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Predictors of Acceptance of H1N1 Influenza Vaccination by FDNY Firefighters and EMS Workers

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Introduction

In New York City (NYC), pandemic influenza A H1N1 was first identified in April 2009 and was considered to have community-wide transmission by the middle of May 2009 [1-3]. According to the Centers for Disease Control and Prevention (CDC), H1N1 presented with symptoms similar to seasonal influenza with the majority of patients reporting fever, cough, or shortness of breath [4]. Prior seasonal influenza vaccines, including the 2009 preparation, offered no protection against H1N1, suggesting widespread illness susceptibility [5].

The 2009 H1N1 influenza vaccine was licensed on September 15, 2009 and became available two weeks later [6, 7]. One dose of the H1N1 vaccination provided an adequate immune response, with protection rates for adults ranging from 93% to 100% [8]. Health care and emergency medical service (EMS) workers were among the first groups recommended for H1N1 vaccination [6], which included Fire Department of New York City (FDNY) firefighters and EMS workers.

In prior years, acceptance rates of seasonal influenza vaccinations have been reported to range from 10 to 62% in hospital personnel [9-11], and from 40% in healthy adults working at a university [12] to almost 100% in the US military, where vaccination has been mandatory since 1954 [13-15]. At FDNY, acceptance rates of seasonal influenza vaccine have averaged around 50% (unpublished data). Acceptance rates vary widely based, in part, on the population studied, and their perception of the vaccine's safety, efficacy, and benefit

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[9, 11, 16]. Among healthcare workers (HCWs), predictors of seasonal influenza vaccination acceptance include prior vaccination, older age, longer tenure as a HCW, and a vaccine awareness campaign with vaccine-related education and easy access to no-cost, on-site vaccination during work hours [9-11].

Influenza vaccination is offered to HCWs in the belief that it will reduce influenza-like illness (ILI)-related absenteeism and nosocomial infection [11]. Several studies in HCWs have found that seasonal influenza vaccination did reduce the incidence of ILI-related sick leave, but results were mixed on whether there were significant reductions in the duration of ILI-related sick leave [17, 18].

Determining predictors of acceptance of a new vaccine is especially important for HCWs – a population that could be severely limited by ILI-related sick leave during a pandemic. Prior to the H1N1 vaccine's availability, a survey of workers' intention to receive the H1N1 vaccination found that prior acceptance of seasonal influenza vaccination was a strong predictor of intention to accept H1N1 vaccine [19].

The purpose of the current study was to determine predictors of H1N1 vaccine acceptance in nearly 14,000 FDNY firefighters and EMS workers during the 2009-2010 influenza season and to assess whether removing potential barriers for voluntary vaccine acceptance through a dedicated campaign would result in higher vaccine acceptance rates and a reduction in ILI-related sick-leave. We also assessed whether these outcomes differed in a smaller group of FDNY workers with co-morbid pulmonary disease.

Methods

Since the early 1990's the FDNY Bureau of Health Services (BHS) has offered a voluntary seasonal influenza vaccination program at no-cost to all FDNY firefighters and EMS workers during regularly scheduled medical monitoring and treatment visits to BHS. After 9/11/01, FDNY developed a bio-preparedness drill, which was designed to practice rapid distribution of medications to the workforce in the event of a biological disaster. During this drill, Fire and EMS units are dispatched to an FDNY-BIOPOD (biologic points of distribution) site within NYC during their usual work shift. Since 2005, BHS has used this annual, city wide, one-day drill to provide seasonal influenza vaccine to firefighters and EMS workers at each of the designated BIOPOD sites. Prior to the FDNY-BIOPOD drill, participants are educated regarding vaccine benefit, risk, and efficacy through a dedicated newsletter, department briefings, and union meetings. This information is repeated during the FDNY-BIOPOD. In 2009, BHS expanded FDNY-BIOPOD to a four-day drill in an attempt to maximize the number of workers offered the H1N1 vaccination instead of the seasonal influenza vaccine. As in prior years, all dispatched units were required to participate, but vaccination remained voluntary. Refusals and acceptances were documented in the electronic medical record immunization table. We compared H1N1 vaccine offers and acceptance rates during the FDNY-BIOPOD to H1N1 vaccine offers and acceptance rates during BHS regularly scheduled visits for annual medical monitoring and treatment. We also compared H1N1 vaccination rates during 2009 FDNY-BIOPOD to acceptance rates of

seasonal influenza vaccinations during other FDNY-BIOPOD years (2005-2008 and 2010). Seasonal influenza vaccination was not offered during 2009 FDNY-BIOPOD.

