



Major article

Understanding health care personnel's attitudes toward mandatory influenza vaccination



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Background: This study investigated the factors influencing influenza vaccination rates among health care personnel (HCP) and explored HCP's attitudes toward a policy of mandatory vaccination.

Methods: In September 2012, a 33-item Web-based questionnaire was administered to 3,054 HCP employed at a tertiary care hospital in metropolitan Detroit.

Results: There was a significant increase in the rate of influenza vaccination, from 80% in the 2010–2011 influenza season (before the mandated influenza vaccine) to 93% in 2011–2012 (after the mandate) ($P < .0001$). Logistic regression showed that HCP with a history of previous influenza vaccination were 7 times more likely than their peers without this history to receive the vaccine in 2011–2012. A pro-mandate attitude toward influenza vaccination was a significant predictor of receiving the vaccine after adjusting for demographics, history of previous vaccination, awareness of the hospital's mandatory vaccination policy, and patient contact while providing care ($P = .01$).

Conclusions: The increased rate of influenza vaccination among HCP was driven by both an awareness of the mandatory policy and a pro-mandate attitude toward vaccination. The findings of this study call for better education of HCP on the influenza vaccine along with enforcement of a mandatory vaccination policy.

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Influenza vaccination is associated with reduced influenza-related morbidity and mortality in health care personnel (HCP).^{1–4} More importantly, vaccinating HCP against influenza reduces the risk of the related disease and subsequent mortality among patients in health care facilities.^{5,6} A review of the literature identified 2 critical factors contributing to HCP's adherence to influenza vaccination: HCP's recognition of their role in transmitting the influenza virus to patients, and HCP's knowledge of the benefits and risks of influenza vaccination.⁷

The US Advisory Committee on Immunization Practices first endorsed influenza vaccination for all HCP in 1984.^{8,9} Since then, advocacy for influenza vaccination of HCP has grown with increased

recognition of the ethical and practical justification for the vaccine. In attempts to improve the nationwide rate of influenza vaccination, professional societies and public health authorities have implemented educational programs, used incentives, encouraged greater leadership support, and provided free and easily accessible vaccine for all HCP.^{10–14} Despite these herculean efforts, however, the rate of influenza vaccination among HCP remains low (44%–60%).^{14–17} In the United States, mandatory influenza vaccination of HCP was first instituted at Seattle's Virginia Mason Medical Center in 2004.¹⁸ In 2005, Bronson Methodist Hospital in Kalamazoo became the first hospital in Michigan to implement a mandatory influenza vaccination program for its HCP.¹⁹

In the 2009–2010 influenza season, the influenza vaccination coverage rate among HCP at our institution was 45.4%. During the next season (2010–2011), the institutional vaccination policy was not strictly mandatory; however, all unvaccinated employees were required to wear masks when within 6 feet of all patient contacts. Influenza vaccination for all HCP became mandatory in

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the 2011-2012 season. The present study was conducted to investigate the factors influencing vaccination among HCP, and to explore their attitudes toward the mandatory vaccination policy.

METHODS

Study context and design

In September 2012, a cross-sectional survey research study was conducted at an urban tertiary care hospital in the metropolitan Detroit area to assess the impact of implementation of a mandatory HCP influenza vaccination policy. The Institutional Review Board of Wayne State University approved the study protocol.

The mandatory vaccination policy adopted in 2011-2012 specified that all HCP be vaccinated against influenza each year when the vaccine becomes available and no later than the annual deadline established by the hospital's Vaccination Planning Committee. Vaccination is a condition of employment for all HCP, including contracted, clinical, and nonclinical personnel. HCP who fail to obtain the vaccine receive a written warning with a suspension of at least 3 days, and are expected to be compliant by the end of the suspension period. HCP who fail to comply with the policy by the end of the suspension are immediately terminated. Exemptions for medical, religious, or other reasons are reviewed and validated by the hospital Occupational Health Services (OHS). HCP who are deemed exempt or are not vaccinated are required to wear a mask whenever within 6 feet of patients during influenza season or are reassigned from high-risk units, such as intensive care units or protective environment patient care areas, to low-risk units. The OHS and HCP's direct supervisors or managers are responsible for ensuring compliance with this policy.

