

## ORIGINAL ARTICLE

# Working Despite Having Influenza-Like Illness: Results of An Anonymous Survey of Healthcare Providers Who Care for Transplant Recipients

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**OBJECTIVE.** To compare the rates of and reasons for presenteeism associated with influenza-like illness (ILI) among healthcare professionals (HCPs) caring for hospitalized inpatient transplant recipients and internal medicine patients.

**DESIGN.** We designed a 10-question anonymous survey in which ILI was defined as fever ( $>37.8^{\circ}\text{C}$ ) and cough and/or sore throat and ILI B was defined as fever ( $>37.8^{\circ}\text{C}$ ) or cough or sore throat; both definitions were considered in the absence of another known cause.

**SETTING.** Tertiary-care center.

**PARTICIPANTS.** Physicians, advanced practice providers (APPs) and nurses.

**INTERVENTION.** Survey deployed at peak of influenza activity in 2016.

**MEASUREMENTS.** Rates of ILI, presenteeism, wearing masks, and time away due to ILI.

**RESULTS.** Of 707 HCPs surveyed, 286 (40%) responded; 15 (5.2%) reported having ILI, and 73 (25.5%) reported having ILI B in the preceding 2 weeks. Presenteeism rates were 92% in both groups of HCPs and were higher among women (adjusted odds ratio [AOR], 2.64; 95% CI, 1.23–5.71;  $P=.01$ ) and those  $\leq 40$  years old (AOR, 1.92; 95% CI, 1.03–3.68;  $P=.04$ ). Healthcare professionals who cared for transplant recipients and female HCPs were more likely to wear masks (AOR, 2.13; 95% CI, 1.05–3.40;  $P=.04$  for transplant recipients and AOR, 3.96; 95% CI, 1.35–11.63;  $P=.01$  for female HCPs). Nurses were more likely than physicians and APPs to take time off (AOR, 3.33; 95% CI, 1.10–10.09;  $P=.03$ ).

**CONCLUSIONS.** Presenteeism among HCPs with ILI is common, including among those caring for transplant recipients. Nonpunitive systems should encourage HCPs not to work with ILI and to wear masks to prevent spread of infections.

*Infect Control Hosp Epidemiol* 2017;38:966–969

Presenteeism is often defined as attending work while sick.<sup>1</sup> This definition does not assign any motives to presenteeism; it can reflect devotion to the job, fear of negative performance review, or an inability to afford time off.<sup>2</sup> Occupations in which higher rates of presenteeism occur include education and health care.<sup>1</sup> Healthcare professionals (HCPs) often feel irreplaceable, and as many as 80% may work while ill.<sup>3</sup> Of resident physicians surveyed in 2008–2009, 58% said they worked while sick and 33% did so more than once.<sup>4</sup>

Consequences of presenteeism include lost productivity,<sup>1</sup> higher rate of occupational injuries,<sup>5</sup> higher rate of future sick leave,<sup>6</sup> and in the case of a communicable disease, such as influenza, spread of infections to coworkers and/or patients. The latter point is particularly important in an inpatient setting; especially when caring for immunocompromised

transplant recipients for whom influenza is associated with significant morbidity and mortality.<sup>7,8</sup>

The objectives of this study were to identify the rate of influenza-like illness (ILI) among HCPs at a tertiary-care center during peak influenza activity, to identify the rate of presenteeism associated with ILI, and to determine whether the rate of presenteeism associated with ILI among HCPs who care for adult transplant recipients is different than that among those who care for other internal medicine patients.

## METHODS

A 10-item, cross-sectional survey was deployed to 2 groups of physicians: (1) advanced practice providers (APPs), which includes nurse practitioners and physician assistants,

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PREVIOUS PRESENTATION: This study was presented in part at the 2016 ID Week meeting in New Orleans, Louisiana, on October 28, 2016 (poster 1393).

Received December 30, 2016; accepted April 7, 2017; electronically published May 18, 2017

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and (2) hospital unit nurses. We administered the survey at 2 geographically distinct locations: (1) inpatient hospital units with adult transplant recipients and (2) inpatient hospital units with internal medicine patients. We did not include HCPs who worked in both transplant units and internal medicine units, or with both types of patients in a single unit. All participants were recruited by e-mail invitation. No identifiers linked respondents to their responses. The completion of the survey required ~2 minutes. Survey items are shown in Online Supplement 1. The study was approved by the institutional review board of the Cleveland Clinic (survey no. 15-1524).

A weekly influenza surveillance report published online by the Cuyahoga County Board of Health (<http://www.ccbh.net/flu-weekly-reports>) was used to determine local influenza activity. Once this trend report detected peak epidemic influenza activity, the survey was deployed via REDCap (Research Electronic Data Capture, Vanderbilt University, Nashville, TN),<sup>9</sup> a secure, web-based application designed to collect survey data for research responses from patients, health professionals, and other research subjects. An e-mail invited the listed groups of employees to participate and explained the purpose of the study, risks, and confidentiality measures. A unique link to the survey was provided in the e-mail, allowing REDCap to send up to 2 additional weekly reminders to employees who did not complete the survey without compromising their anonymity. Survey responses were collected through REDCap. Upon completion of the survey, respondents were entered into a voluntary raffle to win a single \$50 gift card or 1 of 2 \$25 gift cards.

