Introduction and Rationale: A performance improvement project was undertaken to increase health care worker (HCW) influenza vaccination acceptance rates in the long-term care setting by using a novel 15-minute education intervention called the "Flu in 15." As a core principle, we taught that more Americans die from complications of influenza than hepatitis B, yet there remains individual reluctance and barriers to achieve high acceptance rates of influenza vaccination among HCWs.

Methods: During chance encounters we offered the Flu in 15 in-service to all HCWs at the Johns Hopkins Bayview Care Center including certified nursing assistants (also called geriatric nursing assistants), registered nurses, registered dieticians, environment staff, physical therapists, occupational therapists, speech therapists, respiratory therapists, social workers, and administrators. Of the 106 of 347 HCWs who participated in the Flu in 15 in-service, 58 were by chance encounters selected to be surveyed based on convenience. We surveyed 68 of 241 HCWs who did not attend the Flu in 15 in-service as a comparison.

Results: Of the 58 participants who were asked if the in-service helped them understand why a flu vaccine is needed yearly, we found that 15% responded “tremendously,” 48% “a lot,” 26% “some,” 7% “a little,” and 2% “no.” We had 24% report that the program was effective in changing their behavior to accept the flu vaccination for the first time. We found that 49% responded that the in-service was effective in either changing their behavior to accept the flu vaccination for the first time or reaccept it if recently declined in previous years. With respect to motivation, 42% of the certified nursing assistants stated that the in-service made them think more about returning to school to get a license in some area of health care. Although not cause and effect, we observed an increase in the HCW acceptance rate of the influenza vaccine from 65% in 2006–2007 to 73% in 2007–2008. We noticed a decreased trend in patient deaths attributed to complications of influenza with 4 deaths in 2006–2007 and no deaths in 2007–2008.

Conclusions: The Flu in 15 in-service promoted a better understanding of the importance of the influenza vaccine and demonstrated an associated increase in HCW acceptance of the flu vaccine. Although we cannot claim cause and effect, we noted a decrease in resident mortality in the intervention year compared with the prior year. Now that some medical centers require yearly influenza vaccines among HCWs, the education component remains relevant to provide reason behind the mandate. (J Am Med Dir Assoc 2010; 11: 523–527)

Keywords: Influenza vaccine; hepatitis B vaccine; education; health care workers
From an ethical standpoint, Van Delden et al\(^5\) have noted that many HCWs still do not receive the flu vaccine.

Adults often have low immunologic response to vaccine.\(^{11}\) Immunization programs can reduce patient mortality and that this may be more effective if given that a more robust effect comes from immunization of HCWs. These studies have shown that vaccinating HCWs increases knowledge and acceptance of the influenza vaccine which would decrease influenza exposure to our patients, and hopefully decrease patient morbidity and mortality. Multiple studies have demonstrated that successful vaccination of HCWs at the Johns Hopkins Bayview Care Center, the overall acceptance rate of the influenza vaccine with HCWs was estimated to be less than 40%.\(^1\) Each year an estimated 36,000 Americans die from complications of hepatitis B.\(^3\) In general, many HCWs accept the federally mandated series of 3 vaccinations, yet our intervention was not designed to create a positive educational experience. Our secondary goal was a reduction in mortality from complications of influenza, yet our intervention was not designed or controlled to claim this as a cause and effect.

In 2007, before our intervention at the Johns Hopkins Bayview Care Center, the acceptance rate for influenza vaccine among HCWs was estimated to be less than 40%. Each year an estimated 36,000 Americans die from complications of hepatitis B. In general, many HCWs accept the federally mandated series of 3 vaccinations, yet our intervention was not designed to create a positive educational experience. Our secondary goal was a reduction in mortality from complications of influenza, yet our intervention was not designed or controlled to claim this as a cause and effect.

