

Flu vaccine and the ED

Administering influenza vaccine in a Canadian emergency department: Is there a role?

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ABSTRACT

Objectives: To determine the prevalence of influenza vaccination in patients who present to the emergency department (ED) who meet current guidelines for its use. To evaluate the feasibility of an ED-based program to provide influenza vaccine to at-risk patients.

Methods: A survey of ED patients and their family physicians, using a convenience sample.

Participants and setting: Consecutive patients presenting to the emergency department of Prince George Regional Hospital, Prince George, BC, a regional hospital in Northern British Columbia, during designated shifts between Nov. 6, 1997, and Dec. 10, 1997.

Outcome measures: Age, gender, family physician (FP), eligibility for influenza vaccine, vaccination status, willingness to receive vaccine in the ED, and FP methods for ensuring use of influenza vaccine.

Results: 935 patients were interviewed; 816 met study eligibility criteria. Of 214 patients eligible for influenza vaccine, 113 (52.8%) had not been vaccinated. Fifty-three (46.9%) agreed to vaccination, and 49 were vaccinated in the ED. A survey of the patients' FPs revealed that 85% used callback lists, but that only 49% of vaccine-eligible patients identified in the study were on a callback list. Positive associations were found between the presence of an FP and the likelihood of having been vaccinated (odds ratio [OR] = 8.8), being on a callback list and having been vaccinated (OR = 4.1), and age >64 and being on a callback list (OR = 2.1).

Conclusions: Up to 50% of patients eligible for influenza vaccine are not adequately immunized. Administering influenza vaccine in the ED is acceptable to patients and should reduce influenza rates in at-risk populations. There is a role for administering influenza vaccine in the ED.

RÉSUMÉ

Objectifs : Déterminer la prévalence de la vaccination contre la grippe chez les patients reçus à l'urgence qui répondent aux lignes directrices actuelles de vaccination. Évaluer la faisabilité d'un programme basé à l'urgence visant à offrir le vaccin contre la grippe aux patients à risque élevé.

Méthodes : Sondage auprès des patients de l'urgence et de leur médecin de famille, à l'aide d'un échantillon pratique.

Participants et cadre : Patients consécutifs se présentant à l'urgence du Prince George Regional Hospital, à Prince George (C.-B.), un hôpital régional au nord de la Colombie-britannique, au cours de postes pré-déterminés entre le 6 novembre 1997 et le 10 décembre 1997.

Mesures des résultats : Âge, sexe, médecin de famille (MF), éligibilité au vaccin contre la grippe, statut de vaccination, volonté de recevoir le vaccin à l'urgence et méthodes utilisées par le MF pour assurer la vaccination contre la grippe.

Résultats : Neuf cent trente-cinq patients furent interrogés; 816 répondaient aux critères d'éligibilité de l'étude; Parmi 214 patients éligibles au vaccin contre la grippe, 113 (52,8 %) n'avaient pas été vaccinés. Cinquante-trois (46,9 %) avaient accepté de recevoir le vaccin et 49 furent vaccinés à l'urgence. Un sondage auprès des MF des patients révéla que 85 % d'entre eux utilisaient des listes de rappel, mais que seulement 49 % des patients éligibles au vaccin identifiés dans l'étude se trouvaient sur la liste de rappel. Des associations positives furent établies entre la présence d'un MF et

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les chances d'avoir été vacciné (rapport de probabilité [RP] = 8,8), le fait d'être sur la liste de rappel et les chances d'avoir été vacciné (RP = 4,1) et un âge >64 ans et le fait d'être sur la liste de rappel (RP = 2,1).

Conclusions : Jusqu'à 50 % des patients éligibles au vaccin contre la grippe ne sont pas immunisés adéquatement. Les patients acceptent l'idée de la vaccination contre la grippe à l'urgence et celle-ci devrait contribuer à diminuer le pourcentage de gripes au sein de la population à risque élevé.

Key words: influenza vaccine, immunization, emergency department, callback list.

