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Brief report

Support for mandatory health care worker influenza vaccination among allied health professionals, technical staff, and medical students

David B. Banach MD, MPH [a,b], Cen Zhang MD [c], Stephanie H. Factor MD, MPH [a], David P. Calfee MD, MS [a,d,e,*]

[a] Department of Medicine, Mount Sinai School of Medicine, New York, NY
[b] Department of Medicine, Yale School of Medicine, New Haven, CT
[c] Department of Neurology, University of Pennsylvania School of Medicine, Philadelphia, PA
[d] Department of Medicine, Weill Cornell Medical College, New York, NY
[e] Department of Public Health, Weill Cornell Medical College, New York, NY

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Although policies mandating annual influenza vaccination among health care workers (HCWs) are recommended, little is known about which HCWs support mandatory vaccination. We surveyed non-physician, non-nursing HCWs to identify beliefs associated with supporting mandatory HCW vaccination. Although similarities were identified, some beliefs and concerns associated with supporting mandatory vaccination differed among HCW groups. Policy makers should understand these differences and address beliefs and concerns of all HCW groups when attempting to implement a mandatory influenza vaccination policy.

Despite guidelines from the US Centers for Disease Control and Prevention recommending annual influenza vaccination for HCWs, vaccination rates remain low.[1] Although educational and promotional programs have been somewhat successful,[2] mandatory influenza vaccination policies have markedly increased HCW vaccination rates in individual hospitals[3] and multihospital networks.[4] Mandatory HCW vaccination is supported by multiple professional organizations including the Association for Professionals in Infection Control and Epidemiology.[5] Some physician organizations[6] and the largest US health care service union[7] oppose mandatory vaccination.

In August 2009, New York became the first state to mandate seasonal influenza vaccination among HCWs in hospitals, outpatient clinics, and home care services. Amidst opposition and a national vaccine shortage, the mandate was rescinded in October 2009. Previous investigators have surveyed nurses[8] and physicians[9] to determine their support for mandatory influenza vaccination. Little is known about whether other groups of HCWs with extensive patient contact, including allied health professionals (AHP), technical staff (TS), and medical students (MS), support mandatory HCW influenza vaccination and their beliefs associated with supporting mandatory vaccination.

METHODS

Mount Sinai Medical Center is a large, academic medical center in New York City. Despite the rescinding of the statewide vaccine mandate, influenza vaccination is strongly encouraged among all employees, staff, and students. Annual vaccination is offered free at multiple venues through employee and student health programs. E-mail messages, posters, and newsletters encourage vaccination.

From May to July 2010, a cross-sectional survey study was performed to assess influenza vaccine uptake and identify practices, attitudes, and beliefs associated with support of mandatory HCW vaccination among groups of non-physician, non-nursing HCWs. These groups included AHP (physical and occupational therapists and social workers with patient contact), TS (radiology technologists, respiratory therapists, emergency department and patient care technicians, and transporters) and third-year MS. Following Institutional Review Board approval and survey piloting, surveys, available in English and Spanish, were distributed at scheduled departmental meetings. These self-administered surveys assessed vaccination status, attitudes, and beliefs about vaccination and

* Address correspondence to David P. Calfee, MD, MS, 525 East 68th Street, Box 265, New York, NY 10065.
E-mail address: dpc9003@med.cornell.edu (D.P. Calfee).

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Table 1
Demographics and vaccination practices among study participants

Characteristic	Allied health professionals, n = 116 (%)*	Technical staff, n = 122 (%)†	Medical students, n = 178 (%)‡
Sex			
Female	105 (91)	68 (56)	99 (56)
Age range (yr)			
20-29	46 (40)	28 (23)	162 (91)
30-39	45 (39)	30 (25)	16 (9)
40-49	11 (10)	34 (28)	0
50-59	6 (5)	27 (22)	0
≥60	6 (5)	3 (2)	0
Race/ethnicity			
White	76 (66)	9 (7)	96 (54)
Black	5 (4)	36 (30)	10 (6)
Asian	12 (19)	18 (15)	44 (25)
Hispanic	15 (13)	24 (20)	15 (8)
Other	1 (1)	18 (15)	10 (6)
No response	7 (6)	17 (14)	3 (2)
Marital status			
Married	43 (37)	52 (43)	22 (12)
Experience in current position, yr			
Less than 3	45 (39)	29 (24)	N/A
3-5	41 (35)	59 (48)	N/A
Over 5	30 (26)	34 (28)	N/A
Received seasonal influenza vaccine (2009–2010)	91 (78)	74 (61)	154 (87)
Received 2009 H1N1 vaccine (2009–2010)	27 (23)	18 (15)	105 (59)
Support mandatory HCW vaccination§	53 (46)	64 (52)	138 (78)

*Response rate 91% among meeting attendees.
†Response rate 98% among meeting attendees.
‡Response rate 78% among meeting attendees.
§Assessed by agreement with the following statement: "All healthcare workers should be required to get a seasonal, yearly flu shot unless they have a medical reason not to."

support for mandatory vaccination. Participants were offered a gift card to a local coffee shop.

Survey questions were developed using the modified Health Belief Model.[10] In this model, individuals support a preventive measure if they believe that (1) the disease is serious, (2) they are at risk for the disease, (3) the measure effectively prevents disease, and (4) there are no serious risks or barriers associated with the measure. We added a question addressing the concept that HCW vaccination protects patients from influenza infection. Survey questions were based on previously published work[9] and were answered using a 7-point Likert scale: 1 = strongly disagree, 4 = neutral, and 7 = strongly agree. For analysis, responses ≥5 were coded as agree, ≤4 as do not agree. The χ^2 or Fisher exact test was used to identify associations between attitudes and beliefs and support for mandatory vaccination. *P* values <.05 were considered statistically significant.

