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Identifying barriers to influenza vaccination recommendation adherence in an academic outpatient primary care clinic setting

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Key Words: influenza, vaccination, clinical practice guidelines

Abstract:

Objective: The objectives of this study were to identify barriers to influenza vaccination recommendation adherence and determine potential methods to improve influenza vaccination rates at the outpatient primary care health centers within an academic health care system.

Methods: This descriptive study consisted of a questionnaire distributed to primary care providers at outpatient health centers within an academic health care system. The questionnaire assessed provider opinions regarding knowledge of influenza vaccination recommendations, barriers to following clinical guidelines, and methods to decrease delay of guideline use. Influenza vaccination rates at each of the health centers were also determined through documentation of vaccination for adults who visited a primary care provider during the 2011-2012 influenza season. Vaccination rates were used as a potential model for vaccination recommendation adherence.

Results: When providers were asked about barriers to guideline implementation, 75.0% stated lack of awareness that guidelines have been released and 62.5% identified insufficient time to learn new guidelines as barriers. When asked which would be useful to more quickly implement clinical guidelines, respondents selected education for providers of new guidelines (79.2%), reminders in the electronic medical record (62.5%), and involvement of other health care professionals including pharmacists (54.2%) as potential strategies. Most questionnaire respondents (70.8%) strongly agreed that well-developed guidelines would improve quality of care at their practice site. During the 2011-2012 influenza season, 26.0% of 67,827 adults with an office visit at all outpatient health centers had documentation of administration of an influenza vaccine.

Conclusion: Influenza vaccination rates at the outpatient primary care health centers at this academic health care system represent an area for improvement. Provider perceived barriers to clinical practice guideline implementation and adherence at the health centers include lack of awareness of new guidelines and lack of resources such as time and personnel to follow all recommendations. A health care system-wide process needs to be created to better identify strategies to improve adherence to influenza vaccination recommendations and vaccination documentation.

Introduction

Evidence-based medicine serves as the foundation of most clinical practice guidelines.¹ These guidelines are based on sound research methods and lead to improvements in patient outcomes.²⁻⁴ Studies show that implementation of evidence-based guidelines in clinical practice is often delayed or guidelines are not adequately adopted by providers.⁵⁻⁷

Factors that contribute to this delay include complexity of guidelines, lack of clinician awareness of guidelines, lack of agreement with guidelines, physician resistance, lack of external resources, and the increasing multitude of patient comorbidities.^{6,8}

Delays in implementation and lack of adoption of clinical recommendations and practice guidelines can lead to deficiencies in patient care. A study completed by McGlynn et al. estimated patients receive only 54.9% of recommended evidence-based care.⁹ The study presented deficiencies in how recommendations are followed and documented; the investigators determined only 15% of elderly patients had

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documentation of influenza vaccination, but 85% of patients reported receiving the vaccine. It was also determined that 11.3% of patients received non-recommended care that could lead to potential harm. The Centers for Disease Control and Prevention (CDC) and Advisory Committee on Immunization Practices (ACIP) recommends everyone over the age of 6 months be vaccinated annually for influenza.¹⁰ During the 2011-2012 influenza season, 46.4% of people six months and older were vaccinated in the United States.¹¹

At a large network of outpatient primary care health centers within an academic health care system in Utah, influenza vaccination rates and documentation are areas for improvement. This health care system consists of four hospitals and ten health centers with primary care and specialty care providers. Nine health centers house outpatient dispensing pharmacies and four centers provide clinical pharmacy services and chronic disease state management through collaborative practice.

Low influenza vaccination rates may be representative of suboptimal adherence to clinical evidence-based vaccination recommendations at the health centers. The objectives of this study were to identify barriers to influenza vaccination recommendation adherence and ultimately determine potential methods to improve influenza vaccination rates at the health centers. By using influenza vaccination recommendations as a model, these identified methods will be implemented to improve adult influenza vaccination rates at the health centers and possibly adherence to other clinical practice guidelines and recommendations in the future.

Methods

This descriptive analysis evaluated adult influenza vaccination rates as well as barriers to clinical practice guideline use at ten outpatient primary care health centers within an academic health care system. The study consisted of a questionnaire distributed to primary care providers and collection of influenza vaccination rates at all ten health centers in the health care system. We selected influenza vaccination as a model because the recommendations are straightforward and generally well-accepted.

