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Major Article

Understanding drivers of influenza-like illness presenteeism within training programs: A survey of trainees and their program directors

Kelsie Cowman MPH [a,*], Jaimie Mittal MD [b], Gregory Weston MD [a], Emily Harris MD [c], Lauren Shapiro MD [c], Sheira Schlair MD [c], Sun Park MD, MPH [a], Priya Nori MD [a]

[a] Department of Medicine, Division of Infectious Diseases, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY
[b] St. Luke's Physician Group-Infectious Disease Associates, St. Luke's University Health Network, Bethlehem, PA
[c] Department of Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY

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Background: Working with influenza-like illness (ILI) is pervasive throughout health care. We assessed knowledge, attitudes, and practices regarding ILI presenteeism of both postgraduate trainees and program leaders.

Methods: This survey study was conducted at the Montefiore Medical Center, Albert Einstein College of Medicine, a large academic center in the Bronx, New York. Internal medicine and subspecialty house staff and program directors completed an anonymous electronic survey between April 23 and June 15, 2018.

Results: A total of 197 of 400 (49%) house staff and 23 of 39 (59%) program leaders participated; 107 (54%) trainees and 6 (26%) program leaders self-reported ILI presenteeism in the past 12 months. More than 90% of trainees and program leaders reported that ILI presenteeism places others at risk. Only 9% of program leaders accurately estimated trainee ILI presenteeism prevalence. Both cited "not wanting to burden colleagues" as the top reason for ILI presenteeism. Twenty-six (24%) trainees practiced ILI presenteeism on critical care units. The majority reported that they would provide patient care with upper respiratory symptoms without fever. Most trainees incorrectly answered influenza knowledge questions.

Conclusions: ILI presenteeism prevalence is high within training programs at our medical center. Program leaders can model best practices, enforce nonpunitive sick-leave policies, and ensure infection prevention competencies are met annually.

Sickness presenteeism is defined as the employee practice of presenting to work despite illness. Presenteeism has been studied in various professional environments including health care, where the public health impact is particularly serious.[1] Surveys of health care workers (HCW) indicate that 50%-90% of employees self-report working while ill.[2] Cited reasons include burden of responsibilities, lack of coverage, and colleague inconvenience.[1-5] Presenteeism places HCWs and patients at risk, particularly those with immunocompromising conditions.[3] Influenza season presenteeism is a widespread phenomenon among HCWs in the United States.[4] Hospital-acquired respiratory viral infections are an underappreciated source of illness.[6] It is estimated that at least 15,000 adults and 3,000 pediatric hospital-acquired respiratory viral infections cases occur annually in the United States.[7] Working while ill also results in medical errors and a decline in work efficiency.[2]

High annual prevalence of seasonal influenza at our hospital has required system-level adaptations. At the height of the 2017-2018 influenza season, which was one of the worst on recent records, our medicine teaching services staffed inpatient units in which up to one-third or more patients had confirmed or suspected influenza in a given week. Training programs experience workforce strain due to influenza, and program directors are challenged with providing adequate clinical coverage at times when the hospital is at maximum capacity. Postgraduate trainees are an important part of the hospital's workforce, but little is known about (1) their influenza-like illness (ILI) presenteeism practices, (2) program leadership perceptions about ILI presenteeism among trainees, or (3) the presenteeism practices of program leaders. Previous studies have identified reasons for presenteeism that are outside the control of individual HCWs[4]; evaluating the attitudes and practices of house staff together with their

* Address correspondence to Kelsie Cowman, MPH, Department of Medicine, Division of Infectious Diseases, Montefiore Medical Center, Albert Einstein College of Medicine, 3411 Wayne Ave, Ste 4H, Bronx, NY 10467.
E-mail address: kcowman@montefiore.org (K. Cowman).
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program directors can provide valuable information to guide future interventions.

We hypothesized that ILI presenteeism is an under recognized issue in our training programs driven by multiple system-level factors, such as a well-intentioned culture of accountability to colleagues and superiors pervasive throughout medicine, and poor understanding of what constitutes "too sick to work" status.[6] Furthermore, we believe that unfamiliarity with workplace protocols addressing ILI, confusion regarding influenza transmission, and isolation precautions indirectly contribute to ILI presenteeism among trainees.