Background

Influenza causes substantial morbidity and mortality.¹ Despite recent success with antiviral agents, immunization remains the most important relevant health care intervention. In high-risk populations, influenza vaccine reduces the risk of respiratory illness, pneumonia, hospitalization and death.² Several US studies have demonstrated that emergency department (ED) influenza vaccination is feasible and improves health outcomes in at-risk patients presenting to the ED.⁴⁻⁷ The US Centers for Disease Control recommends that emergency departments offer influenza vaccination to eligible patients.³

The British Columbia (BC) Ministry of Health has established a target influenza vaccination rate of 90% for vaccine-eligible persons.⁹ Currently, patients meeting high-risk criteria receive influenza vaccine free of charge in vaccination clinics, at work and in family physician offices, but influenza vaccination in Canadian EDs is not the standard of care and has not been studied. Health Canada's Laboratory Centre for Disease Control (LCDC) guidelines do not recommend ED influenza vaccination,⁸ and it is not known whether ED vaccination is appropriate or necessary, given Canada's emphasis on primary care and the absence of financial barriers to access.

Our primary objective was to assess the need for influenza vaccine in an ED patient sample and to determine the feasibility of providing influenza vaccine in a Canadian ED. Our secondary objective was to evaluate the community use of immunization callback systems (e.g., computer-generated reminders and callback lists), which have been shown to increase influenza vaccination rates.¹⁰⁻¹²

Methods

Setting and patients

This survey was performed in the ED of the Prince George Regional Hospital between Nov. 6, 1997, and Dec. 10, 1997. All patients who arrived in the ED during designated shifts were eligible for the study. Patients with contraindications to vaccine (allergy to egg products, fever >38.5°C or indeterminate vaccine status) were included for data collection but ineligible for vaccine. Patients were excluded from the study if they were acutely ill and required immediate care, if they had an altered level of consciousness, were unable to provide informed consent, were under 3 years of age, or had been referred directly to a specialist. All patients provided informed consent, including consent for the investigators to contact their family physician (FP) to determine vaccination status. This study was approved by the Prince George Regional Hospital ethics committee.

Data collection

A research nurse interviewed all patients, collected demographic information, documented the patient's FP and determined whether the patient met BC Department of Health (BCDOH) criteria for vaccination.¹³ To determine whether our study sample was representative, we compared age and gender for the study group to the age and gender of all ED patients for 3 randomly chosen 24-hour days during the study period.

Intervention

Eligible patients who had not received vaccine that season and had no contraindications were given a fact sheet about the influenza vaccine, educated as to its usefulness, and given 2 options: immediate ED vaccination or follow-up vaccination at their FP's office.

Follow-up

Local family physicians were not specifically notified that their patients received influenza vaccine, but as part of routine ED policy, a copy of the ED record containing a summary of treatment was sent to their office. FPs of study patients were contacted in January 1998, to determine whether they used a yearly callback system for influenza vaccine, whether the patient was on the FP's influenza callback list, whether the patient received an influenza vaccine subsequent to their ED visit, and whether the patient had received an influenza vaccine during the previous (1996-97) influenza season.

