

# H1N1: Communication Patterns among Emergency Department Staff during the H1N1 Outbreak, April 2009

Kelly R. Klein, MD; Hillary Cohen, MD; Cindy Baseluos, MD; John Marshall, MD; Antonios Likourezos, MS, MPH; Ashika Jain, MD; Steven Davidson, MD, MBA

Department of Emergency Medicine,  
Maimonides Medical Center, Brooklyn, New  
York USA

## Correspondence:

Kelly R. Klein, MD  
Department of Emergency Medicine  
Maimonides Medical Center  
4802 10th Avenue  
Brooklyn, New York 11219 USA  
E-mail: kklein@maimonidesmed.org

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## Abbreviations:

CDC = [US] Centers for Disease Control and  
Prevention  
IRB = institutional review board  
SARS = severe acute respiratory syndrome  
WHO = World Health Organization

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## Abstract

**Introduction:** The H1N1 influenza virus has been described by the World Health Organization (WHO) and the media as a disease that could rival the 1918 Spanish Influenza epidemic in deaths. During the spring of 2009, emergency departments across the world saw a spike in the number of influenza cases and by June 2009, the WHO had declared H1N1 a pandemic. In order to prevent emergency department staff from becoming ill and to provide up-to-date medical care to patients, information had to be disseminated quickly to emergency department staff.

**Methods:** An anonymous Internet survey was utilized to query emergency department staff regarding communication methods and overall attitudes regarding safety and treatment during the spring of 2009.

**Results:** The majority of emergency department staff (263; 88.3%) used multiple sources to obtain information about the H1N1 virus. There were 258 respondents (88.9%) that felt that the hospital was supplying them with the necessary information to protect themselves and their families and 280 (98.5%) felt confident that their emergency department was treating patients by the government-recommended guidelines. Statistically significant differences were noted in communication patterns between direct and indirect patient care providers.

**Conclusions:** In general, H1N1 communication to emergency department staff was perceived as good during the initial H1N1 outbreak. However, because of the limitations associated with an online survey, these results do not allow for generalization to the total emergency department staff population. Hospital administrators may need to consider the differences in communication preferences of direct patient care providers and indirect patient care providers when distributing important information to emergency department staff during crisis and emergency situations.

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## Introduction

Every few years, governments and health agencies warn the public about the possibility of a potentially devastating and lethal influenza pandemic. The World Health Organization (WHO) describes an influenza pandemic as a “new influenza virus that appears against which the human population has no immunity, resulting in several, simultaneous epidemics worldwide with enormous numbers of deaths and illness”.<sup>1</sup> However, since the Spanish influenza pandemic of 1918, which killed 21 million people worldwide, an influenza outbreak of similar magnitude has not materialized.<sup>2</sup> However, in April 2009, the H1N1 influenza virus was diagnosed in humans in Mexico City; and on 11 June 2009, the WHO declared a global influenza pandemic (Phase 6). At that time, 74 countries officially had reported a total of 27,737 cases of the H1N1 influenza virus, which included 141 deaths.<sup>3</sup> From 25 April 25 to 08 July 2009, the New York City Department of Health reported >2,600 cases of H1N1

influenza, of which 1,317 were confirmed cases.<sup>4</sup> Given the limited testing performed, this was likely a gross under-estimation of the incidence. Recent estimates place the number of infected people in New York City closer to one million during the initial influenza outbreak.<sup>5</sup> Fortunately, despite initial government alarms and media sensationalism predicting mass deaths and chaos, a relatively mild illness was experienced during this initial outbreak. However, information from the Centers for Disease Control and Prevention (CDC) and the WHO was changing daily, which presented a challenge for public health officials and hospital administrators in disseminating meaningful information to the public and hospital staff in order to avoid hysteria, an excessive number of visits to the emergency department, clinics, and doctor's offices, and a rise in worker absenteeism. It also can lead to confusion in managing expectations and fears of patients.

