



Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Clinical Case Study

Impact of the flu mask regulation on health care personnel influenza vaccine acceptance rates

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Key Words:

Influenza vaccine
health care personnel
vaccine acceptance rates

Achieving high vaccination rates of health care personnel (HCP) is critical in preventing influenza transmission from HCP to patients and from patients to HCP; however, acceptance rates remain low. In 2013, New York State adopted the flu mask regulation, requiring unvaccinated HCP to wear a mask when in areas where patients are present. The purpose of this study assessed the impact of the flu mask regulation on the HCP influenza vaccination rate. A 13-question survey was distributed electronically and manually to the HCP to examine their knowledge of influenza transmission and the influenza vaccine and their personal vaccine acceptance history and perception about the use of the mask while working if not vaccinated. There were 1,905 respondents; 87% accepted the influenza vaccine, and 63% were first-time recipients who agreed the regulation influenced their vaccination decision. Of the respondents who declined the vaccine, 72% acknowledge HCP are at risk for transmitting influenza to patients, and 56% reported they did not receive enough information to make an educated decision. The flu mask protocol may have influenced HCP's choice to be vaccinated versus wearing a mask. The study findings supported that HCP may not have adequate knowledge on the morbidity and mortality associated with influenza. Regulatory agencies need to consider an alternative approach to increase HCP vaccination, such as mandating the influenza vaccine for HCP.

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Since 1981, the Centers for Disease Control and Prevention (CDC) have advised that all health care personnel (HCP) receive an annual influenza vaccine to minimize the risk for the transmission of influenza disease within health care settings.¹ In response, U.S. health care facilities voluntarily instituted influenza vaccine programs to promote influenza vaccine acceptance rates among HCP. Unfortunately, despite the implementation of educational and promotional campaigns, increased access to free vaccine, mandated declinations, and other combinations of strategies, efforts have not been particularly successful.

Health care-associated influenza is not uncommon. According to the CDC, HCP who are ill with influenza, with or without symptoms, may transmit influenza to vulnerable, susceptible patients. Nosocomial transmission occurs when HCP are exposed to patients with influenza, develop signs and symptoms of influenza, and transmit influenza to patients and coworkers.²

There is a relationship with influenza outbreaks within hospitals and long-term care settings with low vaccination rates among HCP. Several randomized controlled studies examined the impact of HCP vaccination rates and the association with morbidity and mortality in older adults; the studies demonstrate decreases in mortality and influenza-like illness with increased vaccine acceptance rates.³⁻⁵

The need to protect the U.S. public against influenza has prompted many states to implement policies to promote HCP influenza vaccination to minimize influenza transmission and outbreaks within health care facilities. As of 2011, 20 states enacted laws that require health care facilities to have influenza vaccination requirements for HCP.⁶

In 2009, following the H1N1 outbreaks, New York State Hospital Review and Planning Council adopted an emergency regulation mandating the vaccination of HCP for seasonal and H1N1 influenza in an effort to contain the pandemic. The former New York State Commissioner of Health, Richard Daines, MD, supported the mandate recognizing that voluntary vaccination programs did not achieve high enough influenza acceptance rates to be effective in protecting the public from influenza disease. Knowledgeable of the medical literature, he agreed that high levels of staff immunity appeared to confer protection to those who medically could not be vaccinated or because

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Conflicts of Interest: None to report.

of immunosuppression could not achieve immunity. That year, all active New York HCP were to receive both the seasonal and H1N1 influenza vaccine by November 30, 2009, unless the vaccine was medically contraindicated, or be terminated.⁷

The New York State Public Employees Federation and the New York State United Teachers Union, on behalf of 4 nurses, initiated legal proceedings to stop the influenza vaccination mandate, which resulted in the issuance of a restraining order. During this same time, the demand overwhelmed the supply and the nation experienced a shortage of seasonal and H1N1 influenza vaccines. In New York, the shortage was so significant that the public health officials asked doctors not to administer vaccinations to healthy adults <65 years. This combined with the restraining order stopped the mandate in its tracks.⁸

Issues with vaccine development and production began years prior to this shortage when vaccine companies began to leave the U.S. market. It was not until the bioterrorism fears of anthrax after the World Trade Center attacks in 2001 and the H5N1 avian influenza scare, which had a 60% mortality rate associated with the infection, that the U.S. renewed its interest in vaccine supply.⁹

During July 2013, in response to the failed 2009 mandate, New York State Public Health and Planning Council adopted the "Prevention of Influenza Transmission by Healthcare and Residential Facility and Agency Personnel" regulation, located in Public Health Law Sections 225, 2800, 2803, 3612, and 4010, referred to as the flu mask protocol. The regulation applies to all HCP in health care and residential facilities and agencies when their jobs are such that they may expose patients or residents to influenza. The regulation requires that facilities document the vaccine acceptance rates of all applicable HCP and require unvaccinated HCP to wear a mask at all times when in areas where patients or residents are present during the time when influenza activity is significant, as declared by the Commissioner of Health.¹⁰ The regulation permits HCP to opt out of influenza vaccination, whereas other states have adopted stricter policies requiring all HCP be vaccinated annually with few exceptions, such as medical contraindication or religious exemptions.