Study Participants

During the 2009 influenza season, FDNY employed 14,141 firefighters and EMS workers. We examined the FDNY electronic medical database for documentation that the 2009 H1N1 vaccine was offered, the offer date, and whether the vaccine was accepted or refused. After excluding 137 workers with vaccination contraindications, the final study population consisted of 14,004 active FDNY workers. Documentation of prior influenza vaccinations at FDNY were obtained from the electronic medical database. Age, gender, race, and service (firefighter or EMS) were obtained from the FDNY employee database. Smoking status was obtained from self-administered questionnaires.

ILI Sick Leave

In an effort to reduce the spread of ILI during the H1N1 pandemic, ILI sick leave was considered work-related. To qualify for paid-sick leave and free medication, FDNY required evaluation by an FDNY physician, with the diagnosis documented in the FDNY electronic medical record. To analyze ILI-related sick leave we considered diagnoses of bronchitis, upper respiratory tract infection (URI), or influenza that occurred from 5/1/2009 through 6/15/2010, as being potentially H1N1 related. We selected these diagnoses from 438 diagnoses in the FDNY database for their consistency with CDC data for ILI in the United States. We also performed a validation analysis within the FDNY database demonstrating that these three diagnoses were the most likely to increase during the 2009 ILI season. Because it takes 1-2 weeks for H1N1 vaccination to confer immunity [20], sick leave was analyzed if it occurred at least 14 days post-vaccination.

Co-morbid Respiratory Disease or Dysfunction

To examine whether those with pre-existing respiratory disease, a risk factor for influenza-related pneumonia and death, were more likely to accept H1N1 vaccination, we constructed a group using two or more visits to an FDNY pulmonologist since 2007 as a proxy measure of co-morbid respiratory disease. We then compared data on vaccine acceptance rates in the co-morbid group to those in the group without co-morbid respiratory disease during the same period.

We also determined whether the level of pulmonary function, independent of co-morbid respiratory disease, influenced one's decision to accept H1N1 vaccination. Spirometry data were obtained from the most recent annual medical evaluation available in the electronic medical database. Forced expiratory volume (FEV1) percent predicted was calculated using NHANES III equations based on age at examination, height, gender, and race/ethnicity [21].

Statistical Analyses

We analyzed demographic and other variables in relation to documented offers of H1N1 vaccine (yes/no) and acceptance of vaccination when offered. We present means and standard deviations (SD) of continuous variables. Bivariate analyses of categorical variables used $\chi 2$ with odds ratios (OR) and 95% confidence intervals (CI_{95}). We tested the following

as independent predictors of vaccine acceptance: vaccination at FDNY-BIOPOD, having an FEV1 ≤ 80% predicted, and having a co-morbid respiratory disease, after adjustment for age, gender, race, service (firefighters or EMS), rank (officer or non-officer), smoking status, and prior seasonal influenza vaccination acceptance. We constructed separate multivariable logistic regression models to test whether H1N1 vaccine acceptance and service were statistically significant predictors of sick leave. All analyses were performed using Statistical Analysis Software, version 9.2 (SAS Institute, Cary, N.C.).

Results

The H1N1 influenza vaccine was offered to 10,612 active-duty FDNY workers (8,358 firefighters and 2,254 EMS workers) or 76.6% of the active workforce (table 1). This included 9,559 at the FDNY-BIOPOD (11/5/2009 – 11/8/2009) and 1,053 at BHS visits for medical monitoring/treatment evaluations between 10/1/2009 to 4/2/2010 (table 1). Of the N=3,392 not offered vaccination, 784 were not available (mostly due to leave) during FDNY-BIOPOD. The remaining 2,608 active FDNY workers had no record of an H1N1 vaccination offer. However, there were no statistically significant differences in age, gender, smoking status, rank, or having received previous seasonal influenza vaccinations between those with no record of H1N1 vaccination offer (N=2,608) compared with those offered H1N1 vaccination (N=10,612).