We conducted a survey-based study of internal medicine (IM) residents, subspecialty fellows, and training program leadership at our medical center to assess knowledge, attitudes, and practices regarding ILI presenteeism. To our knowledge, this is the first study of this nature evaluating both trainees and program leadership in parallel.

METHODS

Design, setting, and participants

We used an anonymous online survey to conduct a cross-sectional study of training programs regarding ILI presenteeism at Montefiore Medical Center, Albert Einstein College of Medicine in the Bronx, NY, which consists of 2 distinct IM programs covering 3 campuses. Training site A consists of an 816-bed tertiary referral center and a 421-bed hospital adjacent to the medical school. Training site B consists of a 321-bed community hospital. Subspecialty training programs may cover all 3 campuses. Surveys were completed between April 23 and June 15, 2018. Those eligible to participate included IM house staff from both programs, subspecialty fellows, IM program directors and associate directors, chief residents, and subspecialty program directors/associate directors (Supplemental Fig S1). All members of the study team were excluded from participation (3 program leaders and 2 house staff). The primary outcome was prevalence of ILI presenteeism among trainees and program leaders in the past 12 months. ILI was defined using the Centers for Disease Control and Prevention (CDC) definition of fever and at least 1 of the following symptoms: cough, sore throat, nasal congestion, or body aches.[8] Secondary outcomes were grouped into (1) access to care, (2) workplace culture, and (3) knowledge on influenza management. This study was approved by the institutional review board at Albert Einstein College of Medicine (IRB number: 2018-8917, approved April 20, 2018).

Recruitment method and survey instrument

Contact information was obtained from the Montefiore/Einstein graduate medical education office. All subjects were recruited through an e-mail invitation, which served as the informed consent. Participation was voluntary and anonymous. Participants received a weekly reminder e-mail for 7 weeks. Study team members also provided in-person reminders during didactic conferences at each training site.

Survey items were organized into (1) ILI presenteeism prevalence, (2) workplace culture, (3) access to care, and (4) knowledge (house staff survey only). The house staff survey consisted of 22 items that assessed demographic information, knowledge, attitudes, and practices. Reasons for coming to work with an ILI were assessed with a 5-point Likert scale. Knowledge questions addressed influenza transmission and appropriate personal protective equipment (PPE) use for providers and visitors. A similar 16-item survey was sent to program leadership evaluating presenteeism practices, perceptions of house staff behaviors, and existing program policies for workplace illness. Surveys were developed collaboratively by members of the antimicrobial stewardship program, infection prevention, and training program leadership and reviewed with experts in survey-based assessment tools (Supplemental Fig S2).

Data analysis

Descriptive statistics were summarized using frequencies and percentages. Response rates were calculated using the American Association for Public Opinion Research methodology (standard definition 1).[9] Bivariate analyses between presenteeism and postgraduate year of training, age group, and identified sex were evaluated using the χ^2 tests. A 2-sided P <.05 was considered statistically significant. SAS version 9.4 (SAS Institute, Cary, NC) was used for all analyses.

RESULTS

E-mail invitations were sent to 400 house staff and 39 program leaders. Of these, 197 (49%) house staff and 23 (59%) program leaders completed the online survey, for a 50% overall response rate (220 completed surveys, 219 did not respond, no partial surveys received). The distribution of sex and age among house staff responders was similar to the overall training program demographics obtained from the graduate medical education office (49% vs 53% men, P = .42; 47% vs 54% ≥31 years old, P = .17). Demographics are shown in Table 1.

PRESENTEEISM

House staff

Over half of house staff (n = 107, 54%) reported presenting to work with an ILI in the past 12 months. ILI presenteeism was not significantly associated with age group, sex, or postgraduate year in bivariate analyses (Supplemental Table S1). Twenty-five (76%) house staff at training site B reported working with an ILI, compared to 76 (50%) of house staff at training site A (risk ratio = 1.52; 95% confidence interval, (1.18, 1.95), P = .007), and 6 (50%) of those who cover all sites (primarily fellows).