The study investigators developed a ten-item questionnaire to collect information that included four questions relating to influenza vaccination recommendations and using vaccination recommendations in practice [Appendix A]. An additional four questions were adapted from the literature and related to clinical practice guidelines in general and their usefulness.^{12,13} Specifically, providers were asked whether they screen patient influenza vaccination status at office visits, whether they follow, agree with, or reviewed current

influenza vaccination recommendations, what barriers prevent them from following clinical practice guidelines, and what methods could assist in implementing guidelines into practice more quickly. Questionnaire items utilized Likert-like scale and free text formats. The questions were not validated.

The questionnaire was sent electronically to all primary care providers practicing in family medicine and internal medicine at the health centers during a three week period in January 2013. This population of providers was selected because patients are likely to be screened for preventive care issues such as vaccinations at visits with their primary care provider. Questionnaire responses were anonymous.

Influenza vaccination rates were obtained for the ten health centers during one influenza season, September 2011 to February 2012. Influenza vaccination rates were based on a population of patients age 18 years or older who had one or more office visits at one or more of the study centers during the study time period. Patients with a documented egg allergy or adverse reaction to vaccines were excluded. Influenza vaccination rates were collected from a database that stores current procedural terminology (CPT) codes indicating documented influenza vaccine administration in the electronic medical record. A low rate of influenza vaccination may demonstrate an area where clinical recommendations for vaccinations are not being followed to standards deemed acceptable by the health care system.

Study outcomes included responses from the primary care provider questionnaire as well as influenza vaccination rates at the health centers. Vaccination rates were reported by total patients, age (18-49 years, 50-65 years, 66-89 years, and 90 years and older), and select comorbidities. Comorbidities were identified by the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes and included asthma, chronic obstructive pulmonary disease, congestive heart failure, coronary artery disease, and diabetes.

Results

Questionnaire – Influenza Vaccination Recommendations
Questionnaires were distributed to a total of 90 family medicine and internal medicine providers within the health care system. The provider questionnaire response rate was 26.7% (n=24 responses), and most respondents had been practicing for at least five years as a health care provider (75.0%). Of those who responded, 79.2% strongly agreed with the current CDC and ACIP influenza vaccination recommendations. This illustrates strong acceptance of these influenza vaccination recommendations. This was further

supported as 75.0% answered in the affirmative when asked if the respondent had reviewed the most current CDC and ACIP influenza vaccination recommendations. Most respondents stated they always (70.8%) or very often (29.2%) follow clinical practice recommendations developed from evidence-based medicine for influenza vaccinations. Select questions and responses are listed in Table 1.

Questionnaire – Clinical Practice Guidelines

With regards to clinical practice guidelines in general, most strongly agreed (70.8%) or agreed (29.2%) that guidelines are useful in practice; 70.8% of respondents strongly agreed that well-developed guidelines would improve quality of care at their practice site. When providers were asked about barriers to guideline adherence in general, lack of awareness that guidelines have been released (75.0% of all responses), insufficient time to learn new guidelines (62.5%), and insufficient time to follow guidelines during office visits (50.0%) were selected as the most common barriers. When asked which items would be useful to more quickly implement clinical guidelines into practice, respondents most commonly selected education for providers of new guidelines (79.2% of all responses), education for support staff (62.5%), reminders in the electronic medical record (62.5%), and involvement of other health care professionals, including pharmacists (54.2%).

Influenza Vaccination Rates

During the 2011-2012 influenza season, a total of 67,827 individual adult patients had one or more office visits with a primary care provider (family medicine or internal medicine clinics) at one of the ten outpatient health centers. Of patients at all health centers in the vaccination analyses cohort, 26.0% had documentation of an administered influenza vaccine during the assessed time period. Vaccination rates varied by comorbidity ranging from 57.1% for those with coronary artery disease and/or congestive heart failure, 51.7% for those with asthma and/or chronic obstructive pulmonary disease, and 28.5% for those with diabetes. For those age 50 years and older, 38.4% had documentation of influenza vaccine administration, while 46.6% of patients age 90 years and older had documentation of influenza vaccine administration [Table 2].

Discussion

Influenza vaccination recommendation adherence by family medicine and internal medicine providers at the outpatient primary care health centers at this academic health care system may be a challenge as evidenced by a low overall influenza vaccination rate, or lack of documentation of vaccination. Clinical practice guidelines in general may have low adherence due to barriers such as lack of awareness by

providers of the release of new guidelines and lack of time to learn new guidelines or follow recommendations during provider visits. According to questionnaire responses from this study, however, most primary care providers at these health centers appear willing to follow guidelines if guidelines are supported by strong evidence from clinical studies, showing acceptance of guidelines in general is high.

