



Seasonal Influenza Prevention in Health Care Workers

Background

Influenza, influenza-like illness (ILI) and pneumonia cause significant morbidity and mortality. Influenza contributes to approximately 36,000 deaths annually in the United States,¹ with mortality increasing over the last two decades as the population ages and with antigenic drifts in the influenza virus. Influenza continues to be a major cause of death and disease, readily spread by respiratory droplets both in the community and in the health care environment. Health care workers (HCWs) are at risk of infection from exposure to their patients, and patients are potentially at risk of contracting the disease when exposed to infected workers.

Over the last several years, health care worker influenza vaccination has been the focus of much discussion, debate and study. At the heart of the debate is the extent to which the health care worker should be compelled to accept vaccination each year, making an emphasis on vaccine not only as protection for the worker, but also as a tool in the fight against nosocomial infections. Influenza vaccination of HCWs has been cast prominently as a patient safety issue, and debate has centered largely on whether to mandate vaccine, whether to require those who refuse vaccine to sign a declination statement, whether and how to enforce such requirements, and whether such requirements are effective and worth the expenditure of resources they require.²⁻⁶

As the nation's largest medical society dedicated to promoting the health of workers, the American College of Occupational and Environmental Medicine (ACOEM) supports comprehensive influenza programs that protect health care workers and their patients. Comprehensive influenza prevention programs include immunization, education, and adherence to good infection control practices at the bedside. These three elements form the legs of a "three-legged stool" upon which the health of both worker and patient are balanced.

Influenza Vaccination

Influenza immunization should be encouraged for all HCWs to protect them against influenza, reduce sick time, and provide an available workforce during flu season. Studies of HCW vaccination suggest that these benefits are most significant in years when the vaccine is well-matched to circulating strains.^{7,8,9} While vaccination of HCWs as a strategy to reduce morbidity and mortality among patients is the underpinning of recent calls for mandatory vaccination, the magnitude of benefit attributable to this intervention has varied from study to study.¹⁰⁻¹³ Health care workers practice in a variety of settings, and it is rational to encourage vaccination most strongly in the highest risk settings. In acute care hospitals, nosocomial influenza outbreaks have impacted primarily neonatal intensive care, myelosuppression, and geriatric units.

Studies have identified factors associated with higher vaccination rates. Employee vaccine programs are most successful when vaccine is provided free of charge and during weekend/night shifts, when adequate staff and resources are allocated to the campaign, when influenza education is provided, when vaccine is provided at locations and times that are convenient to the worker, when upper level management is visibly supportive of the vaccination program, and when the program's outcomes are reported to the institution's leadership.^{14,15,27} Using positive and innovative approaches such as mobile carts, vaccine days, peer vaccination programs, gift incentives and standing orders, HCW vaccination rates as high as 80% have been achieved.²¹⁻²⁵

Incentives to increase institutional vaccination rates are a positive and effective means of accomplishing vaccination goals. At one large multi-hospital system, the establishment of specific vaccination targets as part of senior leader's performance metrics met with great success. The same study found that yearlong educational activities and reminders of risk were associated with better vaccination rates.²⁶ Tying global employee bonuses to the institution's overall immunization rate, or giving individual incentives for obtaining the vaccine are other possible methods of increasing vaccination rates.

Health care worker immunization rates are a readily available metric, and higher immunization rates among HCWs and patients are to be desired. Current HCW immunization rates are 40 to 56% with wide variability among institutions.^{16, 27} However, health care worker immunization is not a panacea, even for the narrow goal of preventing transmission of respiratory infection from HCW to patient. Influenza vaccine is effective only against the estimated 13.3% of ILI actually caused by influenza virus.¹⁷ Annual trivalent vaccine is variably effective against influenza, depending upon the match between the circulating and vaccine strains, with estimated effectiveness of 70 to 90% against influenza when there is a "good match." In the 2007-08 season, its effectiveness was estimated at 44%.¹⁸ Due to annual variability, education and enforcement of infection control practices cannot be neglected even among vaccinated workers.

Compounding the problem of variable effectiveness, vaccine availability varies from year to year, and it is incumbent upon health care facilities to procure adequate supplies of vaccine. Continued national attention to ensuring adequate production capacity is needed, as is continued investment in the development of a universal vaccine, which could not only obviate the need for annual vaccination, but also provide protection against antigenic shifts and resultant pandemics.

Even with plentiful vaccine well matched to the circulating strains, and accepted by most health care workers, ILI will continue to be a major cause of morbidity and mortality among vulnerable patients. Thus continued attention must be devoted to infection control practices

and education.

