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Major Article

Working with influenza-like illness: Presenteeism among US health care personnel during the 2014-2015 influenza season

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Background: Health care personnel (HCP) working while experiencing influenza-like illness (ILI) contribute to influenza transmission in health care settings. Studies focused on certain HCP occupations or work settings have demonstrated that some HCP often continue to work while ill.

Methods: Using a national nonprobability Internet panel survey of 1,914 HCP during the 2014-2015 influenza season, we calculated the frequency of working with self-reported ILI (ie, fever and cough or sore throat) and examined reasons for working with ILI by occupation and work setting.

Results: Overall, 414 (21.6%) HCP reported ILI, and 183 (41.4%) reported working with ILI (median, 3 days; range, 0-30 days). Pharmacists (67.2%) and physicians (63.2%) had the highest frequency of working with ILI. By work setting, hospital-based HCP had the highest frequency of working with ILI (49.3%). The most common reasons for working while ill included still being able to perform job duties and not feeling bad enough to miss work. Among HCP at long-term care facilities, the most common reason was inability to afford lost pay.

Conclusions: More than 40% of HCP with ILI work while ill. To reduce HCP-associated influenza transmission, potential interventions could target HCP misconceptions about working while ill and paid sick leave policies.

Influenza infections are associated with thousands of deaths in the United States each year. Depending on the particular influenza virus types and subtypes in circulation from season to season, the annual rate of influenza-associated death ranged from 1.4-16.7 deaths per 100,000 persons from 1976-2007.[1] Most influenza-associated deaths occur among adults aged ≥65 years, with an average rate of 66.1 deaths per 100,000 persons during the same time period.[1] An estimated 19.1 million persons with influenza illness sought medical care and 974,000 persons were hospitalized in US heath care settings during the 2014-2015 influenza season.[2]

Health care settings are known sites of influenza transmission. Transmission in health care settings, where there is a higher concentration of elderly persons and individuals with immunosuppression or severe chronic disease, is a major concern. Influenza outbreaks in long-term care settings have high attack rates, ranging from 25%-60%.[3] Annual vaccination against seasonal influenza is recommended for all health care personnel (HCP).[4] However, 77.3% of HCP surveyed during the 2014-2015 influenza season reported receiving influenza vaccination,[5] which is below the Health People 2020 goal of a 90% vaccination rate among HCP.[6]

Working while ill, or presenteeism, by HCP while experiencing influenza-like illness (ILI) increases the likelihood of influenza

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transmission to coworkers and patients.[7-9] In hospital settings, inpatients exposed to at least 1 contagious HCP were more than 5 times more likely to develop hospital-acquired ILI than inpatients with no documented exposure in the hospital.[8] The Centers for Disease Control and Prevention recommend that HCP with ILI not work until they are afebrile for at least 24 hours.[4] Despite this recommendation, HCP often continue to work with ILI.[10-12]

Understanding more about the phenomenon of HCP working while experiencing ILI will help HCP employers, infection preventionists, and occupational health and safety professionals develop effective interventions to reduce presenteeism, which constitutes a public health hazard.[13] Previous studies documenting HCP working while ill have focused on specific health care occupations or were conducted in a single institution or type of work setting.[11,12] Thus, we sought to describe the magnitude of and characterize reasons for working with ILI across a range of occupation types and work settings among HCP in the United States.

METHODS

Each year since 2009, the Centers for Disease Control and Prevention has conducted Internet panel surveys to provide timely estimates of influenza vaccination coverage among US HCP.[5,14-18] Since the 2011-2012 influenza season, HCP have been recruited via national nonprobability Internet panels though a contract with Abt Associates, Inc (Cambridge, MA), using 2 national opt-in Internet sources, as previously described.[5,16-18] Clinical professional HCP (ie, physicians, nurse practitioners, physician assistants, nurses, dentists, pharmacists, allied health professionals, and students) and nonprofessional HCP (ie, technicians, technologists, and emergency medical technicians or paramedics) were recruited from the current membership roster of Medscape, a medical Web site. Other HCP, such as assistants, aides, and nonclinical personnel who reported working in a health care setting or having had patient contact, were recruited from general population Internet panels operated by Survey Sampling International (Shelton, CT). HCP were recruited through E-mail and messages on Medscape and panel Web sites for the study, which was conducted March 31-April 15, 2015.

The annual Internet panel survey among US HCP includes elements about demographic characteristics, occupation, work setting, self-reported influenza vaccination, and employer vaccination policies. For the 2014-2015 influenza season, we included additional questions asking HCP about working or missing work when experiencing ILI from October 1, 2014-April 15, 2015. We defined ILI as fever (without a specified temperature cutoff) and sore throat or cough. We asked about the number of days worked with ILI, reasons for working with ILI, and whether medical evaluation was sought. Respondents were asked to select all of the 12 reasons for working with ILI that applied to them from a list generated after the authors reviewed and discussed the literature.[19-21] They could also write in any reasons not on the list. This anonymous survey took approximately 10-15 minutes to complete.

