Short Communication

Knowledge and anticipated behavior of health care workers in response to an outbreak of pandemic influenza in Georgia

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Abstract

Background: Avian influenza has been documented in over 331 humans since 2003 with 203 associated deaths. Health Care Workers (HCWs) have been shown to be at personal risk during other highly virulent outbreaks with a high attack rate. This study aimed to determine the magnitude and factors associated with absenteeism of hospital based health care workers (HCWs) in Georgia associated with a potential highly virulent influenza pandemic.

Methodology: This was a cross-sectional study of how HCWs responded to a potentially highly virulent influenza pandemic in two urban hospitals in Georgia. Hospital based physicians and nurses were studied. Data was collected utilizing a survey instrument. The survey was either self-administered or interviewer administered based upon the preference of the respondent.

Results: There were 288 HCWs surveyed. The study suggested a 23% rate of worker absenteeism, predominately among women and nurses. The majority of the respondents (58.1%), mostly HCWs less than age 35, were opposed to forced isolation or quarantine of staff during a highly virulent influenza pandemic. Seventy-six percent of respondents correctly reported that the strain of virus that was responsible for the outbreaks in the neighboring countries was H5N1. Only 15.5% of respondents, however, correctly identified influenza as the culprit virus.

Conclusions: The rate of work absenteeism suggested by this study represents a significant workforce reduction. There are specific groups who would choose not to attend work in the face of a flu pandemic. This information may allow planners to target these specific groups for education and social support services to encourage greater inclination to attend to clinical duties.

Key Words: Influenza, H5N1, health care workers

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Introduction

Avian influenza has been documented in over 331 humans since 2003 with 203 associated deaths [1]. While either non-existent or extremely rare, human-to-human transmission of H5N1 influenza has generated concern among health care workers (HCW) and the general population. If human-to-human transmissibility were to become widespread, it is feared that a pandemic would ensue. Such an event would challenge the health care delivery infrastructure with workforce issues, material shortages, and markedly increased health care seeking behavior in the population.

Health care workers (HCWs) have been shown to be at personal risk during a highly virulent outbreak with a high attack rate as shown during the SARS epidemic [2,3,4]. Compounding this risk is evidence that a large proportion of HCWs are not fully informed on essential elements of serious infectious diseases [5]. Issues of illness, personal safety, childcare, infectious disease transmission to household cohorts, and competing professional demands between couples may result in HCW absenteeism. Some estimates place worker absenteeism as high as forty percent [6].

Human cases of H5N1 influenza were identified in Turkey in January of 2006 and Azerbaijan in March of 2006. Both outbreaks were associated with high case fatality rates. Georgia shares boarders with both of these countries. Furthermore, H5N1 influenza has been identified in Georgian poultry. As a result, there is a high degree of awareness of the personal health risk associated with H5N1 influenza throughout the country.

In order to effectively plan for national and international responses to widespread public health emergencies, it is important to understand

the resources likely to be available during such crises. Though there may be a large number of HCWs, if they become unavailable for any reason, response strategies would need to address the workforce reduction. Furthermore, if there are predictable factors leading to high absenteeism during such emergencies, advanced planning and education may mitigate them.

This study was undertaken to determine the factors associated with likely absenteeism of hospital based HCWs associated with a potential influenza pandemic. We focused the survey on human-to-human transmitted avian influenza due to the knowledge of and concerns raised by regional outbreaks.

Materials and Methods

This was an observational, cross-sectional study of HCWs conducted in two urban hospitals in Georgia. Hospital based physicians and nurses were studied. The study hospitals were located in Tbilisi and Kutaisi. These represent the largest cities in the country. Participants were selected by random sampling from the list of the staff in each hospital.

Enrollment into the study continued until we had fulfilled the predefined target number of participants from each institution. Physicians were divided into those 35 years and younger and those over age 35 years to determine behavioral differences between the younger and older cohorts.

Data was collected utilizing a survey instrument. The instrument was developed by all of the authors. Pilot testing was carried out in Georgia to insure readability and contextual appropriateness. The survey was either self-administered or interviewer administered based upon the preference of the respondent. The survey instrument was designed to identify demographic and professional characteristics.

Additional information was collected regarding the willingness to report to work if an influenza pandemic were suspected or in progress, the perceived efficacy of infection control measures and basic understanding of the etiology of avian influenza. This survey was nested in a larger project assessing awareness of other aspects of hospital transmission of infectious diseases.