House staff most often reported to work with an ILI while they were in clinic (n = 46, 43%), on medical-surgical units (n = 41, 38%),

Table 1
Demographics

Demographic variables	Number (%) (N = 197 respondents)
Female	99 (50)
Age range, y	
21-30	102 (52)
≥31	92 (47)
Prefer not to answer	3 (2)
Postgraduate year (PGY)	
PGY-1	56 (28)
PGY-2	44 (22)
PGY-3	35 (18)
Fellow	62 (31)
Primary clinical training site	
Site A*	152 (77)
Site B†	33 (17)
All sites	12 (6)
Prior occupation before medical school or residency	54 (27)
Annual influenza vaccine	197 (100)
	N = 23 respondents
Length of time in program leadership‡, y	
<5	11 (48)
5-10	5 (22)
>10	7 (30)

PGY, postgraduate year.
*Site A = 816-bed hospital and a 421-bed hospital.
†Site B = 321-bed hospital.
‡Length of time in program leadership was the only demographic variable assessed in this group.

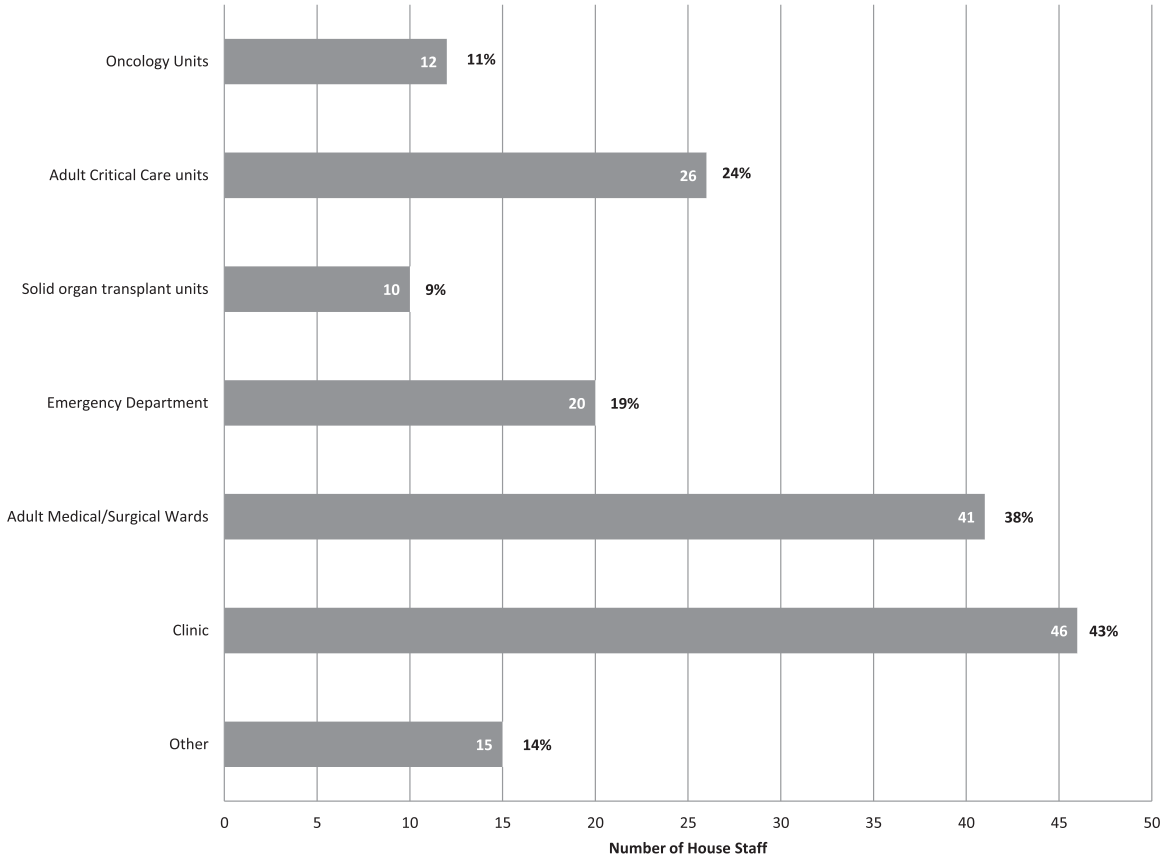

Fig 1. Units in which house staff reported working with an influenza-like illness.