METHODS

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Our literature review noted that certified nursing assistant (CNAs) and described in nursing journals. We felt that co-teaching by an RN and medical doctor (MD) would be an improvement on the staff and hopefully strengthen the message. Seminars called ''Flu in 15'' were offered at a 200-bed acute care facility, a 200-bed acute care facility, a 200-bed acute care facility, and a 200-bed acute care facility. Persuading a reluctant health care worker (HCW) to accept the influenza vaccine for the first time is a significant challenge in preventive medicine. In the United States, the deaths of 10,000 Americans die from complications of hepatitis B. In general, many HCWs accept the federally mandated series of 3 vaccinations, yet our intervention was not designed or controlled to claim this as a cause and effect.

In 2007, before our intervention at the Johns Hopkins Bayview Care Center, the acceptance rate for influenza vaccine among HCWs was estimated to be less than 40%. Each year an estimated 36,000 Americans die from complications of hepatitis B. In general, many HCWs accept the federally mandated series of 3 vaccinations, yet our intervention was not designed or controlled to claim this as a cause and effect.

We chose to attend the in-service. Subsequently (March 2008 to February 2008) 2 authors. HCWs were randomly approached and invited to participate and later requested to complete the survey. Occasionally, because of staffing difficulties, HCWs were disallowed participation by the unit manager. Thus, our study included in an education initiative conducted from September 2006 to September 2007. The in-service was one of many topics.
significantly (Pearson’s chi-square or independent samples test) from the attendees in sex (77.6% of attendees and 83.8% of nonattendees were female), duration of employment (56.0 months for nonattendees), whether they had been vaccinated for hepatitis B (93.1% of attendees and 86.5% of nonattendees), and still transmit the flu virus to their older frail patients reminded them that they could be asymptomatic carriers of declining vaccine (Fig. 1, A). Of those who completed the in-service, 14 (24%) of 58 stated the intervention was effective in changing their behavior to accept the flu vaccine for the first time. In total, 6 (11%) of 58 stated the intervention was a lot effective, 7 (15%) stated some effective, 4 (9%) stated a little effective, and 1 (2%) said no. One individual did not complete the survey. Respondents, 9 (15%) stated tremendously effective, 28 (48%) stated effective, 10 (18%) stated a little effective, and 3 (5%) stated no effective. A random sample of convenience of 68 (28%) of 241 employees who did not attend the Flu in 15 session were asked to respond to a brief version of the survey. A random sample of convenience of 68 (28%) of 241 employees who did not attend the Flu in 15 session were asked to respond to a brief version of the survey. A random sample of convenience of 68 (28%) of 241 employees who did not attend the Flu in 15 session were asked to respond to a brief version of the survey.

**Table 1.** Core Educational Content of the 15-Minute In-service

- 36,000 Americans die each year from complications of influenza of which 90% are older adults.
- 5000 Americans die each year from complications of hepatitis B.
- Hepatitis B virus remains essentially the same shape over time so that the immune system after 3 vaccine doses recognizes the virus and usually offers long-standing immunity.
- Hepatitis C mutates rapidly, and if a vaccine were available, then your immune system would likely not recognize a mutated strain if exposed in the future.
- Influenza’s outer shell stays enough the same that we can benefit from a vaccine but the virus mutates fast enough that humans require a vaccine every year.
- Contraindications of the influenza vaccine are limited to egg allergies and prior adverse reactions to the vaccine.
- Individuals infected with the influenza virus may be asymptomatic but can still transmit the disease to others.

