaching institutions. Immunizations should be available to students at the academic institutions and paid for through student fees.
- Implementing additional mechanisms as necessary to facilitate the administration of vaccinations to health care workers in all settings.

References

1. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practice (ACIP). *MMWR Morbid Mortal Wkly Rep* 2003;52(RR-8):1-36.
2. Horcajada JP, Pumarola T, Martinez JA, et al. A nosocomial outbreak of influenza during a period without influenza epidemic activity. *Eur Respir J* 2003;21(2):303-7.
3. Salgado CD, Farr BM, Hall KK, Hayden FG. Influenza in the acute hospital setting. *Lancet* 2002;2(3):145-55.
4. Harrison J, Abbott P. Vaccination against influenza: UK health care workers not on-message. *Occup Med* 2002;52(5):277-9.
5. Slinger R, Dennis P. Nosocomial influenza at a Canadian pediatric hospital from 1995 to 1999: opportunities for prevention. *Infect Control Hosp Epidemiol* 2002;23(10):627-9.
6. Goldman DA. Epidemiology and prevention of pediatric viral respiratory infections in health-care institutions. *Emerg Infect Dis*. [serial online] 2001 Mar Apr [cited 2004 Feb 25];7(2):249-53. Available from: <http://www.cdc.gov/ncidod/eid/vol7no2/goldmann.htm>.
7. Carman WF, Elder AG, Wallace LA, et al. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomized controlled trial. *Lancet* 2000; 355(9198):93-7.
8. Silka PA, Geiderman JM, Goldberg JB, Kim LP. Demand on ED resources during periods of widespread influenza activity. *Am J Emerg Med* 2003;21(7):534-9.
9. 1998 APIC Guidelines Committee. APIC position paper: immunization. *Am J Infect Control* 1999;27:52-3.
10. Bolyard EA, Tablan OC, Williams WW, Pearson ML, Shapiro CN, Deitchman SD, The Hospital Infection Control Practices Advisory Committee. Guideline for infection control in health care personnel, 1998. *Am J Infect Control* 1998;1998(26):289-354.
11. Saxen H, Virtanen M. Randomized, placebo-controlled double blind study on the efficacy of influenza immunization on absenteeism of health care workers. *Pediatr Infect Dis J* 1999;18(9):779-83.
12. CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 7th edition. January 2002.
13. Weingarten S, Riedinger M, Bolton LB, Miles P, Ault M. Barriers to influenza vaccination acceptance. A survey of physicians and nurses. *Am J Infect Control* 1989;17:202-7.
14. Cunney RJ, Bialachowski A, Thornley D, Smaill FM, Pennie RA. An outbreak of influenza A in a neonatal intensive care unit. *Infect Control Hosp Epidemiol* 2000;21(7):449-51.
15. Malavaud S, Malavaud B, Sanders K, et al. Nosocomial outbreak of influenza virus A (H3N2) infection in a solid organ transplant department. *Transplantation* 2001;72(3):535-7.
16. CDC. Outbreak of influenza A in a nursing home—New York, Dec. 1991-Jan. 1992. *MMWR Morb Mortal Wkly Rep* 1992;Feb 4(18): 129-31.
17. Sartor C, Zandotti C, Romain F, et al. Disruption of services in an internal medicine unit due to a nosocomial influenza outbreak. *Infect Control Hosp Epidemiol* 2002;23(10):615-9.
18. Munoz FM, Campbell JR, Atmar RL, et al. Influenza A virus outbreak in a neonatal intensive care unit. *Pediatr Infect Dis J* 1999;18(9):811-5.
19. Lundstrom T, Pugliese G, Bartley J, Cox J, Guither C. Organizational and environmental factors that affect worker health and safety and patient outcomes. *Am J Infect Control* 2002;30:93-106.
20. Martinello RA, Jones L, Topal JE. Correlation between healthcare workers' knowledge of influenza vaccine and vaccine receipt. *Infect Control Hosp Epidemiol* 2003;24(11):845-7.
21. Adal KA, Flowers RH, Anglim AM, et al. Prevention of nosocomial influenza. *Infect Control Hosp Epidemiol* 1996;17(10):641-8.

For additional information about influenza, please go to: www.cdc.gov/flu/