Health Care Worker Knowledge, Attitudes, and Beliefs Regarding Mandatory Influenza Vaccination

Lauren E. Douville, BS; Angela Myers, MD, MPH; Mary Anne Jackson, MD; John D. Lantos, MD

Objective: To determine the attitudes, beliefs, and knowledge of children's hospital health care workers toward mandatory influenza vaccination.

Design: Self-administered, Web-based questionnaire.

Setting: A large, tertiary children's hospital.

Participants: A random sample of 585 health care workers, including physicians, nurses, and all other hospital employees.

Outcome Measure: Attitudes of health care workers toward mandatory policies for annual influenza vaccination of health care workers as related to their opinions on safety, effectiveness, and knowledge about influenza and influenza vaccination.

Results: Many employees (70%) thought influenza vaccination should be mandatory for health care workers who did not have a medical contraindication. Nearly everyone, 363 of 391 (94%), who favored mandatory immunization had been immunized themselves. Of those who opposed mandatory immunization, 45 of 81 (55.6%) had been immunized ($P < .001$). Individuals who supported mandatory policies were more likely to believe that the vaccine is safe for both children and adults. There was no significant difference between the percentages of pro-mandate and antimandate employees who believed influenza was dangerous for the patients where they work (66.5% and 62%, respectively, $P = .07$). Only 29% of antimandate employees believed they were at high risk of contracting influenza, compared with 51% of promandate employees ($P < .001$).

Conclusions: Approval of mandatory influenza vaccine policies was high; however, attitudes about the dangers of influenza for patients were not associated with acceptance of mandatory vaccination policies for health care workers. Educational efforts targeting health care workers' fears and misconceptions about influenza vaccines might help to decrease the reservoir of unimmunized health care workers.


Influenza is responsible for an estimated 36,000 deaths and 226,000 hospitalizations every year in the United States. Children and the elderly are at particularly high risk of influenza infection. The Centers for Disease Control and Prevention recommend that all health care workers (HCWs) receive an annual influenza immunization to protect themselves and their patients. Nevertheless, only 40% of HCWs in the United States get immunized every year. While immunization rates at hospitals caring for children have generally exceeded the national rate, a 2004 study of 19 children's hospitals revealed very low rates of immunization in some hospitals and among HCWs in some high-risk units. Health care workers give many reasons for not getting immunized. Many underestimate the dangers of influenza for themselves and their patients. They do not know that they are contagious before they are symptomatic and therefore may represent an underrecognized cause of nosocomial spread. They also overestimate the risks of influenza vaccines. Some claim to be too busy and some do not want to pay for the vaccine. To address these objections, hospitals have offered comprehensive education programs, along with free and convenient immunizations. These programs increase immunization rates. Some programs, including ours, require HCWs who turn down the influenza vaccine to sign a...
declination form stating that the vaccine was offered and that they refused it. In programs in which declinations were implemented, modest improvement in vaccination rates among employees have been noted. However, in some cases, employees simply refused to sign the declination. Overall, the impact of declinations is difficult to evaluate, as the language and context typically vary hospital to hospital, and often multiple other strategies are implemented concurrently. Some have argued that mandatory policies should be instituted to achieve universal coverage of HCWs.

Health care workers in children's hospitals may have a unique perspective on influenza vaccines because they routinely recommend other vaccines for children and see the effects of underimmunization. In this study, we examined the attitudes of children’s hospital HCWs toward a hospital policy of mandatory influenza vaccination and what differences might exist between employees who favored a mandate and those who opposed one.

In April 2009, a 44-item survey, adapted from 2 separate surveys used by Looijmans-van den Akker et al19 and Gust et al,20 was sent to a random sample of physicians, nurses, and all other employees at a large, tertiary children's hospital. To select patients from each group of employees, we obtained lists of all physicians, nurses, and other employees. We then used the random sampling feature of Excel software to select them for our study sample. We oversampled physicians to get enough physician responses to allow for meaningful comparisons between employee groups. The sample included 40% of all physicians (n=117), 18% of all nurses (n=236), and 18% of all other employees (n=593) at the hospital. The latter group included non-clinical staff, such as researchers and housekeeping, dietary, child life, security, and cafeteria workers, as well as care assistants and phlebotomists. We did not analyze each group of other employees. The selected individuals were sent an e-mail that explained the nature of the survey and included a link to the Web-based survey available on a secure, online account. Included in the e-mail was an opt-out link for employees who chose not to participate. We sent weekly e-mail reminders to nonrespondents for 6 weeks. The study period ended in mid-May 2009.

We calculated childhood vaccination rates by categorizing children as up to date or not based on parent responses. We did not independently verify childhood immunizations. Children younger than 6 months were excluded from analyses for influenza vacc-

A total of 946 surveys were successfully distributed to employees of the children’s hospital. We received 574 responses, for an overall response rate of 61%, which included 63 of 117 physicians (54%), 135 of 236 nurses (57%), and 376 of 593 other employees (63%). Twenty-six employees (3%) refused to participate in the survey. Eighty-two percent of respondents were female, 83% were white, 53% were aged 25 to 44 years, and 40% had more than 15 years of experience as an HCW.

