Published in final edited form as:

J Stroke Cerebrovasc Dis. 2009 January ; 18(1): 38–40. doi:10.1016/j.jstrokecerebrovasdis.2008.08.002.

A Care Pathway to Boost Influenza Vaccination Rates among Inpatients with Acute Ischemic Stroke and Transient Ischemic Attack

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Abstract

Background—Although influenza-related morbidity and mortality is high, and influenza can be a trigger for recurrent stroke, only about half of stroke survivors receive yearly influenza vaccination. Identifying new avenues through which to optimize influenza vaccination among stroke survivors is a public health need. We assessed the feasibility of integrating influenza vaccination into routine inpatient stroke care.

Methods—We designed a quality improvement project incorporating influenza vaccination into care administered to hospitalized patients with ischemic stroke and transient ischemic attack that included a standardized order and discharge checklist. Data were then prospectively collected on consecutively encountered patients with ischemic stroke and transient ischemic attack admitted to a university hospital stroke service during the influenza season of October 2007 to February 2008. Successful influenza treatment use was based on optimal rather than actual treatment, with credit for optimal treatment given if an acceptable reason for nonadministration of the vaccine was documented.

Results—Of 103 patients admitted during the study period, 75 (73%) were eligible for influenza vaccination (mean age 72.8 years; 51% women). Among vaccination-eligible patients, 65 (87%) received optimal influenza vaccination treatment, whereas 14 (21%) actually received the vaccination during hospitalization. Leading reason (90%) for suboptimal influenza vaccination treatment among eligible patients was that the vaccination was inadvertently not ordered on admission or at discharge.

Conclusions—Influenza vaccination can be systematically incorporated into stroke hospitalization and may be a viable avenue for promptly enhancing short-term clinical outcomes among hospitalized patients with stroke during peak influenza season.

Keywords

Influenza; vaccination; stroke; health services; outcomes

Influenza is the leading cause of vaccine-preventable deaths in the United States.¹ Stroke survivors are particularly susceptible to the deleterious effects of influenza because the majority

of them are elderly, and acute upper respiratory tract infections tend to precipitate further vascular events.² The influenza vaccine effectively lessens the untoward consequences associated with influenza, and it is recommended that yearly vaccination be given to vulnerable subgroups of the population, including persons with atherosclerotic vascular disease.¹ However, vaccination rates in the general population are well below targets,¹ and an analysis of National Health Interview Survey indicates that only about half of eligible stroke survivors seem to be receiving this vaccine.³ In this study we sought to demonstrate the feasibility and impact of integrating influenza vaccination into routine inpatient stroke care.

Methods

At a university-based teaching hospital, we designed a quality improvement project geared at adding influenza vaccination into an existing systematic inpatient program for the implementation of secondary prevention measures among patients hospitalized for atherosclerotic ischemic stroke and transient ischemic attack.⁴ Based on treatment algorithms derived from national clinical guidelines and consensus reports,^{1,5} the protocol specified that influenza vaccination be administered to all patients before hospital discharge who met the following treatment criteria.

Inclusion Criteria

Any one or more of the following 3 conditions served as inclusion criteria: (1) index ischemic stroke or transient ischemic attack presumed a result of large or small artery atherosclerotic disease; (2) history of symptomatic atherosclerosis in any cardiac, cerebral, or peripheral vascular bed; and (3) age 65 years or older.

Acceptable Contraindications/Exclusion Criteria

Exclusion criteria were: (1) patient already vaccinated for the prevailing influenza season; (2) allergy to eggs; (3) previous severe reaction to vaccine; (4) history of Guillain-Barré syndrome; (5) terminal illness or severely ill in judgment of treating physician; and (6) patient or caregiver refused vaccination.

To facilitate implementation of the project, pocket cards outlining the protocol were disseminated to attending physicians, house staff, and nurses caring for patients admitted to the stroke service. In addition, an order for administration of the vaccine was incorporated into the standardized stroke admission order sheet. This was done to facilitate the prompt administration of the vaccine to those who immediately qualified on the basis of age or medical history. To capture those patients who did not qualify based on admission information but were eligible based on subsequent information (e.g., event mechanism), the treating team reassessed eligibility for vaccination on the day of discharge. Data on consecutive patients were collected and analyzed for the influenza season of October 1, 2007, to February 29, 2008. Successful influenza treatment use was administration of vaccine before discharge in patients with an inclusion criterion and no documented contraindication. The local institutional review board approved the research analysis of the results of the quality improvement effort.

Results

During the study period, 103 consecutive patients were admitted to the hospital stroke service with ischemic cerebrovascular events, 85 (82%) of whom had strokes. Among these, 75 (73%) were eligible for influenza vaccination based on project protocol. Patients qualified for influenza vaccination had a mean age of 72.8 (37–99) years, were 51% female, and were 77% white. A breakdown by presumed stroke mechanism was as follows: 30% unknown, 25% cardioembolic, 18% large artery atherosclerosis, 25% small-vessel disease, and 2% other.

Among vaccination-eligible patients, 65 (87%) received optimal influenza vaccination treatment: 14 (21%) actually received the vaccination during hospitalization, whereas 50 (77%) had an acceptable reason for not being vaccinated in the hospital (30 were already vaccinated, 11 declined, and 9 were terminally or severely ill). Contributory factors to suboptimal influenza vaccination treatment among eligible patients (n = 10) were vaccination order not checked on admission or order not made by discharge in 9 (90%), and order made but not carried out in one.

Discussion

Inclusion of influenza vaccination in a systematic acute stroke inpatient pathway/care map yielded higher achieved influenza vaccination rates compared with the general population of stroke survivors.³ Among patients without contraindications, 81% (44 of 54) were vaccinated by the time of discharge, including 56% already vaccinated before cerebrovascular ischemic event onset and 25% vaccinated during the acute hospitalization. These observations suggest that a coordinated program can boost vaccination rates among patients with recent stroke most susceptible to influenza's untoward effects during a period when the risk of vascular event recurrence is at its highest.⁶

Patients with stroke in other health care settings may not have prehospitalization vaccination rates as high as ours, because our hospital serves a largely middle-class, White population with comparatively good general medical care. Studies of influenza vaccination rates in persons with general medical conditions have shown that Non-Hispanic whites and those of better socioeconomic status tend to have higher vaccination rates.⁷ Conversely, despite this sociodemographic setting, one in 6 of our patients declined the vaccine with no clear contraindication for doing so. Methods to improve patient and caregiver education on the benefits of influenza vaccination in eligible patients with stroke would be beneficial. Reinforcement by medical professional is an important step, as studies have found a favorable attitude toward influenza vaccination and comparatively higher rates of vaccination are linked with discussion about the influenza vaccination by a health care provider.⁸

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