

# **Are Rates of Patient Influenza Vaccination in AIM Clinic by Residents Affected by Resident Training Year or Rotation?**

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## **A. Study Purpose and Rationale**

Influenza, an acute respiratory virus, is a major public health problem leading to a significant amount of illness, hospitalization and death every year in the United States. Although the severity and duration of influenza infection changes each year it is estimated that influenza is responsible for over 200,000 hospitalizations per year in the US.<sup>1</sup> A recent study of the data from 1976-2007 estimates that each year influenza causes anywhere from a few thousand to 40,000 deaths per year.<sup>2</sup>

The influenza virus is an RNA virus classified as orthomyxoviridae family. The most common influenza viruses that infect humans are influenza A and influenza B.<sup>3</sup> The virus is transmitted from person to person through large respiratory droplets primarily released from sneezing and coughing. These particles require close contact to spread as they are only able to travel about 6 feet. These droplets may also be spread through contact with surfaces on which the droplets land. The virus gains entry into the body through the respiratory tract where the infection begins. The typical incubation period for the virus is 1-3 days. Once the person is infected with the virus viral shedding can begin one day prior to symptom onset and usually lasts for approximately 4 days. The infected person is considered contagious while active viral shedding takes place.<sup>3</sup>

The influenza virus shows seasonal and climate variation. It most often infects those in temperate climates with a peak in activity in the winter months. The influenza virus has a high rate of mutations through antigenic drift and rarely antigenic shift. These changes in the virus require the development of new seasonal vaccine yearly to adjust for the most common mutated strains of the virus.<sup>2</sup>

Currently the Centers for Disease Control (CDC) recommend that all persons older than 6 months of age receive the annual influenza vaccine. The only people excluded from this recommendation are those with a contraindication to the vaccine.<sup>4</sup> The only absolute contraindication to the inactivated influenza vaccine is a history of previous severe allergic reaction to any a previous influenza vaccination or any component of the vaccine.<sup>5</sup>

There is special emphasis on vaccinating those with one or more risk factor for developing serious complications to influenza infection. High risk factors include age greater than 65 years or less than 5 years, pregnant women, those with asthma, diabetes and heart disease.<sup>4</sup>

A study conducted by the National Immunization Survey in 2007 found that only 68% of those over the age of 65 reported receiving the flu vaccine. Those in the younger age ranges had even lower reported vaccination rates. The 50-64 year age group reported 42% vaccination and the 18-41 group only reported 37.3% vaccination.<sup>6</sup>

The Associates in Internal Medicine (AIM) Clinic is a primary care clinic of Columbia University Medical Center (CUMC). The clinic is primarily staffed by categorical Internal Medicine Residents ranging from post-graduate year 1 (PGY-1) through post-graduate year 3 (PGY-3) residents. The residents are responsible for participating in a continuity clinic on average of 1 time per week while on inpatient and intensive care rotations. Residents also complete dedicated outpatient rotations and elective rotations where a greater proportion of their time is dedicated to continuity clinic without in-hospital call responsibilities.

Influenza vaccination became available in the AIM clinic in September 2013 for the 2013-2014 influenza seasons. While patients are able to present without an appointment to receive the influenza vaccine it is the primary responsibility of the medical resident to ensure that the patients presenting for routine follow-up in continuity clinic receive the annual influenza vaccination. All vaccines are ordered by the residents and are administered by the nursing staff.

Due to the high prevalence of influenza-related complications including illness, hospitalization, and death, it is important that the residents are able to effectively vaccinate their patients when they present for routine visits. It is important to identify possible differences in level of training and curricular variations which may lead to decreased vaccination rates to allow for improvement in the delivery of health care to better the lives of our patients.

### **Questions:**

- What percentage of residents vaccinate their patients against influenza at their first regularly scheduled visit during the period from September 2013 – January 2014?
- Does year of post-graduate training affect the rate at which residents vaccinate their patients?
- Does the resident's rotation affect the rate at which residents vaccinate their patients?

### **Hypotheses**

- Residents will have higher rates of vaccination as their post-graduate year of training increases.
- Residents will have higher rates of vaccination while on outpatient and call-free rotations than they will during inpatient and ICU rotations.

