Pharmacy-initiated immunizations in the emergency department—HaliVax PIIIE

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Introduction

Influenza is responsible for thousands of hospitalizations and deaths among Canadian adults annually. Estimations are that between 10% and 20% of the population becomes infected with influenza each year.^{1,2} Immunization is the single most important intervention for preventing influenza-associated morbidity and mortality.^{1,2} The National Advisory Committee on Immunization (NACI) recommends influenza vaccination for all individuals aged 6 months and older and has established criteria for patients deemed to be high risk for excess morbidity and mortality, including age over 65 years, presence of chronic diseases, immunosuppression and pregnancy.¹ NACI's goals include obtaining 80% or higher vaccine coverage rates for those at high risk for influenza, yet seasonal coverage rates repeatedly fail to meet these national targets.¹ Despite the proven efficacy of the influenza vaccination, NACI data estimate that only 37.2% of the general population receives immunization.¹

Studies based in the emergency department (ED) mirror these low coverage rates, demonstrating that less than 50% of eligible ED patients report receiving the influenza vaccine.^{3,4} Targeting the ED patient population is important, as they have been shown to be largely underimmunized against influenza and are less likely to receive regular physician care.³⁻⁶ Increasingly represented in the ED population are patients who would be considered high risk for influenza-related complications, such as those aged 65 years and older and patients with multiple comorbidities.⁶ NACI recommends placing

particular focus on enhancing influenza vaccine coverage in these high-risk patients.¹

In the Charles V Keating emergency department in Halifax, Nova Scotia, pharmacy technicians collect medication histories from patients, complete medication reconciliation forms and liaise with the department pharmacist. This contact represents an important opportunity to address patients' immunization status. From November 2015 to January 2016, a pilot project for influenza immunization screening and vaccine delivery via the ED pharmacy team was implemented. Until the pilot project, influenza vaccines had not been available to ED patients. Our hypothesis was that this method would represent a sustainable, centralized means of capturing high-risk patients and that patients would be amenable to receiving immunization in the ED.

The primary objective of the study was to examine the proportion of patients presenting to the ED who had not received the influenza vaccination and assess unimmunized patients' willingness to receive vaccination in the ED. Secondary objectives included determining the proportion of patients considered high risk for influenza, determining high-risk patients' awareness of their risk status and examining the reasons unimmunized patients had not received immunization.

Methods

A prospective cross-sectional study of patients presenting to a university-affiliated, tertiary care ED with an annual census of approximately 75,000 visits was conducted from November 2015 to January 2016. Ethics approval was

FIGURE 1 Immunization status of participants and risk stratification among unimmunized participants

granted by the Nova Scotia Health Authority Research Ethics Board in October 2015.

Patients aged 16 years and older presenting to the ED, for any complaint, who had contact with the pharmacy team were eligible for inclusion. Excluded were non-English speakers for whom a translator was not available and those with significant delirium, moderate to severe dementia or any clinical condition impairing their orientation and communication.

Patients were recruited Monday to Friday from 8:30 to 4 pm, corresponding to pharmacy team hours. Pharmacy technicians completed medication reconciliation forms on patients as part of their normal workload. They also inquired as to patients' self-reported influenza immunization status and their interest in completing a questionnaire on influenza vaccination. Written consent was obtained from patients via the principal investigator (H.F.).

To allow for varying degrees of literacy, patients were given the choice of self-administering the questionnaire or having it administered in a face-to-face interview conducted by the principal investigator. Questionnaires collected demographic information and vaccination history, and they screened patients for high-risk criteria as defined by NACI.¹

Patients who identified as unimmunized via the questionnaire were referred to the ED pharmacist for consideration of influenza immunization. For consenting patients, influenza vaccination counselling, administration and postadministration monitoring were performed via the pharmacist in accordance with Public Health guidelines and standards.⁷

Data analysis

Statistical analysis was performed using SAS STAT 12.1 version 9.3 (SAS Institute, Cary, NC). Descriptive statistics were used to summarize the baseline characteristics of patients, mean $\pm$ standard deviation for continuous variables and counts and frequency for categorical variables.

Results

A total of 85 patients were enrolled in the study; 33% ($n = 28$) were unimmunized prior to the ED visit and 93% ($n = 26$) of unimmunized patients met high-risk criteria (Figure 1). The reasons for not being immunized are listed in Table 1. The majority (64%, $n = 18$) of unimmunized patients indicated they would be willing to receive immunization in the ED. The majority (88%, $n = 75$) of all participating patients were high risk for influenza-related complications by NACI criteria, yet 57% ($n = 32$) were unaware of their high-risk status. Almost all (98%, $n = 83$) had a family physician.

Discussion

Our study demonstrated that the majority of patients who encountered the ED pharmacy team were high risk for influenza-related complications and that the majority of unimmunized patients were willing to receive vaccination in the ED.

Vaccination is a relatively simple method of enhancing public health from the ED. For example, the tetanus vaccine is commonly delivered in EDs across the country, and it is the standard of care to ask patients with trauma or lacerations about their tetanus immunization status.⁸

TABLE 1 Reasons identified by unimmunized patients for not having received the influenza vaccine

Reason for not receiving vaccine	Number of times identified
Had not gotten around to it	10
Feeling unwell	6
Do not believe in the vaccine	4
Believe vaccines cause illness	3
Unaware it was needed	2
Bad reaction to previous vaccine	1
Family physician didn't alert them	1
Thought it was good for >1 year	1

However, between 2000 and 2013, Canada averaged only 3 cases of tetanus per year.⁹ Despite influenza's markedly higher prevalence and direct impact on the ED, many EDs do not routinely offer influenza immunization.

As one of the most accessible health care providers, pharmacists play an important role in reducing the impact of vaccine-preventable disease. The pharmacy team can elicit immunization histories, provide evidence-based advice and immunize ED patients who may otherwise go unprotected. Incorporating immunization provision into the role of the existing pharmacy team eased the implementation of this new service.

This project was conducted after the time we expect patients to be immunized by primary care, yet 33% of participants were unimmunized. The majority of these cases could be overcome with counselling, education and access. Future plans for our centre include expanding vaccination offerings to include pneumococcal vaccines.

Limitations of this study include a small sample size of patients and a short duration of data collection. The study was conducted from late November to early January; if conducted either

earlier or later in the flu season, it is likely the number of unimmunized patients would have changed. Vaccination status was assessed via patient report, and no verification was required. Participants had to be willing to participate in a study on vaccination, likely underrepresenting those who had negative attitudes toward receiving immunizations; this sample may have overrepresented the true number of immunized patients in the ED.

We can report that all patients declaring interest in vaccination were offered vaccination via the pharmacist during their ED stay. However, we were not able to cross-reference pharmacy immunization records with our deidentified patient questionnaires. Therefore, if a patient indicated they wished to receive vaccination but later declined administration, this would not be captured by our data set.

Conclusion

Influenza immunization is an important method of enhancing public health from the ED. A pharmacy-driven influenza immunization delivery model is feasible in the ED and would effectively target high-risk patients. ■

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