The survey asked questions regarding demographic data, symptoms of ILI, wearing a mask and time away from work.

Influenza-like illness was defined based on the Centers for Disease Control and Prevention criteria<sup>10</sup> as fever ( $>37.8^{\circ}\text{C}$ ) and cough and/or sore throat (in the absence of a known cause other than influenza). ILI B was defined as fever ( $>37.8^{\circ}\text{C}$ ) or cough or sore throat (in the absence of a known cause other than influenza). Based on their responses, participants were designated as having ILI or ILI B, which is less specific.

For the descriptive statistics, continuous measures were described as means, standard deviations, and percentiles, and categorical measures were summarized using frequencies and percentiles. The Pearson's  $\chi^2$  test or Fisher's exact test was used to evaluate the association between categorical measures and HCPs group (HCPs for transplant recipients vs those for internal medicine patients). For the multivariate analyses, logistic regressions with backward model selection were performed. However, because we were interested in the association between work with transplant recipients and provider behavior, we retained work with transplant recipients in all the models. All tests were performed at the significance level of 0.05, and SAS 9.4 software (SAS Institute, Cary, NC) was used for all analyses.

## RESULTS

Peak epidemic local influenza activity in the 2015–2016 season began the week of March 6, 2016, through March 12, 2016,

and was sustained through the week of March 20, 2016, through March 26, 2016. The survey was first distributed on March 30, 2016, with 2 subsequent reminders 1 week apart. Of 707 HCPs invited, 286 (40%) completed the survey. The response rate was higher for those who cared for internal medicine patients, compared to those who cared for transplant recipients (44% vs 37%;  $P = .04$ ). Among the 286 responders, the median age was 35 years; 206 (72%) were female, 91 (31.8%) were physicians or APP, 137 (47.9%) were nursing staff, and 58 (20.2%) did not report their profession. Responder demographics were similar to those of all hospital employees (median age, 35 years; 67% female). Among the 286 respondents, 15 (5.2%) reported having ILI and 73 (25.5%) reported having ILI B in the preceding 2 weeks. In addition, 16 (5.6%) reported having had a fever, 65 (22.7%) reported having had a cough, and 46 (16.1%) reported having had a sore throat. Furthermore, 14 of 15 (93.3%) with ILI and 67 of 73 (91.7%) with ILI B went to work while ill. Of those who reported going to work while ill, 40 of 81 (49.4%) had worn a mask and 27 of 81 (33.3%) had taken some time off.

Table 1 compares the frequency of presenteeism and protective behaviors associated with ILI and ILI B among HCPs for transplant recipients to those among HCPs for internal medicine patients. Rates of ILI and ILI B, presenteeism, and time off due to ILI or ILI B were similar, but HCPs caring for transplant recipients were more likely to wear a mask when they experienced ILI or ILI B.

In multivariate analyses, presenteeism was associated with female sex and age  $\leq 40$  years (Table 2). Wearing a mask while ill was significantly associated with caring for transplant recipients and female sex but not job title or age (Table 3). Nurses were  $>3$  times as likely to take time off for ILI or ILI B as physicians or APPs. Even though HCPs who cared for transplant recipients were twice as likely to take time off for ILI or ILI B, the association did not reach statistical significance.

## DISCUSSION

In this anonymous survey at a single academic medical center, during influenza epidemic activity, 5% of HCPs experienced ILI, ~25% experienced ILI B, and 92% worked while ill, including those caring for transplant recipients. Although HCPs for transplant recipients who came to work with ILI or ILI B were twice as likely to wear a mask as those caring for general internal medicine patients, ~25% did not wear a mask, potentially exposing these immunocompromised patients to harmful infections. More than half of HCPs caring for transplant recipients, and ~65% of HCPs caring for internal medicine patients, worked continuously while ill with ILI or ILI B.

Female HCPs and HCPs  $\leq 40$  years are more likely to be caring for children at home, which might explain the higher presenteeism rate in these groups of HCPs, if they are saving their days off to care for their children when they are sick at home from school, or for vacation. Nevertheless, many HCPs who are  $>40$  years old may have young children at home.

TABLE 1. Comparing Outcomes of Presenteeism Associated With ILI and ILI B Among HCPs for Transplant Recipients to HCPs for Internal Medicine Patients

Variables	HCPs for Transplant Recipients, No. (%) (n = 134)	HCPs for Internal Medicine Patients, No. (%) (n = 152)	P Value
ILI	8 (5.9)	7 (4.6)	.60
ILI B	36 (26.9)	37 (24.3)	.70
Presenteeism	33 (91.7)	34 (91.9)	.70
Wore a mask	25 (75.7)	15 (44.1)	.01
Time off due to ILI or ILI B	16 (44.4)	11 (29.7)	.20

NOTE. ILI, influenza-like illness defined as fever (>37.8°C) and cough and/or sore throat (in the absence of a known cause other than influenza); ILI B, influenza-like illness defined as fever (>37.8°C), or cough, or sore throat (in the absence of a known cause other than influenza); HCPs, healthcare professionals.