Pandemic planning revolves on the healthcare community's active participation, with emergency departments serving as a major component and cornerstone of the healthcare safety net in the United States. Risk communication with emergency department staff continues to be of significant importance during this pandemic, as well as in other crisis situations. This paper describes the perception of emergency department staff during the initial stages of the H1N1 influenza pandemic, the success of communication strategies, and their own discernment of personal safety.

## Methods

A survey was designed to assess how healthcare workers in emergency departments in the US obtained information related to the initial H1N1 influenza outbreak during the spring of 2009. The survey was written in English, was an original design, and was not based on any other surveys. The survey was piloted to a small sample of emergency department staff at one hospital and changes to the survey were made according to their suggestions and reactions. Using SurveyMonkey®, 13 survey questions were entered into a survey web portal. The survey was designed to be anonymous; however, to have an understanding of the locations of the participants, they were asked to supply their hospital's zip code. This study was approved by the pilot hospital's Institutional Review Board (IRB) and due to the safeguards of anonymity, informed consent was waived by the IRB.

Invitations to participate in the survey were sent primarily to physician listservs whose memberships are both academic and non-academic. Included was an introductory e-mail explaining the survey, the time frame in question (the spring of 2009), and described to whom the survey should be forwarded; i.e., to other emergency department staff including attending and resident emergency department physicians, nurses, advanced care practitioners, emergency department management, and ancillary staff, including patient registration personnel, environmental services/housekeeping, emergency department x-ray technicians, and patient transporters. Additionally, individual e-mails were sent to emergency department leadership, department staff, and emergency managers from personal contact lists. As with the listservs, these personal contacts were both at academic and non-acad-

emic facilities. These personal lists were cross-referenced to ensure non-duplication. Surveys were sent to individuals without bias to academic or community affiliation. All regions in the US were included. Only one e-mail invitation was sent and no compensation was offered for completing the survey.

## Survey Tool

The survey consisted of 13 questions, of which four were demographic: job description, number of years at the institution, gender, and institution zip code. There was one open-ended, and nine primary coded data questions. The open-ended question was presented by text input boxes, with wrapping and scrolling and not single line entry (Appendix). The introductory information briefly described the intent of the survey, the time span of interest, a statement attesting to anonymity, and the approximate length of the time to complete the survey. The questionnaire items were summarized by the use of descriptive statistics, using valid percentages for all categorical variables. All data computations were performed on the survey results using SPSS version 15.0. [SPSS Inc., Chicago, IL, 2005]. Chi-square analyses were used to compare survey respondents' and Fisher's exact test was utilized if there were <5 participants in any one cell; *p*-values <0.05 were considered statistically significant.

## Results

### Characteristics of Respondents

Based upon listserv member numbers obtained from the webmasters for the sites, the survey was sent to approximately 1,800 people. A total of 298 surveys were completed. Analysis was performed on the 298 completed surveys. The majority of respondents (*n* = 245; 82.2%) were categorized as providing direct patient care (nurses, physicians, and patient care technicians), the remaining participants (*n* = 53; 17.8%) provided indirect patient care (Table 1). Respondents worked an equal number of day and night shifts, with 170 (57.2%) working at their respective institution for >5 years; no one reported employment at their present institution of <3 months. None of the respondents described themselves as radiology technicians or patient transporters.

### Sources of Information

Two hundred sixty-three (88.3%) emergency department personnel reported that they obtained their information about the H1N1 pandemic from multiple sources (Internet, hospital, and other media sources). Of those respondents who did not use multiple sources of information, hospital management was cited as the most common source used (*n* = 18; 51.4%), followed by the Internet (*n* = 13; 37.1%). There were 26 respondents (19.4%) that said that they did not use the Internet. The CDC was cited most often as the Internet site used for information (Table 2). Of those respondents who answered that they used only hospital-provided information, 100% had worked at their hospital >12 months. Indirect patient care respondents utilized verbal briefings for information (*n* = 36; 67.9%) more often than the direct patient care respondents (*p* = 0.0001). Similarly, (*n* = 12; 22.6%) also utilized hospital-posted informational displays more often (*p* = 0.023; Table 4). The emergency department attending physicians reported utilizing verbal briefings as their main source of information (*n* = 32; 28.8%).