RESULTS

Surveys were completed and returned by 416 individuals (116 AHP, 122 TS, and 178 MS) (Table 1). Among participants, 272 (65%) were female, 117 (28%) were married, and 236 (57%) were younger than 30 years. Mandatory HCW influenza vaccination was supported by 46% of AHP, 53% of TS, and 78% of MS. Self-reported seasonal vaccine uptake during the 2009–2010 season was 78%, 61%, and 87%, respectively.

Among AHP, belief in efficacy of HCW vaccination for self-protection and reducing infection risk to patients was associated with supporting mandatory HCW vaccination (both $P < .01$) (Table 2). AHP concerned about long-term adverse effects were less likely to support mandatory vaccination ($P = .02$). Beliefs regarding vaccine efficacy in preventing HCW infection and reducing influenza transmission to patients (both $P < .01$) and perceived risk of occupational influenza infection were associated with TS support for mandatory vaccination, although the latter finding did not reach statistical significance ($P = .05$). MS who believed in vaccine efficacy for self-protection ($P = .03$) and reducing infection risk to patients ($P = .04$) were more likely to support mandatory vaccination.

DISCUSSION

Opposition to mandatory HCW influenza vaccination remains a challenge in implementing mandatory vaccination policies. In this study, specific beliefs were associated with support for mandatory vaccination among a racially diverse group of AHP, TS, and MS. Understanding and addressing these beliefs may garner support for mandatory vaccination programs.

Consistent with the health beliefs model, beliefs regarding vaccine efficacy in preventing HCW infection and reducing influenza transmission to patients were associated with supporting mandatory HCW vaccination among all 3 groups. These beliefs should be targeted through educational efforts to increase support for mandatory vaccination. Among TS, those who perceived risk of occupational influenza infection were more likely to support mandatory vaccination. Increasing awareness of occupational infection risk among this group may increase support for mandatory vaccination. Concern regarding long-term safety was inversely related to mandatory vaccination support among AHP. This concern should be addressed to increase support among this group. The lack of association between higher rates of vaccination and support for mandatory vaccination among MS may reflect external pressures for vaccination or higher rates of compliance with institutional recommendations among MS.

This study has several limitations. Data were collected at a single institution. The findings may not represent other groups of HCWs or similar groups of HCWs in other settings. Vaccination status was based on self-reporting among a sample of HCWs attending departmental meetings. This survey strategy may incur sampling bias because HCWs who did not attend meetings could not be surveyed and reporting bias as participants may have different opinions about mandatory vaccination than nonrespondents. Information on nonrespondents was not collected. The majority of

Table 2
Practices, attitudes, and beliefs associated with support for mandatory influenza vaccination among allied health professionals, technical staff and medical students

	Allied health professionals (n = 116)			Technical staff (n = 122)			Medical students (n = 178)		
	Support mandatory vaccine*			Support mandatory vaccine			Support mandatory vaccine		
Practice	Yes (n = 53)	No (n = 63)	*P* value†	Yes (n = 64)	No (n = 58)	*P* value	Yes (n = 138)	No (n = 40)	*P* value
Received seasonal influenza vaccine 2009–2010, n (%)	50 (96)	39 (64)	<.01	45 (73)	27 (48)	<.01	122 (89)	31 (79)	.18
Received H1N1 influenza vaccine 2009–2010, n (%)	19 (37)	8 (13)	<.01	16 (31)	3 (5)	<.01	84 (61)	20 (51)	.26
Attitude or belief, n (%)									
The flu and its complications can be serious.	51 (98)	54 (89)	.07	52 (85)	43 (77)	.34	133 (96)	37 (95)	.65
People with my job can get the flu from patients sick with the flu.	49 (96)	55 (90)	.50	59 (94)	45 (80)	.05	137 (99)	37 (97)	.39
If someone with my job comes to work sick with the flu, he or she can give the flu to patients.	51 (98)	58 (95)	.62	57 (90)	47 (81)	.41	136 (99)	39 (100)	1.00
The seasonal, yearly flu shot can prevent people with my job from getting the flu.	48 (91)	40 (66)	<.01	47 (73)	24 (43)	<.01	131 (95)	32 (84)	.04
If I get a seasonal, yearly flu shot, the patients I work with will be less likely to get the flu.	45 (85)	25 (42)	<.01	43 (68)	22 (39)	<.01	130 (95)	33 (85)	.04
I am worried that the seasonal, yearly flu shot can make me sick with the flu.	26 (49)	31 (51)	.85	30 (48)	30 (54)	.52	18 (13)	7 (18)	.45
I am worried about the long-term side effects of the seasonal yearly flu shot.	15 (28)	31 (51)	.02	30 (48)	27 (49)	.87	6 (4)	4 (11)	.15

*Assessed by agreement with the following statement: "All healthcare workers should be required to get a seasonal, yearly flu shot unless they have a medical reason not to."
†The χ^2 or Fisher exact test, as appropriate.

respondents was relatively young. Thus, the findings may not represent older HCWs.

Efforts to increase support for influenza vaccination that address specific concerns and beliefs of each group may be more effective than "one-size-fits-all" campaigns. Educational interventions should be emphasized and adapted to meet the needs of different groups that will be affected prior to implementing a mandatory vaccination program. The impact of job-specific educational messages on increasing influenza vaccination rates among HCWs should be studied.

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