The acceptance rate among those offered the vaccine was 57.2% (5,469/9,559) during FDNY-BIOPOD as compared to only 34.4% (362/1053) during medical visits to BHS (p=<0.0001) for an overall acceptance rate of 55.0%. The H1N1 vaccination acceptance rate of 57.2% at FDNY-BIOPOD was higher than in prior FDNY-BIOPOD seasonal influenza vaccination campaigns, which averaged 41.1% from 2005-2008 (p=<0.001) and 46.8% in 2010 (p=<0.001). Of note, in 2010 seasonal influenza vaccination in the community began earlier than usual and for the first time, 5% of those seen at the FDNY-BIOPOD were already vaccinated.

There was no difference in acceptance of the H1N1 vaccination by service (54.8% firefighter vs. 55.0% EMS, p=0.82) or by smoking status (54.9% ever smokers vs. 54.1% never smokers, p=0.49). H1N1 influenza vaccine acceptors were, on average, older (39.6±8.9 years) compared to refusers (37.1±8.7; p=<0.03) and more likely to be male (55.5% males vs. 45.8% females, p=<0.0001). Among women, 55.9% of women under 40 accepted compared with 44.1% of those 40 and over (p=0.06).

In unadjusted and adjusted analyses (table 1), African Americans were about half as likely as others to accept H1N1 vaccination (AOR=0.46, CI_{95}=0.4-0.5). Workers who accepted prior seasonal influenza vaccinations were significantly more likely to also accept the 2009 H1N1 influenza vaccination in unadjusted (OR 4.5; CI_{95}=4.2-4.9) and adjusted analyses (AOR=4.4, CI_{95}=4.0-4.8). Workers who accepted multiple influenza vaccinations prior to the H1N1 vaccination campaign were also more likely to accept the 2009 H1N1 influenza vaccination. After adjusting for age, gender, race, service (firefighter or EMS), and smoking status, there was a 56% increased odds of accepting the H1N1 vaccination for each year of prior seasonal influenza vaccine acceptance.

Significantly more workers were offered the 2009 H1N1 influenza vaccination during FDNY-BIOPOD than during BHS monitoring/treatment visits (9,559 vs. 1,053, p=<0.0001). More importantly, workers were more likely to accept vaccination offered during FDNY-BIOPOD (AOR = 2.7, CI_{95}= 2.3-3.2). Table 2 shows that accepting H1N1 vaccination during the FDNY-BIOPOD was more likely for those who had received prior seasonal influenza vaccinations (AOR = 4.2, CI_{95}= 3.8-4.6) and for those who had received four or more seasonal influenza vaccinations (AOR = 9.97, CI_{95}= 4.5-11.7). Rank had a significant effect, as officers were more likely to accept the H1N1 influenza vaccination during FDNY-BIOPOD than non-officers (AOR = 1.9, CI_{95}= 1.7-2.2).

FDNY workers with co-morbid respiratory diseases (n=506) were 40% more likely to accept H1N1 vaccination (AOR = 1.4, CI_{95} = 1.1-1.7) than those without such classification. There was no significant difference in ILI-related medical leave (incidence or duration) for the co-morbid group and the rest of the cohort. However, the mean age of the co-morbid group (44.8 years) was significantly older than the rest of the cohort (38.2 years, p=<0.0001). In addition, the co-morbid group was more likely to be a firefighter (AOR=5.4, CI_{95} = 3.3-9.0), an officer (AOR=1.3, CI_{95} = 1.01-1.6), and more likely to have accepted prior influenza vaccinations (AOR=1.5, CI_{95} =1.2-1.9). For the entire cohort, a low FEV1 alone (≤80 %predicted) was not associated with increased rates of H1N1 vaccination after adjusting for age, gender, race, service (EMS or Fire), and smoking status (Table 3).

H1N1 vaccine acceptors were less likely to be absent for at least one day (7.8%) compared to refusers (9.3%, p=0.007) (table 4) due to a physician diagnosis of bronchitis, URI, or influenza. However, among those who took sick leave for ILI diagnoses (N=890), there was no difference in the average sick leave duration (8.6±5.4 days among acceptors vs. 8.1±5.3 among refusers). When looking at medical leave by service, firefighters were more likely to take medical leave (10.3%) than EMS (1.7%, p=<0.0001). In addition, among all members who took at least one day of medical leave, firefighters took significantly more days (8.5±5.2) of medical leave than EMS (4.5±7.2, p=<0.0001).