The new mandatory vaccination policy was communicated to all HCP through their managers, the hospital's Web site, and e-mail. For this study, a 33-item Web-based questionnaire was delivered by e-mail to all HCP after they were informed about the policy with educational materials about the vaccine and before any reports by the OHS regarding failure of compliance. Responses to the survey, including vaccination refusal, were obtained from all HCP irrespective of whether they were later deemed exempt or were suspended or terminated. At 1 week after the survey was transmitted, a follow-up e-mail reminder was sent to those who had not yet responded.

The questionnaire elicited data on the following: respondent's demographic information, job title, and duration and location of employment at the hospital (part 1); availability and cost of influenza vaccine at the work site, vaccination status, and vaccine-related side effects in the 2011-2012 and 2010-2011 influenza seasons (part 2); and reasons for acceptance or refusal of vaccination, knowledge of the hospital's mandatory vaccination policy, and attitudes toward mandatory vaccination (part 3). Four statements were used to evaluate HCP's attitudes toward the mandated vaccination: (1) "It is the ethical responsibility of all HCP to take the flu shot"; (2) "It is unethical for HCP to not be vaccinated against flu, as they can endanger the lives of their very sick patients by unintentionally transmitting the influenza virus"; (3) "It is unethical to mandate all HCP to take the flu shot"; and (4) "The flu shot should be mandated next year." The degree of agreement with each statement was rated on a 5-point Likert scale (1, strongly disagree; 2, disagree; 3, neutral; 4, agree; and 5, strongly agree), except for the third statement, which was reverse-coded.

Data analysis

The χ^2 test was used to compare the rates of influenza vaccination in 2010-2011 and 2011-2012, and to compare HCP's attitudes

regarding the vaccination mandate. HCP who strongly agreed or agreed with any of the 4 attitudinal statements were coded as "pro-mandate" (ie, advocating mandatory influenza vaccination), whereas those who strongly disagreed, disagreed, or were neutral to all of the statements were considered "anti-mandate." Bivariate logistic regression was performed to examine the differences between vaccinated and nonvaccinated HCP in terms of socio-demographic variables, history of vaccination, accessibility to the vaccine, direct patient contact, knowledge of the hospital's vaccination mandate, and attitudes toward mandatory vaccination. Multivariate logistic regression, using backward selection of variables, was performed to identify the independent predictors of vaccination among HCP. Factors found to be statistically significant ($P < .05$) predictors of HCP vaccination in the bivariate analysis were included in the final model. Data were analyzed using SPSS version 21 (IBM, Armonk, NY).

RESULTS

Sociodemographic data

The survey was completed by 3,054 HCP, for a response rate of 32%. The majority of respondents were aged 36-65 years (75%), non-Hispanic white (66%), female (86%), working as a nurse (33%), and at the current job for >10 years (51%).

Vaccination coverage and reasons for vaccination refusal

The vaccination coverage rate increased significantly from 80% before institution of the mandatory vaccination policy in 2010-2011 to 93% after the institution of the policy in 2011-2012 ($P < .0001$). The rate of influenza vaccination refusal among HCP was 4.8% in 2011-2012. The top 3 reasons cited for vaccination refusal were concerns about potential side effects (63.5%), medical conditions (33%), and religious concerns (17%) (Fig 1). The proportion of respondents citing concerns about side effects as a reason for vaccination refusal was higher in African American HCP compared with non-Hispanic white HCP ($P < .0001$) and in HCP with an associate degree or lower educational level compared with those with a bachelors degree or higher ($P = .004$).

Predictors of vaccination

There were no reported differences between vaccinated and unvaccinated HCP in terms of age, health-care profession, duration of work, presence of a chronic disease, and access to free vaccine. Male, non-Hispanic white, and HCP with higher educational levels were more likely to receive the vaccine (Table 1). HCP who were vaccinated in 2010-2011 were almost 12 times more likely to be vaccinated in 2011-2012 ($P < .0001$). A pro-mandate attitude was reported by 79% of HCP who received the vaccine, compared with 56% of unvaccinated HCP ($P < .0001$). HCP who learned about vaccination risks and benefits through their institution's milieu, such as information from coworkers or the hospital's Web site, were more likely to get the vaccine compared with HCP who relied on information from their primary care physicians or media sources (Table 1). Other factors positively associated with receipt of vaccination included previous history of influenza-related side effects ($P < .0001$), providing direct patient care ($P < .0001$), working in the pediatrics department ($P = .043$), and knowledge of the hospital's mandatory vaccination policy ($P = .002$) (Table 1). HCP who strongly agreed/agreed with any of the 4 attitudinal statements were more likely to receive the influenza vaccine compared with those who disagreed or were neutral (Table 2).

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