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Employers' Views on Influenza and Tetanus-Diphtheria-Pertussis Vaccination in the Workplace

To the Editor:

The Centers for Disease Control and Prevention (CDC) recommends influenza vaccination for all those over 6 months of age, but recent adult vaccination rates are only about 40%.^{1,2} Likewise, although the CDC recommends vaccination with the tetanus, diphtheria, and pertussis (Tdap) vaccine for all adults,³⁻⁵ about 8.0% had ever received it 2010,⁶ with only modest increases reported through 2013.⁶

Low adult vaccination rates for influenza and Tdap are missed opportunities to prevent disease, contain health care costs, and maintain employee productivity. For those 18 to 64 years of age, annual influenza-related health care costs are estimated at \$4.6 billion⁷ and an estimated 16.8 million days of productivity are lost annually.⁷ Pertussis incidence is on the rise, with 10.4 cases per 100,000 in 2014.⁸ Between 65% and 78% of adults with pertussis miss work,⁵ missing 9.8 days on average.⁹

One approach to addressing the problem of low adult vaccination rates is to increase workplace-based vaccination.¹⁰ Workplaces are an established vaccination site for working-age adults, second to doctors' offices as the most common site for vaccination.¹¹ Increased vaccination rates can benefit employers by decreasing absenteeism and reducing employee medical expenses. In addition, workplace

programs have extensive reach to a broad range of socioeconomic and racial and ethnic groups.

Worksite interventions that include free influenza vaccination and active promotion are known to increase vaccination rates among workers.¹⁰ These interventions are intended to reduce physical and financial access barriers to vaccination. Active promotion includes announcing vaccine availability using various communication methods and strategies to provide information and address attitudes.¹⁰ However, the extent of employers' implementation of these practices is not known.

We interviewed key informants representing large employers (>500 employees) headquartered in the United States and conducted a qualitative analysis of the interview data. Key informants were human resources directors or staff, occupational health nurses, or other employees who handled vaccinations or benefits administration.

Anticipating that a maximum of 60 interviews would be required to reach data saturation, we obtained a random sample of 60 employer contacts from a survey research company (Survey Sampling International, Encino, CA). We used quota sampling to ensure that the final sample was comparable with the random sample with respect to region, industry, and size. Saturation was reached when 25 interviews were complete, yielding our final sample. Ten employers we contacted were ineligible and three refused. The remaining 22 employers were not interviewed because saturation had been reached and region, industry, and size quotas had been satisfied. The final sample size was adequate to capture most of the diversity of employers' views but was not intended to generate prevalence estimates of views or practices.

We developed an interview guide composed of short-answer and open-ended questions about influenza and Tdap vaccination practices. Topics included the vaccinations offered, the reasons for offering them, and the process of providing them (cost, employee eligibility, challenges, and planned changes). Development of the interview guide was informed by previous findings and recommendations from the Community Guide.¹⁰

The interviews were completed during the fall of 2010 and early winter of 2011. Interview duration was approximately 10 to 15 minutes. ATLAS.ti software was used for coding (ATLAS.ti

Software Development, Berlin, Germany). We used a content analysis approach. Two team members coded the data. Inter-coder reliability was assessed qualitatively through discussion and review. The coders jointly coded interviews initially until a high degree of reliability was established. The University of Washington Institutional Review Board granted the study exempt status.

Employers offered influenza vaccination either to keep employees healthy or to provide employees with a benefit. Health-related goals were avoiding absenteeism and maintaining a productive workforce. Employers offering vaccination as a benefit described providing it as part of a wellness program, to please employees, and to aid in retention.

All employers made influenza vaccination available to employees at the workplace. The majority provided it free of cost. Among those not offering it for free, payment arrangements included offering vaccinations for free only to employees with certain insurance plans or charging a copayment for all employees.

Employers frequently described providing influenza vaccination as a routine process and rarely described approaches to increasing vaccination rates beyond making vaccinations free. Their primary interest was in making vaccination available to employees, rather than in maximizing vaccination levels among their employees. Employers seemed satisfied with their current vaccination programs and rarely mentioned planned changes. Only a few identified problems with their vaccination programs, such as poor turnout, or mentioned use of active promotion strategies.