Education

Just as all human blood and body fluids are assumed to be infectious, and thus require standard precautions, CDC recommendations for handwashing, respiratory hygiene and cough etiquette must be employed regardless of immunization status to reduce disease transmissions in health care settings. Good infection control practices can prevent the spread of influenza and other viruses capable of causing influenza-like illness, and vaccinated health care workers must not assume that these simple precautions become irrelevant when they receive an influenza vaccine. Education must stress the paramount importance of good infection control practices at all times.

Education on prevention of respiratory virus transmission must be available in a variety of formats for different learning styles, i.e., a choice of live sessions or on-line training. Sessions must be at convenient times and locations, and in a language the worker understands. Educational sessions may be separate from, or combined with, the vaccine program.

Completion of required education must be monitored and enforced by the health care facility. It is not adequate to provide opportunities for health care workers to be educated, and it is not sufficient to monitor and report vaccination rates only, although certainly vaccination rates should be monitored and reported. Compliance with education should be tracked alongside vaccination rates.

Declination Statements

The use of declination statements to document vaccine refusal has had mixed results, ranging from improved vaccination rates to no effect to perceptions of coercion by employees.^{14,15,19,20,27} Analysis of vaccination rates at VA hospitals recently demonstrated that after controlling for other interventions, declinations had no effect on vaccine rates.²⁶ It appears that in institutions with low vaccination rates and perhaps poorly resourced vaccination programs, the implementation of a declination statement may have spurred the allocation of more resources to education and vaccination. The mission of health care worker influenza prevention programs is to educate and vaccinate the employees, and resources are best deployed to accomplish that mission. Where declination statements serve to facilitate the mission, they may be useful; however, where they distract attention from the mission, they are a poor use of resources.

Some institutions have coupled the declination statement with a survey to capture the reasons for vaccine refusal, again with mixed results. While actively soliciting the input of employees who do not accept the flu vaccine is vital, such feedback should be as candid as possible to elicit honest feedback about personal beliefs and concerns. Health care facilities must be sensitive to the power relationship between employer and employee, and should employ innovative methods designed to elicit candid responses.

Program Evaluation and Recommendations

ACOEM believes that occupational influenza prevention programs should be evaluated using meaningful criteria designed to encourage positive, effective programs that prevent transmission of influenza as well as other viruses causing influenza-like illness. Robust programs provide optimum protection to workers and patients despite inevitable fluctuations in vaccine effectiveness and availability.

ACOEM supports the following program elements as indicators of a robust occupational influenza prevention program:

- Staff education emphasizes the importance of hand washing and respiratory etiquette, signs and symptoms of flu and ILI, how respiratory viruses are transmitted, the safety and benefits of influenza vaccine, and how to obtain vaccine at the institution. All HCW receive education regardless of vaccination status.
- Staff education is provided in a language the worker understands.
- Staff education is provided at convenient times and locations and in a variety of formats.
- Staff education is enforced, and compliance rates are reported to senior leadership.
- Influenza vaccination is provided at no charge to the employee, at convenient times and locations during all shifts.
- Influenza vaccination is well publicized in a variety of formats and media.
- Influenza vaccination rates are monitored and reported to senior leadership.
- The institution uses innovative and non-punitive means of actively soliciting candid feedback from employees who decline vaccination.
- Employee feedback is used to make meaningful adjustments to the program.
- Infection control practices including hand washing and respiratory etiquette are monitored and enforced as crucial elements of job performance.
- Leadership establishes institutional goals for both influenza education and vaccination rates, and employs appropriate incentives to accomplish both goals.
- Leadership establishes institutional goals for vaccination of patients at highest risk for influenza, monitors patient vaccination rates, and employs appropriate incentives to accomplish this goal.
- Nosocomial influenza infections are tracked alongside other quality metrics.

Summary

Health care facilities must employ a comprehensive approach to reduce the risk of influenza transmission in the workplace, encompassing education, vaccination, and infection control practices. Education and adherence to infection control practices should be mandatory. Immunization is safe but variably effective and is not a panacea for respiratory virus transmission in the health care setting. Immunization against influenza should be strongly encouraged and employers should provide vaccine at no charge to the worker. Current evidence regarding the benefit of influenza vaccination in HCW as a tool to protect patients is inadequate to override the worker's autonomy to refuse vaccination. Declination statements should only be implemented if they do not divert resources from vaccination and education or create an adversarial atmosphere in the workplace. Health care facilities should measure and track vaccination rates among workers and patients, staff education completion rates and influenza transmission rates.