| Direct Patient Care n = 245 (82.2%)  |            |
|--------------------------------------|------------|
| Attending physician                  | 148 (49.7) |
| Nurse                                | 43 (14.4)  |
| ED resident physician                | 32 (10.7)  |
| Patient care technicians             | 15 (5.0)   |
| Mid-level provider (NP/PA)           | 7 (2.3)    |
| Indirect Patient Care n = 53 (17.8%) |            |
| ED Management                        | 39 (13.1)  |
| ED clerk                             | 5 (1.7)    |
| Social worker/patient representative | 3 (1.0)    |
| Patient registration                 | 3 (1.0)    |
| Environmental services/housekeeping  | 3 (1.0)    |
| X-ray technicians                    | 0 (0.0)    |
| ED transporters                      | 0 (0.0)    |

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**Table 1**—Respondent descriptors (n = 298; ED = emergency department; NP = nurse practitioner; PA = physician's assistant)

| Internet Sources                           | Indirect Patient Care n (%) | Direct Patient Care n (%) |
|--|-----------------------------|---------------------------|
| Centers for Disease Control and Prevention | 16 (32.7)                   | 72 (31.4)                 |
| Local health department                    | 4 (8.1)                     | 26 (11.3)                 |
| Yahoo/Google                               | 2 (4.1)                     | 3 (1.3)                   |
| World Health Organization                  | 1 (2.0)                     | 3 (1.3)                   |
| State Health Dept                          | 0 (0.0)                     | 8 (3.4)                   |
| TMZ  | 0 (0.0)                     | 1 (0.4)                   |
| Medscape                                   | 0 (0.0)                     | 1 (0.4)                   |
| Listserv                                   | 0 (0.0)                     | 1 (0.4)                   |
| Intranet                                   | 1 (2.0)                     | 0 (0.0)                   |
| American College of Emergency Physicians   | 0 (0.0)                     | 2 (0.8)                   |
| CNN  | 0 (0.0)                     | 2 (0.8)                   |

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**Table 2**—Internet sources used by respondents for H1N1 information\*†

\*Three indirect patient care personnel and 19 direct care personnel did not answer the question.

†Question allowed for more than one response.

#### *Was the Message Clear?*

Forty percent of direct and indirect patient care providers felt that they were receiving mixed messages; the differences between them did not reach statistical significance. During sub-analysis, when respondents' length of time employed at the hospital was compared, respondents with <1 year at their hospital, did not reach statistical significances (n = 168; 56.5%) regarding getting mixed messages; however, when compared to respondents employed >1 year, the differences did show a trend ( $p = 0.078$ ).

#### *Confidence among Emergency Department Staff*

Eighty-eight percent (n = 258) of respondents felt confident that the hospital had provided them with the information and supplies necessary to protect them and their family from the H1N1 virus. No statistically significant gender

difference was noted. Ninety-eight percent (n = 280) felt confident that their emergency department was treating patients by the government recommended guidelines. Of note, emergency department attending physicians expressed significantly less confidence in the guidelines compared to the rest of the respondents ( $p = 0.022$ ).

#### **Discussion**

Based on historical data, most pandemics will phase out due to eventual "herd immunity", whereby the population develops a collective immunity to the disease. That can be accomplished through exposure to the disease itself or through vaccination programs.<sup>6</sup> However, until this occurs, emergency department staff will be faced with caring for pandemic influenza patients for an extended period of time. In order to continue to staff the emergency department appro-

|  | Indirect Patient Care<br>n = 53 (%) | Direct Patient Care<br>n = 245 (%) | <i>p</i> -value*  |
|--|-------------------------------------|------------------------------------|-------------------|
| Verbal Briefings                       | 36 (67.9)                           | 75 (30.6)                          | <i>p</i> = 0.0001 |
| Hospital Intranet/<br>Internet         | 21 (39.6)                           | 100 (40.8)                         | <i>p</i> = 0.873  |
| Hospital-placed<br>information posters | 12 (22.6)                           | 27 (11.0)                          | <i>p</i> = 0.023  |
| Hospital e-mail                        | 44 (83.0)                           | 197 (80.4)                         | <i>p</i> = 0.661  |