Overall, 83% of respondents received an influenza vaccine for the 2008-2009 season. Physicians and nurses were more likely than all other employees to be immunized (96%, 93%, and 77%, respectively, P < .001). Ninety-eight percent of respondents were aware that the institution offered free vaccines. Almost half (48.5%) falsely believed that the hospital required them to get vaccinated against influenza.

Most employees (70%) either strongly agreed or agreed that the hospital should mandate influenza immunization (Figure 1). Employees who had received the influenza vaccine were much more likely to favor a policy of mandatory influenza vaccination than those who had not. Other determinants of a positive attitude toward mandates are presented in Table 1. Nearly 15% of respondents opposed a mandatory immunization policy. About half of these respondents (56%) had been vaccinated against influenza.

Comparing those who favored a mandate with those who opposed one, knowledge about Centers for Disease Control and Prevention recommendations was high for both groups and there were no significant differences in knowledge about the dangers of influenza for patients (Table 2). Employees who favored the mandate were more likely to believe that immunization was safe for both children and adults. Employees who opposed the mandate were more likely to report that they oppose mandates for routine childhood immunizations and favor parental authority concerning whether children receive immunizations (Table 3). Only 29% of antimandate employees believed they were at high risk of contracting influenza compared with 51% of promandate employees (P < .001).

RESULTS

Figure 1. Health care workers’ level of agreement with the statement “Health care workers should be required to receive an influenza vaccine unless they have a medical reason not to.”

<table>
<thead>
<tr>
<th>Survey Respondents, %</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
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<td>35</td>
<td>20</td>
<td>12</td>
<td>0</td>
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<tr>
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<td>23</td>
<td>21</td>
<td>10</td>
<td>0</td>
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<tr>
<td>Neither Agree nor Disagree</td>
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<td>9</td>
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<td>11</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

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Employees who oppose an influenza mandate were equally likely as those who favor one to report that their children are up to date on all recommended childhood vaccines (119 of 125 [95%] vs 27 of 29 [93%]). However, employees who favored a mandate were more likely to report that their child was up to date on all recommended childhood vaccines (119 of 125 [95%] vs 27 of 29 [93%]). However, employees who favored a mandate were more likely to report that their child was up to date on all recommended childhood vaccines (119 of 125 [95%] vs 27 of 29 [93%]).

Nearly half of HCWs who disagreed with the mandate received the influenza vaccine in the last year. Comparing only antimandate HCWs who had themselves been immunized with those who had not, immunized HCWs were much more likely to believe that the influenza vaccine is safe for adults and children (339 of 662 [51%] vs 56 of 72 [78%]).

Overall, only 2% (12 of 585) of employees said they would quit if the hospital mandated an influenza vaccine. They were all in the antimandate group and comprised 15% of that group (Figure 2).

In this study of employees at a children's hospital, knowledge about influenza infection and influenza vaccination was high, as was the rate of influenza vaccine coverage, though this was significantly different between
There are many good reasons why all HCWs should be immunized against influenza. They are at high risk of contracting the disease themselves, which can lead to spread of the disease to their vulnerable patients, compromising patient safety.\textsuperscript{9,11} Health care workers are role models who can influence whether their patients and peers get vaccinated.\textsuperscript{21,22} Unimmunized HCWs who become ill will miss work and this may lead to lower quality of care.\textsuperscript{23,24} For all of these reasons, one could see immunization as a duty of professionalism and, as the American Nursing Association suggests, “an ethical responsibility,” even if it carries a small amount of risk. The American College of Physicians’ Charter on Professionalism states that a duty to professionalism, “demands placing the interests of patients above those of the physician, setting and maintaining standards of competence and integrity, and providing expert advice to society on matters of health.”\textsuperscript{25}

Given the known efficacy of the vaccine,\textsuperscript{23,24,26,27} the strong recommendation of all professional organizations for universal vaccination of HCWs,\textsuperscript{1,2} the known shortfalls in voluntary programs,\textsuperscript{28} the known improvements to patient safety, and widely agreed upon duties of professionalism, institutional mandates for flu vaccine are ethically defensible. The next question that will need to be answered is, assuming that mandates are ethically defensible, whether they will effectively increase immunization rates. Some states have recently passed laws mandating influenza immunizations and preliminary data suggest that participation by HCWs has increased.\textsuperscript{29} A recent study shows that a mandatory influenza vaccination policy increased vaccination rates in a large, multi-hospital health care system, with fewer people seeking exemptions than had previously signed declination statements. The program was successful. More than 98% of the 25,000 HCWs in this multihospital system were immunized.\textsuperscript{29} The next frontier will be demonstrating the success of the programs in terms of patient safety and quality of care.

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Correspondence: John D. Lantos, Children’s Mercy Bioethics Center, Children’s Mercy Hospital, 2401 Gillham Rd, Kansas City, MO 64108 (jlanjos@cmh.edu).

Author Contributions: Dr Myers had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Douville, Myers, Jackson, and Lantos. Acquisition of data: Douville, Myers, and Lantos. Analysis and interpretation of data: Douville, Myers, and Lantos. Drafting of the manuscript: Douville, Myers, and Jackson. Critical revision of the manuscript for important intellectual content: Douville, Myers, and Jackson. Statistical analysis: Myers. Administrative, technical, and material support: Lantos. Study supervision: Jackson and Lantos.

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REFERENCES