Our analysis found that documented influenza vaccination rates at the health centers are low, demonstrating an area for improvement. This may represent an area where the health centers can improve in guideline adherence, as the recommendations for influenza vaccinations are straightforward and likely more widely accepted within the health care system compared to other clinical practice guidelines for more complex disease states. Low vaccination rates may also represent indifference to vaccinations by providers. Interestingly, rates were low even for patient populations with comorbidities that may put them at higher risk for influenza-related complications and morbidity. Vaccination rates were determined from documented vaccine administration and do not include vaccinations from outside sources or patient refusal, which likely contributes to the low vaccination rates. Pharmacists may help improve vaccination rates by documenting vaccine administrations from outside sources and increasing screening, administration, and documentation of vaccines at the community pharmacies within the health care system that share access to the electronic medical record. Obtaining vaccines outside of the health care system is common as state laws allow for pharmacists to provide vaccines in the outpatient environment in our state. Although we are unable to fully extrapolate the data from this study to determine adherence and acceptance of other clinical practice guidelines, the barriers to following influenza vaccination recommendations could be similar to barriers in following other recommendations.

Guideline implementation strategies that moderately improve the process of care include educational and technological methods.¹⁴ Methods that may also improve influenza vaccination recommendation adherence at the health centers within our health care system, as supported by providers, include education for providers and support staff, using technology and reminders in the electronic medical record, and inclusion of other health care professionals such as pharmacists. Pharmacists within the health care system may assist with guideline implementation and subsequently recommendation adherence by summarizing evidence supporting a recommendation and disseminating that information to providers through electronic means, live education, notices posted within the health centers, or other

modes of communication. Provider adherence rates to a specific recommendation relative to other centers or peers may help increase provider acceptance and motivation to follow new or current recommendations. For these health centers, an alert in the electronic medical record may improve adherence, such as a prompt that reminds all clinicians to assess and document a patient's influenza vaccination status at point-of-care. The effects of these implementation and adoption strategies on patient outcomes, however, are unclear, and further studies are needed to assess improvements in patient care and outcomes.^{15,16}

Limitations of the study include selection bias of those who responded to the questionnaire and a low response rate. The strategies that could be implemented within the health care system are based on opinions of those who responded to the questionnaire, and the majority of respondents practiced at two of the ten health centers. These two health centers currently have pharmacy involvement in direct patient care through collaborative practice, and providers practicing at these health centers may be more accepting of strategies that include pharmacists. The influenza vaccination rates at these clinics were not higher compared to the other health centers. Providers who have a working relationship with the study investigators or who are more supportive of vaccinations may also have been more inclined to respond to the questionnaire, and there was no analysis of any relationship between respondents and patients included in the vaccination rate data. Those who did respond to the questionnaire may not completely represent those who did not respond, as the health centers are located throughout a large metropolitan area and each center has a different patient population. Several of the health centers are also medicine training centers. Another limitation of the study was lack of inclusion of documented influenza vaccinations from outside sources in calculating vaccination rates; therefore rates may be artificially low. This suggests a need for better documentation efforts at the health centers, especially if patients decline vaccinations. Regardless, we believe our vaccination rates are low for our health care system's standards as ideally all adult patients should be vaccinated annually. A state-wide vaccination registry is also available to document patient vaccinations which can help health care professionals verify influenza vaccination status for patients seen at the health centers.

The strategies identified through this study may not only improve influenza vaccination recommendation adherence but could potentially be applicable to other clinical practice guidelines used within our academic health care system. This application may be difficult to fully implement, however, due

to the complexity of other guidelines, the multitude of guidelines developed by outside organizations as well as protocols from our health care system for one disease state, and the strong possibility that other guidelines are not as well-accepted by providers. Applying the results from this study to other clinical practice guidelines and implementing strategies to improve influenza vaccination rates are areas for further exploration by our health care system.

Conclusion

Influenza vaccination rates at the outpatient primary care health centers at this academic health care system represent an area for improvement. Provider perceived barriers to clinical practice guideline implementation and adherence at the health centers include lack of awareness of new guidelines and lack of resources such as time and personnel to follow all recommendations. Future goals include development of a system-wide process to increase adherence to influenza vaccination recommendations and to improve vaccination rates at the health centers.