### **B. Study Design and Statistical Analysis**

The study is a retrospective chart review. The rates of vaccination of each resident at their first encounter with a patient in continuity clinic during the 2013-2014 influenza vaccination season will be analyzed. First, the schedule of each resident will be obtained from Amion. Next, the patients seen for their first continuity clinic visit for each resident will be identified using the Soriano scheduling system. Lastly, the

vaccination status of the patient at the visit will be obtained. Patients who had received influenza vaccinations prior to the first encounter in continuity clinic during the study period will be excluded.

The categorical residents will be divided into 6 groups based on PGY year (1, 2 or 3) and rotation (inpatient/ICU or outpatient). The group of PGY year will be determined by number of years in the Internal Medicine residency program. Those residents rotating on General Medicine 1, General Medicine 2, Infectious Disease, Cardiology, Cardiac Care Unit, Medical Intensive Care Unit, Intensive Care Unit Triage, Allen Wards, Allen Intensive Care Unit, Oncology, and Hematology will be placed in the "Inpatient/ICU group." Those residents on outpatient, elective, health sciences, and geriatrics will be placed in the "Outpatient group." Each patient encounter and resident will be given unique identifiers and no personal identifiers will be recorded.

There will be no subjects enrolled. No randomization will take place.

### **Statistical analysis**

The results of the rates of vaccination of each resident will be calculated. The rates of the residents in all of the 6 groups will be compared using a t-test. The probability of committing a type I error ( $\alpha$ , alpha) will be set to 0.005 using the Bonferroni correction for 6 multiple analyses. The probability of committing a type II error ( $\beta$ , beta) will be 0.8. The power will be  $1 - 0.8 = 0.2$ . With an expected variability of 5 (standard deviation) the study should be able to detect an effect of 4 percent. There will be a total of 135 residents in the study with approx. 44 in each group.

### **C. Study Procedure**

The procedures of this study will involve retrospective chart review as described in detail above.

### **D. Study Drugs**

No study drugs will be used in this study.

### **E. Medical Device**

No medical devices will be used in this study.

### **F. Study Questionnaires**

No questionnaires will be used in this study.

### **G. Study Subjects**

No study subjects will be used for this retrospective chart review.

### **H. Recruitment of Subjects**

No study subject will be recruited for this retrospective chart review.

### **I. Confidentiality of Study Data**

All study data will be coded with unique coded number assignments made to each resident and each patient. The identity and health information of the subjects will be kept confidential. Study data will be stored on a password protected and encrypted devices only. Only investigators will have access to the study data.

**J. Potential Conflicts of Interest**

No potential conflicts of interest identified. The data from all persons involved in this study will be excluded from study analysis.

**K. Location of Study**

The study will be conducted at New York Presbyterian Hospital – Columbia University Medical Center at the Associates of Internal Medicine Clinic under the Department of Medicine.

**L. Potential Risks**

Medical residents vaccination rates will remain confidential. No data will represent any specific residents. There are no risks to this study.

**M. Potential Benefits**

The study may benefit the residents or patients in the AIM clinic by providing information about influenza vaccination practices leading to improvements in the practice.

**N Alternative Therapies**

None.

**O. Compensation and cost to subjects.**

None.

**P. Costs to subjects.**

None.

**Q. Minors as subjects**

Not applicable.

**R. Radiation or radioactive substance exposure.**

None.

**S. References**

1. Johnson, W. et al. *Influenza-Associated Hospitalizations in the United States*. JAMA. 2004;292 (11):333-1340.
2. Thompson MG et al. *Updated Estimates of Mortality Associated with Seasonal Influenza through the 2006-2007 Influenza Season*. MMWR 2010; 59(33): 1057-1062.

3. Dolan,R. *Clinical Manifestations of Seasonal Influenza in Adults*. *Uptodate.com*. Review current through February 2014. Information retrieved March 2014.
4. [Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices – United States, 2013-14, MMWR 2013, September 20, 2013 / 62\(RR07\);1-43.](#)
5. <http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm> (flu contraindications)
6. Euler, GL. Et al. Summer 2007 Self-Reported Vaccination Coverage among U.S. Adults. National Immunization Survey. [www.cdc.gov](http://www.cdc.gov) March 2014.