and on adult critical care units (n = 26, 24%) (Fig 1). Using a "check all that apply" format, we further assessed the threshold of symptoms leading to presenteeism on both house staff and program leader surveys. House staff responded that they would come to work with sore throat alone (88%), cough alone (87%), or nasal congestion (89%). Sixty-eight (35%) responded that they would come to work with fever alone. Only 4 (2%) reported that they would not work with any of the symptoms listed (Table 2).

A high proportion of house staff recognized that working with an ILI can expose patients (93%) and colleagues (89%) to illness, decrease work efficiency (75%), increase the probability of medical errors (47%), and appear unprofessional (34%). However, 23 (12%) responded that they would be complimented for their work ethic, and 9 (5%) responded that there would be no negative consequences of not disclosing illness.

Program leadership

Six program leaders (26%) reported that they have provided patient care with an ILI in the past 12 months, and none reported to occupational health services (OHS). All reported that they would provide patient care with either a cough alone or nasal congestion (Table 2). Three program leaders (13%) expected to be complimented on their work ethic by colleagues for coming to work with ILI. The majority recognized that ILI presenteeism exposes patients (96%) and colleagues (91%) to illness. Over half (52%) estimated that <10% of their trainees presented to work with an ILI at least once in the past 12 months. Only 2 program leaders (9%) accurately estimated that house staff presenteeism in the past 12 months was >50% (Fig 2).

Table 2
Symptoms with which respondents would still come to work to provide patient care

Symptom*	House staff Number (%) (N = 197)	Program leadership Number (%) (N = 23)
Respiratory symptoms (nasal congestion)	176 (89)	23 (100)
Sore throat alone	173 (88)	19 (83)
Cough alone	172 (87)	23 (100)
Fever alone	68 (35)	4 (17)
Fever and body aches	45 (23)	2 (9)
Fever and body aches with sore throat	31 (16)	2 (9)
Fever and body aches with cough	36 (18)	2 (9)
Fever and body aches with gastrointestinal symptoms	9 (5)	1 (4)
I would not come to work with any of the above symptoms	4 (2)	0 (0)

*Respondents could select more than 1 answer.

WORKPLACE CULTURE

House staff

Almost half of house staff (n = 96, 49%) reported hearing a colleague speak poorly of another colleague who called out sick with an ILI. Only 11 respondents (6%) reported never observing a colleague work with an ILI; the majority (n = 148, 75%) reported that this occurred 1-5 times, and 38 (19%) reported that this occurred >5 times. Most house staff (n = 121, 61%) reported that sick-call policies had been explained at orientation, 15 (8%) reported that these had not been explained, and 61 (31%) did not remember. The most commonly