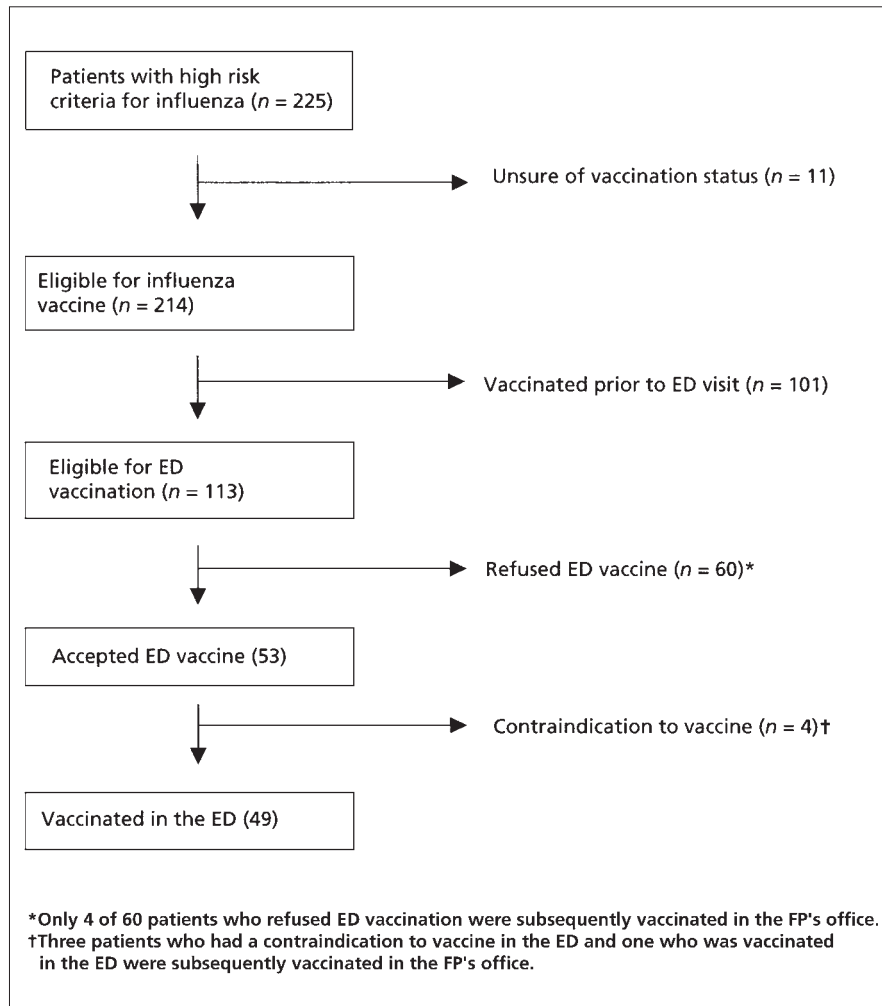


Fig. 1. Vaccination status of 816 study-eligible patients

Table 1. Vaccination eligibility groups and prior vaccination status

Risk group (criteria for vaccination)	No. who met criterion	No. (and %) vaccinated prior to study
Age over 65 years	89	49 (55)
Resident of nursing home or chronic care facility	3	2 (67)
Chronic cardiac or pulmonary disorder severe enough to require regular medical follow-up or hospital care	55	22 (40)
Chronic conditions (e.g., diabetes or other metabolic disease, cancer, immunodeficiency, immunosuppression, HIV infection, renal diseases, anemia, hemoglobinopathy)	41	15 (37)
Health care and other personnel in contact with high-risk people	35	13 (37)
Household contacts (including children) of high-risk people who cannot be vaccinated or may respond inadequately to vaccination	2	0 (0)
Total	214	101 (47)

Note: 11 persons were excluded due to uncertain vaccine status

Statistics

Student's *t*-tests were used to determine the statistical significance of observed differences in continuous outcome variables. Chi² analysis was used to determine the statistical significance of observed differences in categorical outcomes. Univariate tests were performed to assess the level of association between potentially related variables, and odds ratios were used where appropriate to express differences between groups. Intervals of 95% confidence were calculated to illustrate the precision of specified study parameters.

Results

Patients

Of 935 patients screened during the study period, 49.1% were women and the mean age was 33.8 years. In the demographic comparison group (*n* = 301), 48.8% were women and the mean age was 31.8 years, suggesting that we enrolled a representative patient sample. Data on primary health care were available for 897 people. Of these, 822 (88%) were from the local primary health care catchment area and 818 (91.2%) reported having a family physician.

ED vaccination

In total, 816 patients met study eligibility criteria. Figure 1 shows that 225 (27.6%) of these fulfilled BCDOH criteria for influenza vaccination, that 11 were excluded because of uncertain vaccine status, and that 101 (47.2%) of 214 vaccine-eligible patients had already been immunized. Of 113 vaccine-eligible patients who had not yet been immunized, 53 (46.9%) agreed to ED vaccination and 49 received vaccine (4 had fever or allergy as a contraindication). Eight persons were later vaccinated by their FP, including one person who was inadvertently vaccinated twice. How-

ever, of the 60 patients who declined ED vaccination, only 4 were subsequently vaccinated. Table 1 shows the number of patients by influenza risk group and the proportion already vaccinated. Of note, patients who had an FP were more likely to have been previously vaccinated (odds ratio [OR] = 8.8; 95% confidence interval [CI], 1.1–18.9).

Community practice and callback lists

Of 225 vaccine eligible persons, 197 identified 57 local FPs as their primary care provider. These physicians were surveyed, and 54 (94.7%) responded, providing complete data on 140 (71.1%) of the 197 patients. Forty-six physicians reported using a callback list, but only 67 (49.3%) of the patients eligible for ED vaccination were found on their FP's callback list. Table 2 shows that patients on callback lists were more likely than those not on callback lists to have been vaccinated prior to their ED visit (71.6% vs 17.6%; OR = 4.1; 95% CI, 2.4–6.9). Table 3 shows that patients over 65 were more likely to be on callback lists (70.2%) than patients with other vaccination criteria (70.2% vs 35.4%; OR 2.0; 95% CI, 1.4–2.8).