**RESULTS**

<table>
<thead>
<tr>
<th>Table 2. Results and Core Summary Points</th>
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<tbody>
<tr>
<td>- A random sample of convenience of 106 (31%) of 347 HCWs participated in the Flu in 15 in-service.</td>
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<td>- A random sample of convenience of 58 (55%) of 106 of the Flu in 15 participants completed a postintervention survey.</td>
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<tr>
<td>- A random sample of convenience of 68 (28%) of 241 employees who did not attend the Flu in 15 session were asked to respond to a brief version of the survey.</td>
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<tr>
<td>- Fourteen (24%) of 58 HCWs who participated in our Flu in 15 in-service accepted the influenza vaccine for the first time.</td>
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<td>- Overall HCW acceptance rates of the influenza vaccination increased from 65% in the 2006–2007 flu season to 73% in the 2007–2008 flu season.</td>
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<tr>
<td>- Write-In comments:</td>
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<tr>
<td>&quot;Getting the vaccine keeps my patients healthy.&quot;</td>
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<tr>
<td>&quot;I did not know there was also hepatitis D and E.&quot;</td>
</tr>
<tr>
<td>&quot;Surprised to learn that more people die from Influenza than Hepatitis B.&quot;</td>
</tr>
<tr>
<td>&quot;Better understanding of mutations and the need for a yearly flu vaccine.&quot;</td>
</tr>
<tr>
<td>&quot;If you get the flu vaccine and later get influenza then you will not get as sick.&quot;</td>
</tr>
<tr>
<td>&quot;The flu kills more people than you think.&quot;</td>
</tr>
<tr>
<td>&quot;Please continue this education, I would have never got the flu vaccine.&quot;</td>
</tr>
<tr>
<td>&quot;It got me to get my first flu vaccine in over 7 years.&quot;</td>
</tr>
<tr>
<td>&quot;Getting the flu shot does not make you sick.&quot;</td>
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</table>

Individuals infected with the influenza virus may be asymptomatic but can still transmit the disease to others.
CONCLUSION

Because of the limitations of this study, we can only infer that our intervention was successful in changing learner beliefs and in convincing 14 (24%) of 58 to accept flu vaccine for the first time (Table 2). During the past 3 years, patient/resident acceptance rate of the flu vaccine has remained consistently over 90%. We noticed an incidental increase in our overall facility acceptance rate from 65% in 2006–2007 to 73% in 2007–2008 (Table 2). Although we cannot claim cause and effect, we noticed as an incidental observation a decrease in patient mortality rates attributed to complications of influenza over the past 2 years of flu sessions. In 2006–2007 (October to April) there were 4 deaths and in 2007–2008 (October to April) there were zero deaths. Our trend is consistent with Lemaitre et al's14 and other studies that show staff influenza vaccination programs lead to lower patient mortality rates. Lemaitre et al14 demonstrated that their staff influenza vaccination program led to a 20% decrease in resident mortality rate and 31% reduction in resident influenza-like illness.14 They also showed the additional benefit of 42% lower sick leave of the health care workforce.14 Although an important issue, we did not collect data about the sick leave of HCWs at our facility.

A crucial limitation is the lack of a preintervention survey. Initially, we began the initiative to teach and team build between CNAs and MDs. The Flu in 15 was one of many quality improvement topics later deemed important by the administration and expanded to include all HCWs. We later requested IRB approval to obtain a postintervention questionnaire to help learn about the beliefs of those HCWs who participated compared with those who did not participate in the Flu in 15 in-service.

A second limitation of the study was that the HCWs were not randomized but rather randomly selected by convenience, which could have created postsurvey bias. In addition, the surveys were collected by the 2 in-service educators. There is the possibility of a "social desirability bias" or subtle pressure toward providing more positive responses and holding back on negative comments.

Another limitation was not accounting for the stigma associated with contracting hepatitis. In addition, we did not account for the motivational difference that accepting the hepatitis B vaccine may be seen primarily as a way to help protect the individual HCW whereas accepting the influenza vaccine is viewed more to protect the patient rather than HCWs. Overall, the Flu in 15 in-service promoted a better understanding regarding the importance of the influenza vaccine, broke down false myths, and was associated with increased HCW acceptance of the flu vaccine. Many participants stated they were surprised to learn that more deaths in the United States occur from complications of influenza than hepatitis B, especially in frail older adults. The recent trend in major academic medical centers requiring mandatory yearly influenza vaccines of their workforce has been increasing. In our opinion, the "education piece" of heightening HCW understanding of the importance of influenza vaccination remains a more important adjunct than simple reliance on an administrative dictum.

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REFERENCES