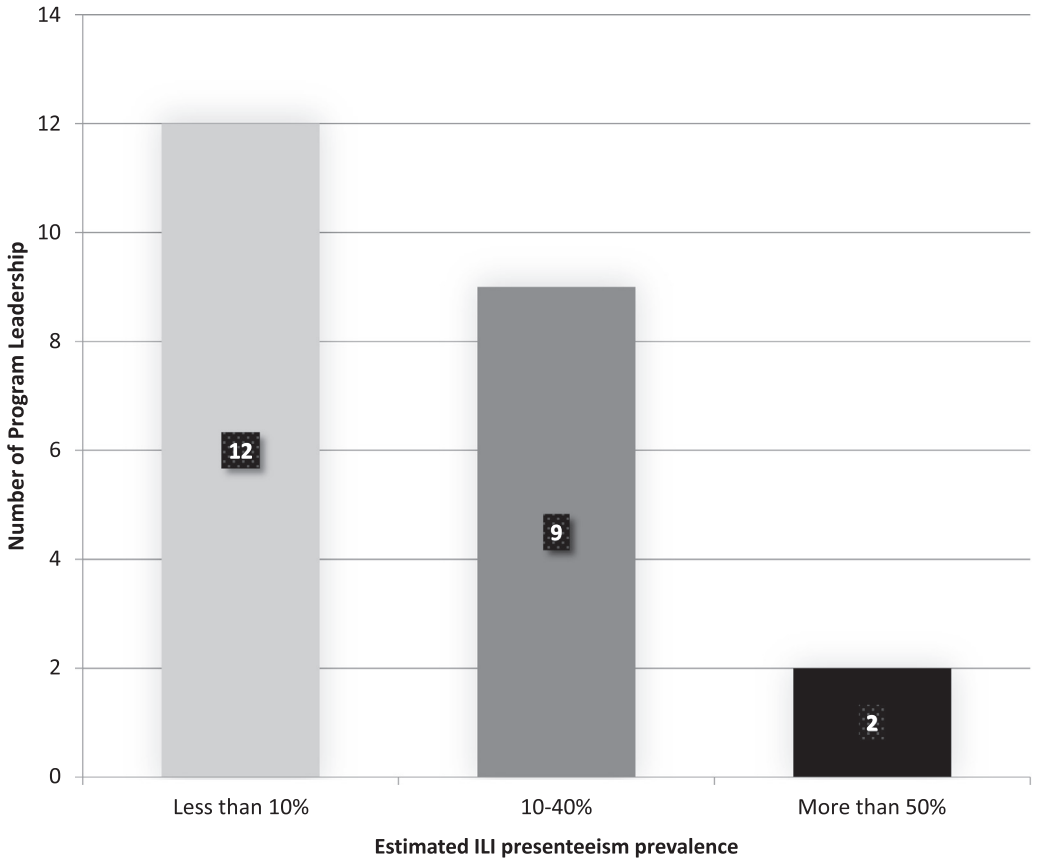

Fig 2. Program leadership estimates of presenteeism prevalence among house staff. *ILI*, influenza-like illness.

reported reason for ILI presenteeism was not wanting to burden colleagues (n = 82, 77%). Most house staff (n = 65, 61%) did not cite lack of knowledge about illness procedures and protocols as a reason for ILI presenteeism (Fig 3A).

Program leadership

Most (87%) program leaders also reported witnessing a colleague provide patient care with ILI symptoms. Only 23% reported that calling out sick for ILIs is required for house staff, whereas 50% reported that it is not required but encouraged. Most (96%) stated that their programs have procedures in place for calling out sick, which are explained at orientation (50%), at annual meetings (9%), both times (23%), or another unspecified time (18%). Program leaders perceived "I don't want to burden my colleagues with my workload" and "my peers will think less of me" as the top reasons for house staff presenteeism (Fig 3B).

ACCESS TO CARE

House staff

House staff who reported presenting to work with an ILI in past 12 months (n = 107, 54%) were asked about further steps taken; 35 (33%) stated that they contacted their chief resident, 27 (25%) updated their colleagues, and 14 (13%) contacted their attending physicians. Only 13 (12%) reported presenting to OHS for ILI. The majority of those who presented to work while ill reported never calling out sick for ILI (n = 61, 57%).

When asked to prioritize next steps after presenting to work with ILI, 87 of 197 total house staff (44%) reported that they would speak to their immediate supervisor (attending or chief resident), 52 (26%) would continue to work while wearing a mask, and 36 (18%) would speak to their program director as their first priority. House staff reported that they would not prioritize going to urgent care/emergency department (n = 120, 61%), their primary care provider (n = 95, 48%), or OHS (n = 77, 39%) for their ILI symptoms.

Program leadership

Eighteen of 23 program leaders provided a description of their house staff sick-leave policies (notification of the chief resident, supervising attending, or program director). Eighteen of 23 stated that their programs work to find house staff coverage based on specific rotation. Only 5 reported encouraging trainees to seek a formal evaluation from their primary doctors or OHS.