Institutional Research Board approval was obtained from the overseeing agencies. Data analysis was conducted using SPSS 13.0 (Chicago, IL USA).

Results

There were 288 HCWs surveyed. Characteristics of study participants are shown in Table 1. The majority of the respondents (58.1%) were opposed to being forced into hospital isolation or quarantine during a highly virulent influenza pandemic. Respondent age was associated with differences in attitudes regarding enforced quarantine.

Table 1. Characteristics of respondents and features associated with unwillingness to report to work in the event of avian flu pandemic.

Characteristics	N	Unwillingness to report to work		
		N(%)	RR	CI
Gender				
Females	242	62 (25.6)	2.95	1.13-7.70
Males	46	4 (8.7)		
Age				
<=35	59	14 (23.7)	1.05	0.62-1.75
> 35	229	52 (22.7)		
Marital status				
Married	174	38 (21.8)	0.89	0.58-1.36
Unmarried	114	28 (24.6)		
Occupation				
Nurse	158	47 (29.7)	2.04	1.26-3.29
Physician	130	19 (14.6)		
Position				
Reanimation	59	13 (22.0)	0.95	0.56-1.63
Others	229	53 (23.1)		

Fifty-seven percent of respondents age 35 and younger did not favor enforced quarantine compared to 26% of those over age 55 not favoring enforced quarantine (OR=3.7, CI:1.37-10.0). Eighty percent reported that special suits and masks would be required to prevent transmission of avian influenza to HCWs; 10% doubted that there would be any effective means of preventing transmission to HCWs.

Seventy-six percent of respondents correctly reported that the strain of virus that was responsible for the outbreaks in the neighboring countries was H5N1. Only 15.5% of respondents, however, correctly identified influenza as the culprit virus.

When posed with the hypothetical situation that the incidence of infection in HCWs was twice that of the general population, 76% reported that they would continue to report to work. Features associated with unwillingness to report to work are displayed in Table 1. Overall, women were more likely to report discontinuation of work compared to men (RR=2.95, 95% CI:1.13-7.7); however, this

association substantially attenuated when the comparison was limited to physicians only (RR=1.79, 95% CI:0.63-5.06).

If a family member were to become ill with an illness consistent with avian influenza, 84% of HWCs indicated they would seek care in a hospital setting as opposed to 1.3% who would actively avoid hospital or clinic settings for treatment.

Discussion

The overall 23% work absenteeism suggested by this study represents a significant workforce reduction. During normal hospital operations, such an attrition rate would result in a major alteration in scheduling and may not be sustainable. In the face of a public health emergency such as pandemic influenza, this rate of absenteeism would be considered a crisis unto itself. This absentee rate does not take into account the possibility that a significant proportion of health care workers may fall ill as well, either as a function of public exposure or as a result of their clinical activities.

The results of this survey reveal that there are specific groups who would choose not to attend work in the face of a flu pandemic. Female nurses are less likely to continue clinical work than are male physicians during epidemic periods. As nurses have very low wages, the lost income may have the smallest impact on household income. Also, similar to most countries, women have substantial care-giving responsibilities at home, including the need to care for sick children and elderly parents. Thus, these competing demands are the most likely reason for the gender difference in projected absenteeism.

An important regional finding for this former Soviet republic is that forced quarantine of staff is unacceptable among the majority of younger professionals. While unlikely to be an important issue for pandemic influenza where softer quarantine procedures may be developed and implemented (e.g., limit contact with family members), quarantine has been an important component of disease control, most recently with the SARS epidemic [7]. Thus, understanding how to negotiate and develop quarantine plans for staff in this post-Soviet era is important as part of a comprehensive preparedness protocol.

All studies have caveats. A limitation of this study is its hypothetical, survey design. It is probable that respondents were influenced in part to respond in a socially altruistic or positive manner to please the investigators. We are, however, not aware of any data that would allow actuarial analysis from previous highly virulent pandemic events from this or other eastern European countries. If this weakness does bias our results, the proportion of absenteeism would be higher than the results presented in our study.

This information may allow planners to target the groups predisposed for absenteeism for further education, social support services, and safety training/development to encourage them to attend to clinical duties. Additionally, disaster relief organizations may need to alter human resource planning, if possible, to address this expected absenteeism.

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Conflict of interests: The authors declare that they have no conflict of interests.