Discussion

During the H1N1 outbreak and vaccination campaign, 77% of the active FDNY workforce was offered H1N1 vaccination. Of those offered H1N1 vaccination, the overall acceptance rate was 55%, but the difference between acceptance rates during routine BHS medical visits as compared with the FDNY-BIOPOD drill was striking: 34% vs. 57%. This highlights the differences between a relatively passive program with vaccine availability during any medical monitoring/treatment visit as compared to a dedicated campaign, which includes targeted education, and takes advantage of peer norms and social influence to improve vaccine acceptance. A prior study in HCWs of seasonal influenza vaccination found that sources of social influence differed between the vaccine acceptors and refusers. Those vaccinated were more likely to follow advice of others, in particular advice from supervisors, the public health department, the charge nurse, and physicians [22].

Since vaccination acceptance rates were substantially higher at the FDNY-BIOPOD, the “where” and “how” a vaccination program is administered has an important impact on

vaccine acceptance. FDNY-BIOPOD provides an opportunity for positive social influence and serves as an active demonstration of the commitment that leadership has made to the health and safety of its workforce. This is especially important in a workforce that often voices concern about transmission of work-related infections to co-workers, patients, and family members. With high vaccine acceptance and efficacy rates, influenza vaccination can prevent ILI not only in those vaccinated but throughout the wider population in which they serve [23].

Consistent with prior studies on seasonal influenza vaccination acceptance rates [9, 12], we found that receiving previous seasonal influenza vaccination(s) was associated with higher rates of H1N1 vaccination and was the single best predictor of H1N1 vaccine acceptance. Among HCWs, influenza vaccination acceptance has also been shown to increase rates of accepting hepatitis B vaccination [16], suggesting that people who accept influenza vaccination are more likely to accept other preventive forms of medicine. Based on these results, campaigns such as FDNY-BIOPOD to increase influenza vaccine acceptance rates may have far greater health impact than just reducing the incidence of ILI.

Our study found that officers were more likely to accept vaccination than non-officers. A prior study in non-FDNY EMS workers found that officers were more likely to accept Hepatitis B vaccination that non-officers [24]. In other studies, medical personnel employed longer were more likely to accept vaccination suggesting that training, seniority, and increasing age in addition to social influence can lead to increased rates of influenza vaccination acceptance [10]. This is consistent with our finding that vaccine acceptance increased with rank and with increasing age, as at FDNY, both are closely correlated with years of service. Officers were more likely to be vaccinated than non-officers throughout the entire H1N1 vaccination campaign suggesting that in the future vaccination programs should attempt to leverage the role of officers, leaders, and senior workers as role models to help increase acceptance rates.

This study also found that acceptance rates were significantly lower in African American FDNY workers. At FDNY, firefighters and EMS workers have the same training, vaccine education, and free access to FDNY-BIOPOD. Therefore, our finding is surprising, given that other studies have found lower rates of influenza vaccination among African Americans mostly attributed to socio-economic barriers [25]. We also found lower acceptance rates among workers under the age of 30, which is again surprising as younger cohorts were more affected by H1N1 [5]. These findings suggest the need for targeted and focused educational campaigns to improve acceptance by all affected groups.

In the current study, men were more likely to accept vaccination than women. We did not find previous research which either supports or refutes this finding. It is possible that younger women were more likely to accept vaccination than older ones because of concerns about the possibility of pregnancy in the younger cohort. Pregnant women were one of the original target groups for vaccination because pregnancy puts a woman at higher risk for H1N1 complications [5].

Guidelines suggested H1N1 vaccination for those with chronic respiratory diseases because they were at higher risk for complications resulting from influenza [26]. Consistent with this recommendation, we found that FDNY workers with co-morbid respiratory diseases were more likely to accept H1N1 vaccination, confirming a successful educational campaign. In contrast, vaccine acceptance rates did not increase in workers with FEV1 % predicted below 80%, perhaps because these workers do not realize that low or abnormal lung function is a sign of respiratory disease and an indication for influenza vaccination. Future vaccination campaigns should tailor the message of increased risk to a broader audience that in all likelihood would qualify based on abnormal pulmonary function measurements.