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**Table 3**—Sources of information from hospital management and methods of communication.<sup>†</sup>

\* *p* < 0.05 is considered significant

<sup>†</sup>Question allowed more than one response.

priately, effective risk communication must be provided with dissemination of timely, accurate, and trusted information.

The WHO devised six classifications of pandemic phases to guide pandemic planning and response. A main action category for each phase includes communication.<sup>7</sup> Although, most government and public health agencies are proficient at the other categories, such as, planning and coordination, monitoring and assessment, and reducing the spread of disease, communications are not as well-understood especially in the hospital arena. Although hospital and emergency department personnel are essential during a pandemic, there is a paucity of studied and tested communication patterns for dissemination of information, and safety concerns to emergency department staff during an infectious disease outbreak or emergency situation.

Crisis communication is a science, and it is known that people will come to work if they feel safe.<sup>8–12</sup> When only one form of communication is utilized, not all providers and staff members will access some information. It also is important to have information delivered from a trusted source, the message must be simple and clear, and the message must be able to be revised without causing the reader to lose confidence.<sup>13,14</sup> In addition, communiqués must be as frequent as necessary without over-stimulating the target audience into apathy. One study from the National Health Service in the United Kingdom pertaining to H1N1, indicates that hospital non-patient care groups were confused, concerned, and uncertain of their role because of lack of understandable information and clear direction.<sup>15</sup> In addition, this group reported that hospital employees felt that they did not need all the answers from their supervisors, but needed to feel as if they were getting timely information.<sup>16</sup> As seen from the psychosocial literature, it is important that emergency department staff feel their family is

safe.<sup>17,18</sup> A study in Taiwan during the severe acute respiratory syndrome (SARS) outbreak found that providing nurses and staff with education about the etiology of SARS and infection control measures, increased their knowledge, contributed to positive attitudes regarding their perceived risks of personal safety, and reduced nurses' fears regarding the potential consequence of caring for patients with an infectious process.<sup>19</sup>

In this survey, there was a limited response by emergency department staff involved in indirect patient care (i.e., x-ray technicians, patient transporters, environmental services, and clerks). Infectious disease control is dependent on the understanding and practice of recommended policies by all involved personnel. E-mail may not be an effective way of communicating with ancillary staff; a more direct approach maybe needed to reach staff members. Confounders may include the unwillingness to respond to a survey, a relatively smaller number of ancillary staff receiving the survey, and differences in education levels and ability to use the Internet. Staff members involved in indirect patient care are an integral part of the emergency department, and are vital to its continued function. As noted during the SARS outbreak in Toronto, communication was incredibly important and rapid changes in personal protection protocols proved to be very challenging.<sup>20</sup> In the current survey, emergency department staff who used hospital administration as their primary source of H1N1 information utilized verbal briefings and hospital information posters as the preferred source of information.

The majority of respondents to this survey felt that patients in their emergency department were treated using government guidelines, and that that they were provided the tools necessary to protect themselves and their family. It is important to remember that in a large institution such as a hospital, there are multiple communication strategies that should be utilized to ensure that all of the staff is getting accurate and timely information. In this survey, the majority of respondents used multiple sources for information including hospital management, with direct verbal briefings utilized more significantly by the indirect patient care group.