The 2013-2014 influenza vaccine performed within the range expected, particularly against the 2009 H1N1 virus; public health officials expected to have an efficacy rate approximately 60%.¹¹ Even with this moderate level of efficacy, the influenza vaccine reduces the severity and duration of the illness, which can mean to some the difference between life and death. Randomized studies on the effectiveness of the influenza vaccines have been conducted; in 1 study of 427 HCP, influenza vaccination did not decrease respiratory illness or decrease the duration of the illness but did demonstrate a 28% decrease in respiratory illness-associated absenteeism.¹² In another study, influenza vaccination was associated with a significantly lower rate of disease, with a vaccine efficacy rate of 88% for influenza A and 89% for influenza B; however, no significant decreases were identified in reported respiratory illness or absenteeism.¹³

On January 12, 2013, Governor Cuomo issued an executive order requiring all unvaccinated HCP who are in an area where patients may be, to wear a surgical mask. Although masks are not as effective as the vaccine, according to the CDC, the use of surgical masks by infectious patients may help contain their respiratory droplets and limit transmission to others.

The objectives of this study were to determine the views of HCP regarding this executive order, current beliefs about influenza vaccine and its safety and efficacy, and the perception about nosocomial influenza and its impact on patient morbidity and mortality and ultimately how the protocol may impact vaccine acceptance rates.

METHODS

A 13-question survey was developed and then reviewed by 19 experts in the field of infection prevention who determined the

questions to be reliable to associate HCP actions with the mask protocol and vaccine acceptance rates.

The survey was administered electronically and manually to the HCP of a large downstate New York health care system. The survey was designed (1) to examine HCP knowledge about influenza transmission, including their opinions about the risk for influenza transmission from HCP to vulnerable patients and from patients to HCP, whether the respondents believed symptomatic HCP can transmit influenza to patients and coworkers, their opinions about the efficacy and safety of the influenza vaccine, if they thought influenza was a serious, potentially deadly disease, and if they agreed that they received sufficient information about the vaccine to make an educated decision; (2) to obtain information about HCP vaccine acceptance during the 2013-2014 season, if the 2013-2014 season was the first time they received the vaccine, or if they did not receive the vaccine what were the reasons for not receiving it (responses included fear of the vaccine, vaccine is not safe, vaccine does not prevent influenza illness, medical contraindication, refusal to be influenced by either government or employer, religious exemption, or another reason); (3) to recognize the HCP's perception of the use of the mask while working when not vaccinated, their perception of the patients' and their families' concerns when unvaccinated HCP are wearing a mask while providing care, vaccinated coworkers' concerns about HCP wearing a mask while at work; (4) to identify any preconceived thoughts that influenza vaccine acceptance rates will increase in response to the mask protocol; (5) to identify if they are aware of the New York State mandate; and (6) to provide awareness of those who state they intend to receive the influenza vaccine during the 2014-2015 season. Demographic and background information was also collected, including occupation, direct patient contact, years of experience in health care, age, sex, race, and level of education.

The survey was distributed to all employees; the questions were available to the HCP in the beginning of July 2014 and closed in December 2014 electronically and manually. The survey results were loaded into Microsoft Excel (Microsoft, Redmond WA) for tabulation after entering responses from the manual submissions. Frequency tables were created using SPSS software (SPSS, Chicago, IL).

RESULTS

There was a total of 1,905 respondents; 87% accepted the influenza vaccine, and 63% were first-time recipients who agreed the regulation influenced their vaccination decision.

There were 13% who did not get vaccinated. Of the respondents who declined the vaccine, 33% agreed or strongly agreed that patients are at risk for acquiring influenza while receiving health care compared with 75% of the vaccinated group; however, most (76% in the group who declined vaccine, and 96% of those who accepted vaccine) agreed or strongly agreed symptomatic patients can transmit influenza to persons delivering care. Interestingly, 72% of those who declined the vaccine agreed or strongly agreed that influenza can be transmitted to patients from symptomatic employees while rendering care, and 95% of those who accepted the vaccine believe the same, concluding that a significant number of respondents agree that patients are at risk for acquiring influenza when employees attend work while ill. Of the respondents who declined the vaccine, 69% agreed or strongly agreed that influenza is a serious illness that may lead to death compared with 94% of the respondents who accepted the vaccine. Only 9% of the respondents who declined the vaccine agreed or strongly agreed that the influenza vaccine was safe and effective compared with 63% of the respondents who accepted the vaccine, whereas 20% of those who did not agree the vaccine was safe and effective were first-time recipients. Future studies related to this population to better

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