Title:
An Evidence-Based Educational Strategy to Improve Influenza Vaccination Rates Among Hospital Nurses

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Session Title:
Global Disease Prevention in Influenza
Slot:
P 03: Sunday, 30 July 2017: 2:30 PM-3:15 PM
Scheduled Time:
2:50 PM

Keywords:
Education, Evidence-based practice and Influenza

References:
Akker, I. L., Hulsher, M. E., Verheij, T. M., Dalhuisen, J. R., Delden, J. M., & Hak, E. (2011). How to develop a program to increase influenza vaccine uptake among workers in health care settings. *Implementation Science, 6*(47), 32-45. http://doi: 10.1186/1748-5908-6-47

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Abstract Summary:
Seasonal influenza, or the flu, impacts three million people annually. In hospital settings, the flu is associated with nosocomial infection and absenteeism. The CDC recommends flu vaccination for all eligible individuals, especially healthcare workers. Interventions to address misconceptions about vaccine safety and efficacy are associated with improved vaccination rates.
Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE

Describe the impact of health care worker (HCW) influenza vaccination rates on nonsocial hospital infections.	A brief overview will be presented to describe the number of HCWs, with a focus on nurses, choosing influenza vaccination. Also, a figure will be presented to illustrate the impact of HCW vaccination in reducing nonsocial influenza in hospitals and increasing patient safety.
Discuss the ethical considerations specific to required versus voluntary HCW influenza vaccination programs.	A brief discussion will provide the an overview of the ethical issues for mandatory versus voluntary influenza vaccination. The concepts are numerous but will focus on autonomy, beneficence, and professional virtue.
Identify the common myths and barriers to influenza vaccination for HCWs.	The most common myths and barriers described in the literature will be identified. These will be linked to the design and development of the educational module.
Analyze the applicability and effectiveness of the learning objectives and content for a web-based influenza virus and vaccination professional educational module.	The content will focus on providing an overview of the literature specific to the evidence-based strategies and interventions that informed the creation of the web-based influenza virus and vaccination professional educational module. The strategies and interventions selected for the module will be analyzed by the level of evidence.
Evaluate the outcome of an evidence-based educational program in achieving improved vaccination rates for hospital nurses.	The project results will be presented for evaluation, including the impact of the module on nurse perceptions about influenza vaccination and the manner in which this translated into increased vaccination rates.

Abstract Text:

Background: Seasonal influenza, or the flu, impacts over 3 million people each year. Within the health sector, nosocomial infection and absenteeism are frequently associated with the flu. The Centers for Disease Control and Prevention (CDC) recommend flu vaccination for all eligible individuals, especially health care workers (HCWs). Interventions associated with increased HCW vaccination include educational programs and occupational health campaigns to address misconceptions regarding vaccine safety and efficacy. This project evaluated the impact of a voluntary, web-based education module to encourage registered nurse (RN) vaccination. The logic and health belief models served as the theoretical frameworks.

Methods: The project used a quantitative research method with a quasi-experimental nonequivalent control group to test the effectiveness of a web-based influenza virus and vaccination professional educational module in HealthStream®. Because both the comparison group and the intervention group were convenience (non-randomized) samples, a quasi-experimental design was necessary. The participants self-selected. The groups were pre-existing and nonequivalent. The selection of this design was most appropriate for this study because it offered a larger cross section of nurses. This design also

limited the potential for interaction between the two groups of participants and limited any potential bias. A brief anonymous paper survey method limited the participant's time commitment required for completion but allowed for collection of sufficient data to gain insight into similarities, differences, and trends to make predictions about the sample population. The anonymous survey also allowed for data collection from a large population without cumbersome effort on my part. Lastly, the selection of this method will allow continued data collection with the same methodology with other groups of participants in future studies.