KNOWLEDGE

All 197 house staff answered the 5 knowledge questions. Sixty-three (32%) answered both questions correctly pertaining to PPE worn by HCWs, and 27 (14%) identified the correct PPE worn by both HCWs and visitors during enhanced infection control precautions for outbreaks. Both questions on influenza transmission were answered correctly by 35 (18%) house staff.

DISCUSSION

Our data suggest that presenteeism is pervasive and may be an underappreciated patient and HCW safety issue at our academic institution. Published HCW presenteeism rates vary between 30%

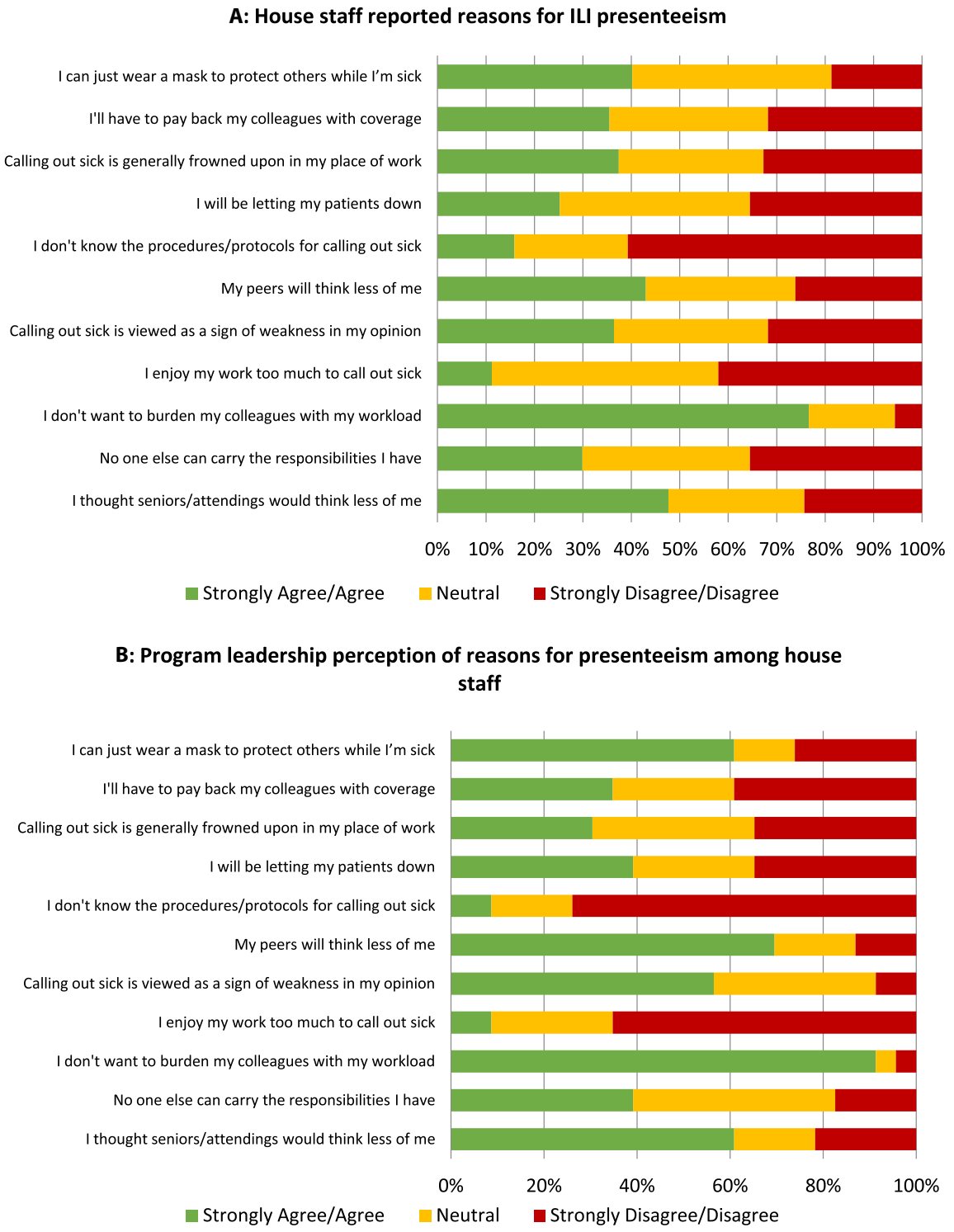

Fig 3. Reasons for presenteeism reported by house staff (A), and perceptions of program leadership (B). *ILI*, influenza-like illness.