Because influenza is highly contagious and can cause serious illness, in 2009 the CDC recommended that people with ILI stay home and away from the public for at least 24 hours after the fever broke, which meant an average of three to five days sick leave [27]. FDNY did the same and issued department orders stating that all ILI sick leave in 2009 would be considered work-related for FDNY firefighters and EMS workers as long as it was reported to the FDNY-BHS. This allowed sick leave documentation in the FDNY electronic medical record to be as complete as possible. Prior studies in non-FDNY HCWs found that seasonal influenza vaccine acceptors were less likely to take sick leave than vaccine refusers, although there was no difference in the number of days taken [17]. This trend was the same in our population, where H1N1 vaccine acceptors were less likely to be absent for one or more days than refusers, although the duration of ILI-related sick leave was not different. However, firefighters were more likely to take sick leave and be absent for more days than EMS workers suggesting further education is needed on staying home with ILI. We do not believe absenteeism for these symptoms was related to non-H1N1 influenza, as other influenza strains were nearly nonexistent in NYC during this time-period [28].

At FDNY-BIOPOD, after providing education on safety, efficacy, and benefit, after removing cost and convenience barriers, and with full backing from labor/management leadership, an H1N1 vaccination acceptance rate of 57% was achieved. This is particularly noteworthy as the H1N1 vaccine was a new and unknown vaccination. This acceptance rate is arguably as high as any voluntary influenza vaccination program reported in the literature [9-11]. Nonetheless, it is far from the nearly 100% achieved by mandatory vaccination programs such as vaccination in the military [13-15]. Moreover, the rate of voluntary acceptance remained far lower than the 70% acceptance rate estimated by some [29, 30] as a requirement for achieving “herd” immunity – a rate high enough to prevent contagious disease even in non-vaccinated.

In a voluntary program, what else could be done to further improve vaccination rates? We did see higher rates of H1N1 vaccination acceptance during the 2009 FDNY-BIOPOD than in previous years. This suggests that increasing the number of FDNY-BIOPOD days to reach greater numbers in a socially persuasive and culturally acceptable environment coupled with improved educational messages tailored specifically to affected populations (HCWs, first responders) and minority populations could increase vaccination acceptance rates further. However, even with these additional efforts it is unlikely that rates in a voluntary program would be high enough to achieve herd immunity [29, 30]. And yet vaccination is an important component of HCW protection, especially for firefighters and EMS workers, who

work in close quarters and assess and treat patients in poorly ventilated areas lacking the environmental controls found in most medical facilities and where the only barrier to contagion is their personal protective equipment (i.e., N95 respirator).

In summary, this study examines influenza vaccination behavior among an urban firefighter and EMS population. An active H1N1 vaccination campaign was able to reach over 75% of FDNY workers, obtaining a 55% vaccination acceptance rate. We found that prior seasonal influenza vaccination and offering vaccination in a group setting such as FDNY-BIOPOD increased H1N1 vaccine acceptance. These results can be used to design future vaccination campaigns at FDNY and elsewhere. In a workforce for whom vaccination is strongly recommended [5, 16], it is important that we continue to monitor vaccination behaviors and improve the proportion of HCWs, including pre-hospital HCWs (i.e. firefighters and EMS workers) offered and accepting vaccination.

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Table 1

Predictors of acceptance of the 2009 H1N1 influenza vaccination.