We categorized HCP into 8 occupation types and 4 work settings. Occupation types included physicians; nurse practitioners/physician assistants; nurses; pharmacists; assistants/aides; allied health professionals, technicians, and technologists (other clinical HCP); nonclinical HCP; and students. Work setting categories consisted of hospitals, ambulatory care or physician offices, long-term care facilities, and other clinical settings. For HCP who indicated that they work in >1 setting, we chose to categorize them into 1 work setting in the following hierarchical order: hospital, ambulatory care or physicians office, long-term care facility, and other clinical setting.

We weighted responses to the US HCP population by age, sex, race/ethnicity, work setting, and census region based on Bureau of Labor Statistics[22] and US Census Bureau[23] data. Weighted percentages are presented. Statistical measures were calculated with an assumption of random sampling, although the data arose from an opt-in Internet panel. We used the χ^2 test to assess differences between groups, with a significance level of $P < .05$. We used SAS version 9.3 (SAS Institute Inc, Cary, NC) and SUDAAN (RTI International, Research Triangle Park, NC) for statistical analysis. We calculated the frequencies of reasons for working with ILI overall and by occupation type and work setting.

RESULTS

The final analytic sample consisted of 1,914 HCP.[5] During the 2014-2015 influenza season, 414 (21.6%) respondents had self-reported ILI. Among HCP with self-reported ILI, the median number of missed work days was 2 days (range, 0-30 days), 57.3% visited a medical provider for symptoms relief, and 25.2% were told they had influenza. Of the 414 HCP with self-reported ILI, 183 (41.4%) reported working during their illness, for a median duration of 3 days (range, 0-30 days).

Clinical professional HCP had the highest frequency of working with ILI (44.3%). There was no significant difference compared with clinical nonprofessional HCP (39.4%; $P = .51$) or nonclinical HCP (40.4%; $P = .65$) (Table 1). Pharmacists (67.2%) and physicians (63.2%) had the highest frequency of working with ILI. Compared with physicians, a lower proportion of assistants and aides (40.8%; $P = .02$), nonclinical HCP (40.4%; $P = .02$), nurse practitioners/physician

Table 1
Percentage of health care personnel* (HCP) who reported working with influenza-like illness, by occupational type and work setting, Internet panel survey, United States, 2014-2015 influenza season

Occupation type or work setting†	n/N	Weighted %‡	*P* value
Overall	183/414	41.4	
Occupation type			
Clinical professional§	88/191	44.3	Referent
Clinical nonprofessional	63/152	39.4	.51
Nonclinical‖	32/71	40.4	.65
Physician	28/46	63.2	Referent
Nurse practitioner/physician assistant	11/29	37.9	.03
Nurse	21/43	46.9	.13
Pharmacist	11/19	67.2	.76
Assistant/aide	33/76	40.8	.02
Other clinical HCP¶	45/124	32.1	<.01
Nonclinical HCP#	32/71	40.4	.02
Work setting			
Hospital	78/151	49.3	Referent
Ambulatory care/physician office**	49/111	45.7	.67
Long-term care setting	24/73	28.5	.01
Other clinical setting††	32/79	31.7	.09

*HCP were defined as persons who worked in a place where clinical care or related services were provided to patients, or whose work involved face-to-face contact with patients, or who were ever in the same room as patients.
†Respondents with >1 work setting were classified into 1 work setting category using the hierarchy of hospital, ambulatory care, or long-term care, in that order.
‡Weights were calculated based on each occupation type, by age, sex, race/ethnicity, work setting, and US Census region to represent the US population of HCP. Work setting and overall occupation are presented as weighted estimates of the total sample. Where the groups are stratified by work setting, the estimates are presented as weighted estimates of the occupation group subsample of each work setting subgroup.
§Includes students in a medical-related field.
‖Technicians, technologists, and emergency medical technicians or paramedics, as well as administrative support staff members or manager and administrative support staff members mentioned in footnote††.
¶Allied health professional, technician, or technologist.
#Administrative support staff members or manager and nonclinical support staff members (including foodservice workers, laundry workers, janitors, and members of the housekeeping and maintenance staffs).
**Includes physician office, medical clinic, and other ambulatory care settings.
††Dentist office or dental clinic, pharmacy, laboratory, public health setting, health care education setting, emergency medical services setting, or other setting where clinical care or related services were provided to patients.