and 90%, with physicians and advanced practitioners at the upper end of this spectrum.[2,4,10-12] Few existing studies examine presenteeism prevalence specifically in postgraduate trainees.[13-15] Our study contributes additional data on IM residents and subspecialty fellows, and is a call-to-action for program leaders and educators.

Presenteeism prevalence

Although negative workplace safety consequences were well-recognized by both groups, presenteeism prevalence, particularly during influenza season, remains concerning. Prevalence of >50% observed in our study mirrors that previously reported by Jena et al[13-14] with

similar motivations cited, such as obligation to colleagues and patient care.[15] Raising further concern, critical care units were among the top 3 units where trainees reported working while ill, indicating that presenteeism persists despite HCW awareness of patients' medical comorbidities.[13,16,17]

Primary training site was the only demographic variable significantly associated with presenteeism. The smaller size of medicine program B may result in a lack of available personnel for adequate sick coverage. Although not statistically significant, there was a higher rate of presenteeism in second year trainees. Possibilities for this finding include the desire to impress senior physicians prior to applying for fellowship, although our study was not designed to address this in further detail.

Although nearly half of program respondents completed training and joined program leadership only recently (47.8% <5 years), they still underestimated the presenteeism prevalence among their trainees. Only 2 program leaders accurately estimated house staff presenteeism prevalence of >50%.

Workplace culture

All program leaders and house staff reported receiving an annual influenza vaccination, suggesting a high baseline commitment to influenza prevention and an effective institutional HCW immunization policy.

As hypothesized, our results reflect a pervasive culture of accountability to colleagues and superiors, which drives ILI presenteeism within training programs at our hospital. Similar to previous studies, trainees' primary motivation for not calling out sick was the desire not to burden colleagues.[4,13,14] This may account for high rates of presenteeism observed in intense settings such as critical care rotations.

Concern for burdening colleagues is often cited as a barrier to calling out sick with ILI[4]. Chiu et al[4] suggest implementing a jeopardy coverage system, in which house staff are not expected to payback colleagues. However, despite a jeopardy coverage system for medicine house staff at all 3 training sites, our data suggest that trainees still hesitate to call out sick because of potentially negative perceptions of their colleagues. Long-standing hierarchies in academic medicine prioritize accountability to colleagues often above safety and prevention. Understanding these deep-rooted issues is an important step in reducing trainee presenteeism. Half of house staff reported hearing colleagues speak negatively of others who called out sick, 12% reporting being complimented for their conscientiousness for working with illness, and 26% reported that they would continue to perform clinical duties while wearing a mask. Future interventions should address the pressure medical trainees face to work while ill instead of tending to their own health and protecting patients and colleagues from illness.

Although >90% of program leaders recognized that ILI presenteeism exposes patients and colleagues to illness, nearly one-third (26%) reported providing patient care with an ILI in the past 12 months. All reported that they would provide patient care with either cough or nasal congestion, and several expected to be complimented for their work ethic. Positive reinforcement of potentially damaging workplace behaviors perpetuates a system that compromises patient and HCW safety. Health care leaders should instead model best practices and dismantle hierarchies leading to sickness presenteeism.

Access to care

Lack of understanding of workplace procedures does not appear to contribute significantly to house staff presenteeism at our institution. Forty-four percent reported that they would contact their immediate supervisors, but only a minority stated that they would seek additional medical care. Although reasons were not specifically elicited, possibilities include offsite location of OHS, and time spent away from clinical duties. Furthermore, HCW ILI symptoms are often managed with supportive care, which can be implemented without formal OHS consultation. Of program leadership reporting presenteeism (26%), none reported to OHS either.

