

# Ripples Left by H1N1: Care Utilization and Repeat Visits for Influenza-Like Illness (ILI) in Houston, Texas (2008-2011)

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## ABSTRACT

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In December 2007, the Houston Department of Health and Human Services (HDHHS) instituted a collaboration with local healthcare providers to enhance influenza surveillance by performing tests on specimens from patients with ILI symptoms. Kelsey-Seybold Clinic contributes the largest number of samples for this surveillance network.

When H1N1 arose in April 2009, this program provided an opportunity to effectively monitor the highly publicized outbreak's impact on local patients' behavior and care utilization through number of return visits. The data used for this study comprised 3,776 patients' records with 4,047 visits obtained between August 2008 and January 2011 from Kelsey-Seybold Clinic as part of the HDHHS enhanced Influenza surveillance project. Visits were classified into three phases: pre-H1N1, during H1N1, and post-H1N1, and from these, return visits were identified as any non-initiating visits made by an individual in a given phase. Both descriptive and inferential statistical analyses were conducted using STATA IC10.

Results indicated that a total of 150 ILI-related return visits (3.71%) were recorded. The age category with the highest percentage of return visits was 0-4 years (8.8%). Further analyses indicated a significant difference ( $p < .0001$ ) in the proportion of return visits between pre-H1N1 (1.21%), during H1N1 (4.56%) and post-H1N1 (1.65%). Overall, 2% of return visits were by patients with no vaccination history, compared to 6% for vaccinated patients.

A significant increase was observed in the percentage of ILI-related return visits during H1N1 compared to the phases before and after, which may reflect a variety of factors such as media publicity, changes in CDC guidelines and vaccine availability, and/or differing attitudes towards influenza vaccination and prevention.

### Learning Areas:

Epidemiology  
Public health or related research  
Social and behavioral sciences

### Learning Objectives:

To analyze how H1N1 impacted the number of Influenza-Like-Illness related return visits to a multispecialty clinic.

**For more information, contact:**

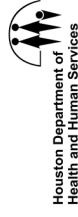
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## Introduction

Though many factors are involved in healthcare-seeking behavior, few studies have examined its relationship to events of public health significance such as a pandemic, and even fewer in a long-term context. The recent H1N1 pandemic, paired with an existing sentinel surveillance program, provided an opportunity to examine the local lingering impact that such an event may have left on healthcare-seeking behavior for influenza-like illness (ILI), as measured through return visits to their provider.

## Purpose

To analyze how H1N1 may have impacted potential differences in healthcare-seeking behavior, measured through return visits to a multispecialty clinic

## Study Background

In late 2007, the Houston Department of Health and Human Services (HDHHS) began collaborating with local private medical providers to improve influenza surveillance.

Data collection for this program began in August 2008 and was well in place when H1N1 began in April 2009.

Kelsey-Seybold Clinic (KSC), referred to as the provider, is the largest private multispecialty medical organization in Houston<sup>1</sup>, with more than 375 physicians at 20 clinic locations. KSC contributes the largest number of samples for the sentinel surveillance network through its two participating clinics: West Clinic and Main Campus.

## References:

1. Kelsey-Seybold Clinic. <http://www.kelsey-seybold.com/About-Us/Pages/more-about-us.aspx>.

2,3. Centers for Disease Control and Prevention. *Overview of Influenza Surveillance in the United States*. <http://www.cdc.gov/flu/weekly/overview.htm>.

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## Methods

### Study population:

The data comprised 3,776 unique patients and 4,047 ILI-related visits. Specimens were collected from the West and Main locations of KSC for patients visiting the provider and exhibiting symptoms of ILI, defined as the following:<sup>2</sup>

- Fever of at least 100°F [37.8°C], and
- Cough and/or sore throat in the absence of a known cause other than influenza

### Study period:

Data was collected between August 2008 and January 2011, and was divided into three phases:

- Pre-H1N1 (April 16, 2009 or earlier)
- During H1N1 (April 17-2009-March 1, 2010)
- Post-H1N1 (all events after March 1, 2010)

Return visit criteria was defined as any visit after the initial visit within a given phase. (see Figure 1)

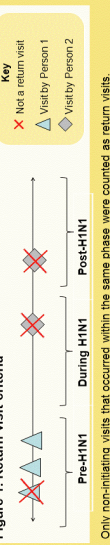
### Other variables of interest:

- Sex
- Vaccination history (whether patients had been vaccinated for influenza prior to the visit)
- Age group (based on CDC's U.S. Outpatient Influenza-Like-Illness Surveillance Network (ILINet) categories: 0-4, 5-24, 25-49, 50-64, and 65 and older)<sup>3</sup>

### Analyses

Using STATA IC10 (College Station, Texas), descriptive, Pearson Chi-square ( $\chi^2$ ), and Fisher's exact test analyses were done comparing the proportion of return visits between periods and various cross tabulations of other variables.

### Figure 1. Return visit criteria



## Results

Table 1. Comparison of Regular vs. Return Visits by Phase (N=4,047)

Type of Visit	Pre-H1N1 (%)	During H1N1 (%)	Post-H1N1 (%)	Total Visits
Non-return	654 (98.79)	2,826 (95.44)	417 (98.35)	3,897 (96.29)
Return visit	8 (1.21)	135 (4.56)	7 (1.65)	150 (3.71)
Total	662	2,961	424	4,047

$\chi^2 = 22.6273$ ,  $p=0.000^*$

- 1,761 (43%) of all visits were made by male patients; 2,286 (57%) were made by female patients.
- For comparing return visits between sexes,  $\chi^2 = 0.6300$ ,  $p=0.427$

- A comparison of vaccination history between return visits in different phases yielded Fisher's exact statistics of:

- 0.000<sup>\*</sup> for during H1N1
- 0.034 for post-H1N1

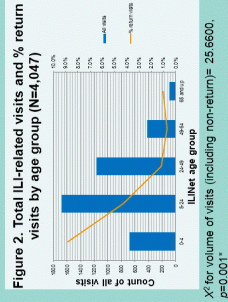
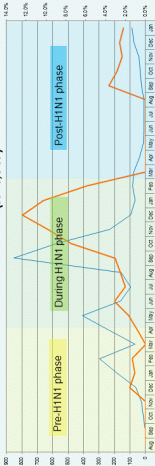


Figure 2. Total ILI-related visits and % return visits by age group (N=4,047)

$\chi^2$  for volume of visits (including non-return)= 25.6600,  $p=0.001^*$

Figure 3. ILI-related visits to West and Main Campuses of KSC, 2008-2011 (N=4,047)



## Conclusions

- During the H1N1 phase, there was a significant increase in the percentage of return visits and more return visits by patients with some vaccination history.
- Partnering with the medical community for influenza surveillance can provide access to novel sources of data to better monitor health status and behaviors.
- Further research is necessary to explore the various possible public health implications of these findings, including:
  - *emergency preparedness* (predicting and preparing for hospital surge capacity in future pandemics)
  - *health communications* (impact of media coverage during an outbreak on health behaviors)
  - *public health economics* (reducing possibly unnecessary healthcare utilization)