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References

1. Thompson WW, Shay DK, Weintraub E, et al. Mortality associated with influenza and respiratory syncytial virus in the United States. *JAMA*. 2003;289:179-86.
2. Talbot TR, Bradley SE, Cosgrove SE, Fuef C, Siegel JD, Weber DJ. Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. *Infect Control Hosp Epidemiol*. 2005;26:882-90.
3. American College of Physicians. American College of Physicians Recommends Flu Vaccination for Health Care Workers. 2007. www.acponline.org/pressroom/hcw.htm.
4. Olsen D. Should RNs be forced to get the flu vaccine? *Amer J Nursing*. 2006;106:76-9.
5. JCAHO. Joint Commission establishes infection control standard to address influenza vaccines for staff. June 13, 2006, Press release.
6. Lugo, NR. Will carrots or sticks raise influenza immunization rates of health care personnel? *Amer J Infection Control*. 2007;35:1-4.
7. Weingarten S, Staniloff H, Ault M, Miles P, Bamberger M, Meyer RD. Do hospital employees benefit from the influenza vaccine? A placebo-controlled clinical trial. *J Gen Intern Med*. 1988;3:32-7.
8. Wilde JA, McMillan JA, Serwint J, Butta J, O'Riordan MA, Steinhoff MC. Effectiveness of influenza vaccine in health care professionals. *JAMA*. 1999;281:908-13.
9. Burls A, Jordan R, Barton P, et al. Vaccinating healthcare workers against influenza to protect the vulnerable – is it a good use of healthcare resources? *Vaccine*. 2006;24:4212-21.
10. Potter J, Stott DJ, Robers MA, et al. Influenza vaccination of healthcare workers in long-term-care hospitals reduces the mortality of elderly patients. *J Infect Dis*. 1997;175:1-6.
11. 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 randomised controlled trial. *Lancet*. 2000;355:93-7.
12. Salgado CD, Giannetta ET, Hayden FG, Farr BM. Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. *Infect Control Hosp Epidemiol*. 2004;25:923-8.
13. Hayward AC, Harling R, Wetten S, et al. Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health service use among residents: cluster randomised controlled trial. *BMJ*. 2006;333:1241.
14. Polgreen PM, Chen Y, Beekmann S, et al. Elements of influenza vaccination programs that predict higher vaccination rates: results of an emerging infections network survey. *Clin Infect Dis*. 2008;46:14-9.
15. Borlaug G, Newman A, Pfister J, Davis JP. Factors that influenced rates of influenza vaccination among employees of Wisconsin acute care hospitals and nursing homes during the 2005-2006 influenza season. *Infect Control Hosp Epidemiol*. 2007;28:1398-400.
16. Influenza vaccination of health-care personnel. *MMWR*. 2008;55:1-16.
17. Thompson WW, Shay DK, Weintraub E, et al. Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP). Influenza-associated hospitalizations in the United States. *JAMA*. 2004;292:1333-40.
18. Centers for Disease Control and Prevention. Interim within-season estimate of the effectiveness of trivalent inactivated influenza vaccine. *MMWR*. 2008;57:393-8.
19. Polgreen PM, Septimus EJ, Parry MF, et al. Relationship of influenza vaccination declination statements and influenza vaccination rates for healthcare workers in 22 US hospitals. *Infect Control Hosp Epidemiol*. 2008;29:675-7.
20. Buchta WG. Effectiveness of declination statements in influenza vaccination programs for healthcare workers. Oral presentation at International Conference on Occupational Health for Health Care Workers, Vancouver BC, October 27, 2007.
21. Hospitals take their best shot at the flu: 'best practices' share winning strategies. *Hosp Empl Health*. 2008, 27(9); 99-101
22. Interventions to increase influenza vaccination of health-care workers – California and Minnesota. *MMWR*. March 4, 2005;54(08);196-9.
23. Bryant KA, Stover B, Cain L, Levine GL, Siegel J, Jarvis WR. Improving influenza immunization rates among healthcare workers caring for high-risk pediatric patients. *Infect Control Hosp Epidemiol*. 2004;25:912-7.
24. Stone EG, Morton SC, Hulscher ME, et al. Interventions that increase use of adult immunization and cancer screening services: a meta-analysis. *Ann Intern Med*. 2002;136:641-51.
25. Briss PA, Rodewald LE, Hinman AR, et al. Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults. The Task Force on Community Preventive Services. *Am J Prev Med*. 2000;18(Suppl 1):97-140.
26. Hirsch, P and Hodgson, MJ, Veteran's Health Administration, unpublished data 2006-2008.
27. University Health System Consortium. Healthcare Worker Influenza Vaccination 2008 Benchmarking Project. Knowledge Transfer Webcast, Sept 30, 2008.

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