					Unadjusted		Adjusted[a]	
	n	%	Accept (n)	% Accept by row	OR	95% CI	OR	95% CI
Total	10612	100.00	5831	54.95				
Age								
<30	1928	18.17	842	43.67	0.70	0.62-0.78	0.66	0.59-0.75
30-39	4071	38.36	2145	52.69	1.00	(ref)	1.00	(ref)
>39	4613	43.47	2844	61.65	1.44	1.33-1.57	1.37	1.25-1.50
Gender								
Female	570	5.37	261	45.79	1.00	(ref)	1.00	(ref)
Male	10042	94.63	5570	55.47	1.48	1.25-1.75	1.46	1.19-1.79
Race								
Caucasian	8538	80.46	4823	56.49	1.00	(ref)	1.00	(ref)
African American	770	7.26	307	39.87	0.51	0.44-0.59	0.46	0.38-0.54
Hispanic	1153	10.87	612	53.08	0.87	0.77-0.99	0.85	0.74-0.98
Asian	142	1.34	83	58.45	1.08	0.77-1.52	1.06	0.74-1.53
Native American	9	0.08	6	66.67	1.54	0.39-6.16	1.21	0.29-5.09
Class								
EMS	2254	21.24	1234	54.75	1.00	(ref)	1.00	(ref)
Firefighter	8358	78.76	4597	55.00	1.01	0.92-1.11	0.70	0.61-0.79
Rank								
Officer	2289	21.57	1619	70.73	2.36	2.14-2.61	1.93	1.72-2.17
Not an Officer	8323	78.43	4212	50.61	1.00	(ref)	1.00	(ref)
Smoking status (e/n)								
Ever	3251	35.18	1784	54.88	1.00	(ref)	1.00	(ref)
Never	6989	64.82	3242	54.13	0.97	0.89-1.06	1.01	0.93-1.11
Vaccination at FDNY-BIOPOD								
No	1053	9.92	362	34.38	1.00	(ref)	1.00	(ref)
Yes	9559	90.08	5469	57.21	2.55	2.23-2.92	2.72	2.34-3.15
Prior Seasonal Influenza Vaccination								
No	4347	39.22	1467	33.75	1.00	(ref)	1.00	(ref)
Yes	6268	60.78	4364	69.66	4.51	4.15-4.90	4.35	3.97-4.77
Number of Prior Influenza Vaccinations								
0	2873	31.44	835	29.06	1.00	(ref)	1.00	(ref)
1 to 3	4226	46.25	2650	62.71	3.30	3.02-3.61	3.36	3.05-3.70
4 or more	2039	22.31	1714	84.06	10.35	9.05-11.84	10.75	9.23-12.54

OR = Odds Ratio; (Ref) = Reference Group

[a]Each variable is adjusted for age, gender, race, class, and smoking status

Table 2

Predictors of acceptance of 2009 H1N1 influenza vaccination during FDNY-BIOPOD.

					Unadjusted		Adjusted[a]	
	N	%	Accept (n)	% Accept by row	OR	95% CI	OR	95% CI
Total	9559	100.00	5469	57.21				
Class								
EMS	2053	21.48	1175	57.23	1.00	(ref)	1.00	(ref)
Firefighter	7506	78.52	4294	57.21	1.00	0.91-1.10	0.69	0.60-0.78
Rank								
Officer	2051	21.46	1490	72.65	2.36	2.12-2.62	1.94	1.71-2.20
Not an officer	7508	78.54	3979	53.00	1.00	(ref)	1.00	(ref)
Prior Seasonal Influenza Vaccination								
No	3889	40.68	1423	36.59	1.00	(ref)	1.00	(ref)
Yes	5670	59.32	4046	71.36	4.32	3.96-4.71	4.17	3.79-4.59
Number of Prior Influenza Vaccinations								
0	2474	30.38	804	32.50	1.00	(ref)	1.00	(ref)
1 to 3	3813	46.82	2470	64.78	3.19	2.90-3.50	3.25	2.94-3.59
4 or more	1857	22.80	1576	84.87	9.72	8.43-11.21	9.97	4.48-11.72

OR = Odds Ratio; (Ref) = Reference Group

[a]Each variable is adjusted for age, gender, race, class, and smoking status

Table 3

Predictors of 2009 H1N1 vaccination acceptance.

					Unadjusted		Adjusted[a]	
	N	%	Accept (n)	% Accepted by row	OR	95% CI	OR	95% CI
FEV1 % predicted								
≤80	1234	11.63	725	58.75	1.19	1.06-1.34	1.06	0.93-1.22
>80	9378	88.37	5106	54.45	1.00	(ref)	1.00	(ref)
Respiratory Disease								
Yes	506	4.77	340	67.19	1.72	1.42-2.08	1.4	1.14-1.73
No	10106	95.23	5491	54.33	1.00	(ref)	1.00	(ref)

OR = Odds Ratio; (Ref) = Reference Group

[a]Each variable is adjusted for age, gender, race, class, and smoking status

Table 4

Medical leave for vaccine acceptors and vaccine refusers.

	Vaccine acceptors	Vaccine refusers	p
N	5790	4757	
Number who took 1 or more sick days	450	440	
Percent	7.77	9.25	0.0066
Mean days (SD)			
At least one day	8.60 (5.42)	8.13 (5.25)	0.18
Entire population	0.67 (2.75)	0.75 (2.84)	0.13