The web-based educational module was developed to address knowledge gaps identified from the literature. The program was made available to all RNs through an existing internal web-based computerized program, HealthStream®. This approach was a familiar learning method for the participants and a standard education delivery method in the project setting. The educational program was made available during the employee influenza vaccination campaign. Nurses in the intervention group (IHNV) had access to the educational program and were notified about the program through a flyer (Appendix C), which was distributed in both printed and digital format. Nurses at IHNV were also invited to participate in the program through an email announcement (Appendix D). Finally, the nursing leaders at the IHNV site were encouraged to include the availability of the educational program in their routine staff meeting agendas. Nurses in the comparison group (IHNE), who did not receive the educational program, were made aware of the study when they presented for vaccination or declination.
A four-question survey was used to collect data from two nonequivalent groups: (a) RNs at IHNV who received the intervention (web-based education) and (b) RNs working at IHNE, who did not. The use of a comparison group located in another hospital limited the risk of bias related to information sharing between nurses who participated in the education and their colleagues who may not have participated. As each RN presented to the IHNV or IHNE influenza vaccine clinic or occupational health office, he or she was provided the standard vaccine consent or declination form.

After vaccine administration or completion of the declination form, participants were asked to complete the study tool. The tool allowed participants to self-select whether or not they participated in the intervention and to indicate whether they opted to receive or decline the seasonal influenza vaccine. Other pertinent influenza and demographic information was also collected; however, anonymity was maintained. Surveys for data collection were returned immediately following completion to the secured lock box located at the site of vaccine administration.

Results: A total of 192 surveys were returned during the data collection period of approximately 3 weeks. During this time, both sites conducted "amnesty" days on which noncompliant employees were allowed to attend the flu vaccine clinic and either receive the vaccination or complete a declination form. A total of 116 surveys (60.4%) were returned at the IHNV campus, and 76 were returned at the Elmer campus (39.6%). The education program, implemented at IHNV only, received a total of 145 views. Of those returning surveys at the IHNV campus, 79 (41.1%) reported having viewed the education. Clinical (bedside) RNs constituted the largest group of respondents (n=132, 68.8%). The majority of respondents worked in a medical–surgical specialty (35.5%) and prepared at the BSN level (67.2%). Most RNs who accepted the vaccine, regardless of their primary work site, had been vaccinated the previous year as well (79.7%). Interestingly, only 5.7% of respondents reported having previously contracted the flu within the last 2 years.

Vaccine acceptance rates, overall, were similar between the two campuses. In fact, acceptance rates at IHNV (where the education was made available) were slightly lower (81.1%) than acceptance rates at IHN (84.2%; $x2$=0.318, p=0.573). However, vaccine acceptance rates among participants who reported completing the educational program were significantly higher (91.1%) than among those who reported not having viewed the education program (76.1%; $x2$=7.210, p=0.007). A significant difference in the vaccine acceptance rate was not seen in relation to any of the other demographic variables (nursing specialty, nursing role, academic degree). When comparing the prior year's decision to vaccinate or not, a significant difference was seen in the percentage of RNs who chose vaccination this year. Specifically, 87% of RNs who received the vaccine the previous year were revaccinated this year, while only 12.4% of those who were previously vaccinated refused vaccination this year ($x2$=14.465, p<0.01). Only 11 RNs

reported having had influenza in the previous 2 years; of those, 10 were vaccinated this year, and one was not.

Discussion: The current literature suggests that the most common reason for influenza vaccine refusal involves misconceptions regarding the safety and efficacy of the influenza vaccine. As such, the program was designed to address these misconceptions by providing factual information about influenza severity, vaccination safety, and historical efficacy. This information appears to have addressed the reasons previously unvaccinated RNs chose vaccination. In total, 39 RNs reported not having received the vaccine last year; of those, 11 completed the education and all but one chose to receive the vaccination this year. In addition, all of the individuals who previously had the flu and who participated in education accepted the vaccination this year.

The findings demonstrate that the educational program effectively addressed the most common barriers to vaccination in that individuals who participated in the educational program were vaccinated at a significantly higher rate than those who did not. Interestingly, the vaccination rates at the IHNE campus (comparison site) were slightly higher than the IHNV campus (intervention site). The findings suggest that the educational program influenced the individual's vaccination choice; however, the impact on vaccine decision did not spread from these educated individuals to the overall hospital population One possible explanation is that individuals thoughtfully considered the program's effectiveness and benefit to patients yet did not share or discuss their choice with others.

Conclusion: This project demonstrated a simple but tailored web-based educational program is effective in converting RNs to vaccination acceptance. Increased vaccination produces societal change by reducing nosocomial and community influenza transmission. Reduced influenza infection improves community health as well as patient safety. Future work should address community-wide HCW education initiatives and evaluate their impact on quality and financial indicators at the hospital and community levels.