Information regarding pandemic flu was available from international sources as well as from the government on a national, regional, and local level. Twenty-four hour continuous media coverage and the Internet frequently reported information before hospital administrators can verify and respond to the information.<sup>14,21</sup> Inconsistent information can lead to confusion, lack of confidence, and fear among healthcare workers that, in turn, could lead to a decreased work force. This survey showed that the majority of respondents felt that the messages they received during the initial H1N1 influenza outbreak were consistent and that they had confidence in the information that they had received from the hospital administration and various other sites. However, the information obtained from this survey suggest that emergency department staff use of multiple sources of information will continue to help guide their personal decisions during the remainder of the H1N1 outbreak. During this and future pandemics, hospital administrators, public health workers, and government officials will

be challenged with the need to deliver consistent and trusted information to those working on the front lines of the H1N1 pandemic. Effective communication during a public health emergency depends on the provision of clear, timely, accurate, and trusted information.<sup>21,22</sup> During infectious diseases outbreaks, emergency department personnel are on the frontline caring for affected patients, and healthcare workers must be updated continuously regarding rapidly evolving healthcare recommendations relative to infection control and medical management of contagious diseases. A lack of updated, credible information could lead to an increase of absenteeism among hospital workers due to concerns regarding their own personal safety and the safety of their families. It is important to the communicators to take into consideration that information distribution is not "one size fits all" and must be tailored, even in one's own institution, to the communication preferences of those who need to have the information. Continuing to monitor risk communication practices will enable us to be better prepared and informed during future public health crises.

### Limitations

The survey was sent through the Internet to multiple listservs and individuals. Those initially receiving the survey were asked to complete the survey as well as to forward the survey to others at their institution. Using these methods allowed researchers to reach a large and geographically diverse group in a short period of time. However, it did not

allow for the accurate computation of how many people ultimately received the survey. Therefore, it was not possible to calculate population-based statistics and the results cannot be generalized. The use of an online survey introduces systematic and self-selection bias. For example, those who participated may have been more skilled in the use of the Internet than those who do not.<sup>23</sup> Additionally, results may be skewed regarding subsets of individuals who received the e-mail but chose not to respond to the survey, or to forward the survey to their colleagues. Misclassification bias may result if respondents purposefully or accidentally chose the wrong professional category, although grouping into direct and indirect patient care may have mitigated the skewing of these data. The snowball sampling technique (asking respondents to forward the survey to colleagues), limits the ability to generalize results, as those who were sampled may not have accurately reflected the general population.

### Conclusions

In this study, H1N1 communication to emergency department staff was perceived by the staff to be adequate during the initial H1N1 outbreak. However, the results present some interesting points for hospital administrations to consider when distributing important information to emergency department staff noting the differences in communication preferences of direct patient care providers and indirect patient care providers during crisis and emergency situations.