Previous-year vaccination

Information about previous-year vaccination was available for 203 vaccine-eligible patients. Of these, 51% of patients reported that they had not been vaccinated the previous season, but FP records suggested the figure was slightly higher, at 55%. In the subgroup who were vaccinated in the ED, 57% of patients reported that they had not been vaccinated the previous season, whereas FP records suggested that 66% had not.

Discussion

The value of influenza immunization for at-risk populations is well established. In the US, socioeconomic factors and

poor access to primary care have been suggested as reasons for poor compliance with national guidelines.⁷ Several US studies have examined organizational strategies, including ED-based immunization, but report widely variable success rates.^{4–7} One such study concluded that an ED immunization program could be implemented with minimal impact on staff workload.⁶

This is the first Canadian study to assess influenza vaccination rates in ED patients and to evaluate the potential for implementing an ED immunization program. The study showed that most vaccine-eligible patients had not been vaccinated prior to their ED visit; nor had most been immunized the previous season, suggesting that our findings are not specific to the 1997–1998 season. Non-vaccination rates in this study are similar to those (57%–63%) documented by US investigators,^{4–6} despite the fact that Canada has fewer social and financial barriers to immunization.

Our data showed that being on a family physician callback list increased the likelihood of appropriate vaccination, especially for patients over 65. Unfortunately, most of the eligible patients in this study were not on their FP's list. We also found that half of eligible, unvaccinated patients accepted ED vaccination, and that eligible patients who left the ED without being vaccinated seldom received follow-up vaccination. Therefore, it seems clear that ED influenza

Table 2. Vaccination status by presence of name on a callback list*

On callback	Vaccinated prior to ED visit			Total
	Yes	No	Uncertain	
Yes	48	19	2	69
No	12	56	3	71
Total	60	75	5	140

*Odds ratio = 4.1 (95% CI, 2.4–6.9), $p < 0.001$.

Table 3. Emergency department patients whose names were on a family physician flu vaccine callback list (and total number eligible* to be on a callback list), by risk group

Risk group	No. on list (and total no. eligible)	%
Age over 65 years	40 (57)	70.2†
Residents of nursing home or chronic care facility	1 (1)	100
Chronic cardiac or pulmonary disorder severe enough to require regular medical follow-up or hospital care	17 (35)	48.8
Chronic conditions (e.g., diabetes or other metabolic disease, cancer, immunodeficiency, immunosuppression, HIV infection, renal diseases, anemia, hemoglobinopathy)	9 (25)	36.0
Health care and other personnel in contact with high-risk people	2 (22)	9.1
Household contacts (including children) of high-risk people who cannot be vaccinated or may respond inadequately to vaccination	0 (0)	–

*According to callback data available.

†Odds ratio for being on a callback list if age >64 (vs. other criteria) was 2.0 (1.4–2.8).

vaccination is an effective means to increase community coverage, and equally clear that many patients would benefit from ED vaccination programs.

The value of ED immunization is apparent in our study, where the median age was 33.8 years and 91.2% of patients had a primary care physician. It will be more apparent in departments that treat more elderly patients and in inner-city settings, where patients are more likely to have comorbid illness and less likely to have family physicians or adequate preventive care.

Limitations

This study was performed between November 6th and December 10th. These dates are 4 to 5 weeks after widespread influenza vaccination began. The dates chosen for the study allowed time for primary care providers to immunize their eligible patients. Despite this delay, it is possible that some of the people who were vaccinated within the study would have received vaccine from their FP independent of the study.

In addition, our study took place in a northern regional ED, and its results may not be representative of urban Canadian centres. Notably, the high prevalence of young patients with primary care providers enrolled in this study would lead us to underestimate the value of ED immunization. In addition, while we believe that such a program could be instituted with minimal impact on ED workload, we used trained research nurses to interview patients and provide vaccine during the study; therefore, we do not have data to demonstrate that this is the case.

Conclusion

The administration of influenza vaccine in the Canadian ED setting is a feasible and effective method of increasing vaccination coverage in the community.

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