TABLE 2. Multivariate Analysis for Risk of Presenteeism

Factors	AOR	95% CI	P Value
HCPs for transplant recipients vs HCPs for internal medicine patients	1.19	0.67–2.10	.55
Age (18–40 y vs >40 y)	1.95	1.03–3.68	.04
Gender (female vs male)	2.64	1.23–5.71	.01

NOTE. AOR, adjusted odds ratio; CI, confidence interval; HCPs, healthcare professionals.

TABLE 3. Multivariate Analysis for Wearing a Mask and Taking Time Off With ILI or ILI B

Factors	Wearing a Mask			Taking Time Off		
	AOR	95% CI	P Value	AOR	95% CI	P Value
HCPs for transplant recipients vs HCPs for internal medicine patients	2.13	1.05–4.30	.04	2.05	0.90–4.65	.09
Gender (female vs male)	3.96	1.35–11.63	.01	...	...	...
Job (nurses vs physicians and APPs)	...	...	...	3.33	1.10–10.09	.03

NOTE. ILI, influenza-like illness defined as fever (>37.8°C) and cough and/or sore throat (in the absence of a known cause other than influenza); ILI B, influenza-like illness defined as fever (>37.8°C), or cough, or sore throat (in the absence of a known cause other than influenza); AOR, adjusted odds ratio; CI, confidence interval; HCPs, healthcare professionals; APPs, advanced practice providers.

Although they continued to work while ill with ILI or ILI B, female HCPs were 4 times more likely to wear a mask compared to male HCPs. Nurses were >3 times as likely to take time off for ILI or ILI B as physicians or APPs. Both the culture of nursing and the shift nature of the work may make it easier to call in sick because “float nurses” can be called in to cover their duties.

In contrast, physicians and APPs may mistakenly believe themselves to be irreplaceable, and the healthcare system may not accommodate illness in this HCP group. A previous study showed that although the majority of physicians and APP believe that working while sick puts patients at risk, most of them work while sick.<sup>11</sup> That study listed the following reasons for working while sick: not wanting to let colleagues down, staffing concerns, not wanting to let patients down, fear of ostracism by colleagues, concern about continuity of care, extreme difficulty finding coverage, a strong cultural norm to come to work unless remarkably ill, and ambiguity about what constitutes “too sick to work.” Employers should support physicians and APPs to overcome the reasons for working

while sick by setting the expectation not to do that, and the expectation that colleagues will cover for each other in such instances.

Influenza has a significant negative impact on solid organ transplant recipients; causing pneumonia in 33%, requiring care in an intensive care unit (ICU) in 16%, and associated with death in 4%.<sup>7</sup> Similarly, in hematopoietic cell transplant (HSCT) recipients, 33% of patients with influenza develop pneumonia, 33% require care in an ICU, and 19% die within 30–60 days.<sup>8</sup> HCPs for transplant recipients may consider themselves uniquely qualified to care for these immunocompromised patients, which may explain why their presenteeism rate was equal to that of HCPs caring for internal medicine patients. HCPs of transplant recipients should also be especially aware of the dangers that ILI poses to their patients. A recent study showed that universal masking by all individuals in inpatient and outpatient HSCT facilities with direct patient contact, regardless of symptoms or season, reduced the incidence of respiratory viral infections in a unit by 60%.<sup>12</sup> If cost analysis of universal masking shows favorable

benefit, this would be an important additional infection prevention method, but reducing presenteeism remains essential to prevent spread of ILI; particularly to our most vulnerable immunocompromised transplant recipients.

Our study has several limitations. First, the response rate was 40%. Because we did not identify respondents, we cannot compare the characteristics of people who did or did not respond, but respondents' demographics were similar to those of overall hospital employees, and the study sample was larger than is often obtained from surveys of physicians. In our hospital, inpatient hospital units that house transplant recipients are geographically separate from those that house internal medicine patients; although we cannot retrospectively ascertain that no transplant recipients were hospitalized in units that normally house internal medicine patients, or vice versa. Second, we did not confirm that respondents had influenza; 5.2% of respondents reported having ILI as defined by the Centers for Disease Control and Prevention,<sup>10</sup> which is consistent with a highly vaccinated population during an influenza epidemic.

In conclusion, presenteeism is very common among HCPs, including those who care for transplant recipients. Many HCPs who work with ILI do not wear a mask, and most do not take time off when ill. Nonpunitive systems should encourage HCPs to not work with ILI and to wear a mask to prevent spread of infection.

#### ACKNOWLEDGMENTS

*Financial support:* No financial support was provided relevant to this article.

*Potential conflicts of interest:* Sherif B. Mossad is the site principal investigator for multicenter studies funded by GlaxoSmithKline and Oxford Immunotec. Michael B. Rothberg has served as a consultant for ReVO Biologics. All other authors report no conflicts of interest relevant to this article.

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#### SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/ice.2017.91>

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