### References

1. WHO Global Influenza Programme: Pandemic Influenza Preparedness and Response: A WHO guidance document. Available at <http://www.who.int/csr/disease/influenza/PIPGuidance09.pdf>. Accessed 02 October, 2009.
2. Garrett L: The American Bicentennial. In: *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*. New York: Farrar, Straus and Giroux, 1994, pp 156–158.
3. WHO: Influenza A (H1N1) Update 46. Available at [http://www.who.int/csr/don/2009\\_06\\_10a/en/index.html](http://www.who.int/csr/don/2009_06_10a/en/index.html). Accessed 24 September 2009.
4. Weekly Influenza Surveillance Update: Archive of weekly influenza surveillance update. Available at <http://nyc.gov/html/doh/html/imm/immprinfo.shtml#sur>. Accessed 24 September 2009.
5. Geibelhouse E: Fall Influenza Planning: A Briefing on Citywide Planning Efforts. NYC Office of Emergency Management Public/Private Initiatives Conference Call. 17 September, 2009.
6. Fine PE: Herd immunity: History, theory, practice. *Epidemiol Rev* 1993;15:265–302.
7. WHO: Epidemic and Pandemic Alert and Response (EPR): Pandemic preparedness. Available at [www.who.int/cr/disease/influenza/pandemic/en/](http://www.who.int/cr/disease/influenza/pandemic/en/). Accessed 17 October 2009.
8. Booth CM, Stewart TE: Communication and the Toronto critical care community: Important lessons learned during SARS. *Crit Care* 2003;7(6):405–406.
9. Chaffee MW: Making the decision to report to work in a disaster: Nurses may have conflicting obligations. *Am J Nurs* 2006;106:54–57.
10. Smith E: Emergency health care workers' willingness to work during major emergencies and disasters. *The Australian Journal of Emergency Management* 2007;22(2):21–24.
11. Qureshi K, Gershon RRM, Sherman MF, Straub T, Gebbie E, McCollum M, Erwin MJ, Morse SS: Health care workers' ability and willingness to report to duty during catastrophic disasters. *J Urban Health* 2005;82(3):378–388.
12. Davidson JE, Sekayan A, Agan D, Good L, Shaw D, Smilde R: Disaster dilemma: Factors affecting decision to come to work during a natural disaster. *Adv Emerg Nurs J* 2009;31:248–257.
13. Glass TA, Schock-Spana M: Bioterrorism and the people: How to vaccinate a city against panic. *Clin Infect Dis* 2002;34:217–223.
14. Covello VT, Peters RG, Wojtecki JG, Hyde RC: Risk communication, the West Nile Virus epidemic, and bioterrorism: Responding to the communication challenges posed by the intentional or unintentional release of a pathogen in an urban setting. *J Urban Health* 2001;76(2):382–391.
15. Ehrenstein BP, Hanses F, Salzberger B: Influenza pandemic and professional duty: Family or patients first? A qualitative survey of hospital employees. *BMC Public Health* 2006;6:311.
16. Ives J, Greenfield S, Parry JM, Draper H, Gratus C, Petts JI, Sorell T, Wilson S: Healthcare workers' attitudes to working during pandemic influenza: A qualitative study. *BMC Public Health* Available at <http://www.biomedcentral.com/1471-2458/9/56>. Accessed 23 September 2009.
17. Qureshi K, Gershon RRM, Sherma MF, Straub T, Gebbie E, McCollum M, Erwin MJ, Morse SS: Healthcare workers ability and willingness to report to duty during catastrophic disasters. *J Urban Health* 2005;82(3):378–388.
18. Shiao JSC, Koh D, Lo LH, Lim MK, Gui YL: Factors predicting nurses' consideration of leaving their job during the SARS outbreak. *Nurs Ethics* 2007;14(1):1–17.
19. Tzeng HM: Nurses professional care obligation and their attitudes towards SARS infection control measures in Taiwan during and after the 2003 epidemic. *Nurs Ethics* 2004;11:277–289.
20. Booth CM, Stewart TE: Severe acute respiratory syndrome and critical medicine: The Toronto experience. *Crit Care Med* 2005;33(1):s53–s60.
21. WHO: Outbreak communication, Best practices for communication with the public during and outbreak. Report of the WHO expert consultation on outbreak communications. Singapore, 21–23 September 2004.
22. Auf der Heide E: Disaster Response: Principles of preparation and coordination. St. Louis: CV Mosby, Chapter 10.
23. Eighth www user survey. 1997. Available at [http://www.guv.gatech.edu/user\\_survey/survey-1997-10](http://www.guv.gatech.edu/user_survey/survey-1997-10). Accessed 17 September 2002.

## Appendix—Survey questions (ED = emergency department)

|   |
|---|
| Which choice best described your job at the hospital?   |
| What shift do you primarily work?   |
| Are you involved in direct patient care?  |
| Number of years at present institution  |
| What sources of information did you use to get information regarding the flu? (you may choose more than one)                                    |
| If you chose that you get your information from hospital management, please specify.  |
| If you use the Internet as a major source of information please specify which Websites (you may pick more than one).                            |
| If you were getting information from multiple sources, did you feel that you were getting mixed or conflicting messages about the flu?          |
| How confident are you that your ED is treating patients by the government recommended guidelines?   |
| How confident are you that your hospital has supplied you with the tools and information necessary to protect you and your family from the flu? |
| What is your gender?  |
| Please enter your hospital's postal code/zip code.  |
| Is English your native language?  |

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