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Table 1
Select Primary Care Provider Questionnaire Items and Responses

Question	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
Everyone \geq 6 months of age should be assessed for influenza vaccination	79.2%	20.8%	0.0%	0.0%	0.0%
Clinical practice guidelines are useful in my practice	70.8%	29.2%	0.0%	0.0%	0.0%
Well-developed guidelines would improve the quality of care at my practice site	70.8%	25.0%	4.2%	0.0%	0.0%
Question	Always	Very Often	Sometimes	Almost Never	Never
Ask adult patients or review their chart for influenza vaccination	37.5%	54.2%	8.3%	0.0%	0.0%
Follow clinical practice recommendations for influenza vaccinations	70.8%	29.2%	0.0%	0.0%	0.0%
Question: What do you identify as a barrier to following clinical practice guidelines and recommendations that are relevant to your practice? Please choose all that apply:					
Being unaware that guidelines have been released					75.0%
Insufficient time to learn new guidelines					62.5%
Insufficient time to follow guidelines during office visits					50.0%
Feeling guidelines do not allow clinical judgment					16.7%
Disagreeing with guidelines					12.5%
Feeling guidelines are not practical					8.3%
Other					25.0%
Question: Which of the following, if any, would be useful to more quickly implement clinical practice guidelines and recommendations into practice? Please choose all that apply:					
Education for providers					79.2%
Education for support staff					62.5%
Reminders in the electronic medical record					62.5%
Involvement of other health care professionals					54.2%
Team meetings of health care professionals to assess guideline validity					29.2%
Other					12.5%

Target Population	Number of Patients	Influenza Vaccination Rate
All patients	67,827	26.0%
Asthma/COPD	6,326	51.7%
CAD/CHF	4,739	57.1%
Diabetes	11,981	28.5%
Age ≥ 50 years	22,767	38.4%
Age ≥ 90 years	416	46.6%

^aRates calculated from current procedural terminology (CPT) codes indicating documented influenza vaccine administration in the electronic medical record. Patients with a documented egg allergy or adverse reaction to a vaccine were excluded.
COPD = chronic obstructive pulmonary disease, CAD = coronary artery disease, CHF = congestive heart failure

Appendix A

Primary Care Provider Questionnaire

1. During the flu season, how often do you ask adult patients if they would like a flu shot or review their chart to see if a flu shot has been administered?
 - a. Always
 - b. Very often
 - c. Sometimes
 - d. Almost never
 - e. Never
2. Everyone over the age of 6 months should be assessed for receiving an influenza vaccine. Do you agree with this statement?
 - a. Strongly agree
 - b. Agree
 - c. No opinion
 - d. Disagree
 - e. Strongly disagree
3. I follow clinical practice recommendations developed from evidence-based medicine for flu vaccinations. Please choose one of the following:
 - a. Always
 - b. Very often
 - c. Sometimes
 - d. Almost never
 - e. Never
4. Have you reviewed the most recent 2012 to 2013 CDC and ACIP recommendations for the influenza vaccine?
 - a. Yes
 - b. No, I do not know where to find the current recommendations
 - c. No, I was not aware of these recommendations or an update to recommendations
 - d. No, I assumed the recommendations are the same as previous years
 - e. No, other: [Free text]
5. Clinical practice guidelines are useful in my practice. Do you agree with this statement?
 - a. Strongly agree
 - b. Agree
 - c. No opinion
 - d. Disagree
 - e. Strongly disagree
6. Well-developed guidelines would improve the quality of care at my practice site. Do you agree with this statement?
 - a. Strongly agree
 - b. Agree
 - c. No opinion
 - d. Disagree
 - e. Strongly disagree
7. What do you identify as a barrier to following clinical practice guidelines and recommendations that are relevant to your practice? Please choose all that apply:
 - a. Insufficient time to learn new guidelines and recommendations
 - b. Being unaware that guidelines and recommendations or updates have been released
 - c. Disagreeing with guidelines or recommendations
 - d. Feeling guidelines or recommendations do not allow clinical judgment
 - e. Insufficient time to follow all guidelines and recommendations during office visits
 - f. Feeling guidelines or recommendations are not practical
 - g. Other: [Free text]

8. Which of the following, if any, would be useful to more quickly implement clinical practice guidelines and recommendations into practice? Please choose all that apply:
 - a. Education for providers of new guidelines
 - b. Education for support staff (medical assistants, nursing staff) of new guidelines
 - c. Involvement of other health care professionals such as pharmacists or physician extenders
 - d. Reminders in the electronic medical record
 - e. Meetings of health care professionals at my clinic to assess guidelines for validity and feasibility
 - f. I prefer to treat each patient individually based on personal experience rather than apply guidelines uniformly to all patients
 - g. Other: [Free text]
9. How long have you been practicing as a health care provider?
 - a. Less than 1 year
 - b. 1 to 5 years
 - c. 5 to 10 years
 - d. 10 to 15 years
 - e. More than 15 years
10. Which community clinic do you practice at? Please choose all that apply.