Knowledge

Less than one-third of house staff correctly answered knowledge questions on influenza transmission, appropriate PPE for varying influenza presentations, and enhanced masking protocols during nosocomial outbreaks. At present, no formal training regarding infection prevention and control policies is provided for our house staff during influenza season. Ensuring house staff competencies in influenza management and infection prevention should be a priority for educators and program leaders.

Strengths and limitations

The study was conducted at a single hospital system, limiting the generalizability of results. However, multiple training programs across 3 clinical sites were represented. Another limitation is the typically low response rate of online survey-based studies. To counteract nonresponse bias, we encouraged survey participation with weekly reminder e-mails and recurring face-to-face reminders. These steps resulted in an overall response rate of 50%, which is higher than that of other web-based surveys of physicians.[18] Demographics of responders were not significantly different than those from the overall training program, which decreases the likelihood of nonresponse bias in our data. Relying on the CDC definition of ILI including fever may not account for all ILI cases. Studies indicate that up to half of HCWs do not have fever at the onset of influenza when both viral load in respiratory secretions and transmission risk are maximal.[6] Despite use of the more conservative definition, high prevalence of ILI presenteeism remained. In fact, the majority of both house staff and program leaders reported that they would present to work with only sore throat or cough in absence of fever. In a 2015 study, Ridgway et al[19] implemented a policy of mandatory influenza testing of all HCWs with respiratory symptoms to prevent health care–associated influenza of patients. Only 51.2% of HCWs with respiratory symptoms and positive influenza test had fever at the time of diagnosis.[19] The program leadership survey did not include influenza knowledge questions, limiting our ability to compare responses between the 2 groups. However, program leaders on the study team believed that a longer questionnaire might limit the response rate in this group (59%).

The study has several unique strengths. The study team members included representatives from program leadership, infection prevention, antimicrobial stewardship, and house staff, all of whom are primary stakeholders in study outcomes and subsequent interventions. The multidisciplinary team approach enabled us to harness unique perspectives to design and implement the study. Feedback reports were also shared with program directors to help inform future policies. To our knowledge, this is the first study to evaluate both trainee and program leadership attitudes and perceptions using complementary surveys administered in parallel. We feel this unique approach adds significantly to the existing literature on presenteeism within training programs. Overall, the survey results support our hypotheses that (1) a pervasive culture of accountability in academic medicine is an important driver of ILI presenteeism, (2) there are discrepancies between program leader perceptions and house staff behaviors regarding ILI presenteeism, and (3) trainees need targeted education on influenza transmission and control measures.

CONCLUSIONS

Reducing respiratory viral transmission from symptomatic HCWs requires changes in attitudes, practices, and culture regarding sick-leave policies, as well as HCW education emphasizing risks to patients.[6] Nonpunitive sick-leave policies with coverage redundancy, such as those that already exist in our training programs, is one strategy, but not sufficient on its own. Residency programs can collaborate with physician assistant programs to expand the available coverage pool for ill house staff. Hospital administration can also consider paying moonlighters to cover for ill HCWs, especially during the flu season. Streamlining the process of reporting illness to OHS through an electronic reporting system may reduce barriers to following protocols reported by our house staff.[20] Future qualitative research with focus groups and interviews of respondents might identify additional challenges and solutions regarding ILI presenteeism. Program leaders should serve as catalysts for change by modeling best infection prevention practices, calling out sick when indicated, and reiterating sick-leave policies throughout the year. As a crucial next step, we plan to implement a team-building workshop for house staff and program leaders to practice donning and doffing appropriate PPE for a variety of influenza scenarios. This will be modeled after a similar, successful workshop conducted annually with undergraduate learners at the Albert Einstein College of Medicine.[21] Given the inevitability of seasonal influenza and its burden on the health care system, hospital leaders, program directors, and educators must collaborate on innovative strategies to protect both patients and front-line providers.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ajic.2019.02.004.

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