Employers did not recognize the importance of offering Tdap vaccination to protect their workforce from pertussis. Tdap vaccination was rarely offered to employees and was almost never offered for free. Only four employers offered it and only one of those offered it for free. Employers that offered Tdap were motivated by the need to address occupational tetanus risk, rather than pertussis risk. Accordingly, they usually offered the vaccination only to those employees whose jobs placed them at risk of tetanus, rather than to their entire employee population, and some employers offered Td (tetanus-diphtheria) vaccination, which does not contain the pertussis vaccine, rather than Tdap. Finally, of the employers not offering Tdap, none were planning to do so in the

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future. Several had considered offering it, but felt that employee demand would be inadequate.

We found that employers are positioned very differently with regard to influenza and Tdap vaccinations. Interventions intended to raise workplace vaccination rates for influenza should help employers understand the increased health and productivity benefits of high vaccination rates, identify barriers to increasing rates, and implement promotion practices that will increase rates. Because employers were unaware of pertussis as a threat to the health and productivity of their employees or that of the larger population, interventions may need to be developed to encourage employers to offer and promote Tdap vaccination in the workplace. These interventions should focus on making the business case for offering free workplace Tdap vaccination and integrating free Tdap vaccination into existing workplace vaccination programs.

Although our data are not necessarily representative of all large employers and it was outside our scope to provide quantitative estimates of the prevalence of employers' views or practices, our qualitative analysis allowed us to capture the range of their opinions. Large workplaces, like those in our sample, are positioned to make a major contribution to addressing low adult vaccination rates for influenza and could help raise Tdap vaccination rates in the future. However, we found evidence that vaccination programs need further development if employers are to fulfill this potential. Specifically, employers should consider adding Tdap to their vaccination programs and use simple, evidence-based approaches to maximize vaccination rates among their employees. These approaches may include using a

range of communication methods to announce vaccination availability, providing information about vaccination, and addressing negative employee attitudes about vaccination.¹⁰

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REFERENCES

- McIntyre A, Gonzalez-Feliciano A, Santibanez T, et al. "Flu Vaccination Coverage, United States, 2011–12 Influenza Season." Centers for Disease Control and Prevention. Available at: http://www.cdc.gov/flu/professionals/vaccination/coverage_1112estimates.htm#data. Accessed September 17, 2015.
- Centers for Disease Control and Prevention. Flu Vaccination Coverage, United States, 2014–2015 Influenza Season. Available at: <http://www.cdc.gov/flu/fluview/coverage-1415estimates.htm>. Accessed September 17, 2015.
- Centers for Disease Control and Prevention. Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine from the advisory committee on immunization practices, 2010. *MMWR Morb Mortal Wkly Rep.* 2011;60:13–15.
- Kretsinger K. Centers for Disease Control and Prevention. Preventing tetanus, diphtheria, and pertussis among adults: use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine. Recommendations of the advisory committee on immunization practices (ACIP) and recommendation of ACIP, supported by the healthcare infection control practices advisory committee (HICPAC), for use of Tdap among health-care personnel. *MMWR Morb Mortal Wkly Rep.* 2006;55(RR17):1–33.
- Centers for Disease Control and Prevention. Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine in adults aged 65 years and older- advisory committee on immunization practices (ACIP), 2012. *MMWR Morb Mortal Wkly Rep.* 2012;61:468–470.
- Williams W, Peng-Jun L, O'Halloran A, et al. Vaccination coverage among adults, excluding influenza vaccination- United States, 2013. *MMWR Morb Mortal Wkly Rep.* 2015;64:95–102.
- Molinari NA, Ortega-Sanchez IR, Messonnier ML, et al. The annual impact of seasonal influenza in the US: measuring disease burdens and costs. *Vaccine.* 2007;25:5086–5096.
- CDC. Notice to readers: final 2014 reports of nationally notifiable infectious diseases. *MMWR Morb Mortal Wkly Rep.* 2015;64:1019–1033.
- Lee GM, Lett S, Schauer S, et al. for the Massachusetts Pertussis Study Group. Societal costs and morbidity of pertussis in adolescents and adults. *Clin Infect Dis.* 2004;39:1572–1580.
- Guide to Community Preventive Services. Worksite Health Promotion. Available at: <http://www.thecommunityguide.org/worksite/index.html>. Accessed December 2, 2014.
- Centers for Disease Control and Prevention (CDC). Place of influenza vaccination among adults — United States, 2010–2011 vaccination season. *MMWR Morb Mortal Wkly Rep.* 2011;60:781–785.