

Effect of web-based education and nurse champions on employee influenza vaccination in an integrated health care system

Justine Miranda M.D.^{1,7}, Sarah Haessler M.D.^{1,7}, Paul Medrek M.D., M.P.H.^{2,7}, Mary Ellen Scales R.N., M.S.N., C.I.C.³, Jennifer Friderici M.S.⁴, Amy M. Rist⁵, Melisha Cumberland M.D.^{6,7}, and Michael B. Rothberg M.D., M.P.H.^{6,7}.

¹Division of Infectious Diseases, ²Employee Health Services, ³Infection Control Program, ⁴Department of Epidemiology and Biostatistics, ⁵Workforce Planning, and ⁶Division of General Internal Medicine and Geriatrics, Baystate Medical Center, Springfield, MA, USA.

⁷Department of Medicine, Tufts University School of Medicine, Boston, MA, USA.

Revised Abstract

BACKGROUND: Nurse coordinators and online educational programs can increase influenza vaccination rates for healthcare workers in outpatient settings, but their effect in tertiary care systems is unknown. We hypothesized that implementation of these strategies in a large integrated health care system would increase vaccination rates.

METHODS: In 2006, an online educational tool on influenza vaccination, including a survey of comprehension and reasons for declination, was implemented in our tertiary health care system. From 2007-2009, a revised educational tool and unit-based nurse champions were employed at the intervention site, while control sites received education only. We collected influenza vaccination status, survey answers, reasons for declination, age, gender, job description, and job location for all employees in 2007-2009. Trends in vaccination rates were analyzed using logistic regression and descriptive statistics were used to describe vaccination rates by employee demographics.

RESULTS: We studied 10,400 employees (89% at intervention site and 11% at two control sites). Employees at control sites were older (mean age 46.3±12.7 vs. 42.8±12.5 years, $p<0.0001$) and less likely to be physicians (0.9% vs. 8.6%, $p<0.0001$). Across two influenza seasons, vaccination rate increased at the intervention site (39% vs. 42%), but not in the control site (42% vs. 42%) (test of parallel slopes $p=0.02$). Vaccination rates varied by nursing unit from 10% to 60% and were highest in labor and delivery (60%) and intensive care (58-59%). In multivariable modeling, vaccination was most strongly associated with age ≥ 50 years (OR 1.55, 95% CI 1.44-1.67) and previous vaccination (OR 16.0, 95% CI 14.41-17.79). The top reasons for declination were the same across job types: “healthy”, “the vaccine does not work” and “had a past reaction.”

CONCLUSION: In a tertiary care health system, nurse champions were positively associated with influenza vaccination, but rates remained low and misconceptions about vaccination persisted.

Introduction

In the healthcare setting, one source of nosocomial influenza is unvaccinated health care workers [1], who may be infected either in their workplace or home, but continue to work even though they are ill [2]. Two successful strategies to increase health care personnel influenza immunization rates are utilizing nurse coordinators [3] and computer based educational programs for employees who previously declined vaccination [4]. Only one study, conducted in an outpatient setting, applied these two strategies together [5]. In 2007, Baystate Health implemented a web-based educational tool at all hospitals, plus employment of nurse champions at one hospital to increase influenza vaccination rates among healthcare workers. We hypothesized that nurse champions and online educational programs would increase influenza vaccination rates in a tertiary health care system.

Results

	Intervention Site (n=9220)	Control Sites (n=1114)	P-Value ^a
	N (%) or Mean (SD)	N (%) or Mean (SD)	
Female	6970 (75.6%)	866 (77.7%)	0.12
Job description			<0.0001
MD	790 (8.6%)	10 (0.9%)	
RN	2122 (23.0%)	307 (27.6%)	
Other Clinical	1895 (20.6%)	251 (22.5%)	
Non-Clinical	4413 (47.9%)	546 (49.0%)	
Age>50	3078 (33.4%)	512 (46.0%)	<0.0001
Age (SD)	42.8 y (12.5y)	46.3 y (12.7y)	<0.0001

Table 1. Description of study population at Baystate Health in the 2008-2009 influenza vaccination season.

Characteristic	Proportion (95% CI)	Odds Ratio (95% CI)
Gender		
Male	38.0% (36.3%, 39.7%)	1.00 (Referent)
Female	42.2% (41.2%, 43.1%)	1.19 (1.09, 1.30)
Age		
<50	37.5% (36.5%, 38.5%)	1.00 (Referent)
≥ 50	48.2% (46.7%, 49.6%)	1.55 (1.44, 1.67)
Job Type		
Doctor	36.9% (34.0%, 39.9%)	1.00 (Referent)
RN	41.7% (40.0%, 43.4%)	1.22 (1.05, 1.42)
Other Clinical	38.2% (36.5%, 40.0%)	1.06 (0.91, 1.23)
Non Clinical	42.9% (41.7%, 44.0%)	1.29 (1.12, 1.47)

Table 2. Multivariable model predicting influenza vaccination at Baystate Health from 2007-2009 influenza vaccination seasons. Mutually adjusted estimates. Model includes intervention site and year.

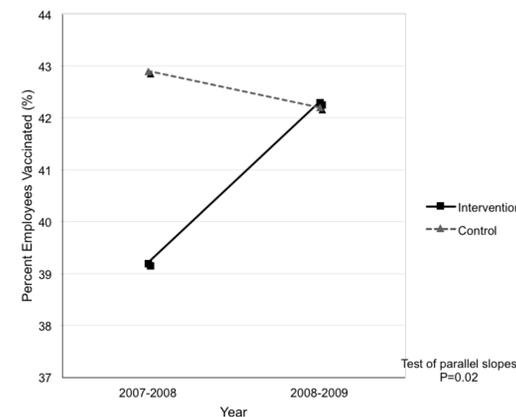


Figure 1. Rate of vaccination among Baystate Health employees, 2007-2009 influenza seasons.

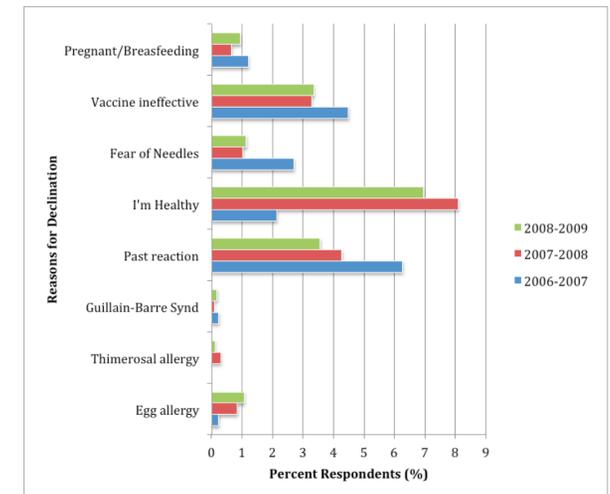


Figure 2. Reasons for declination by year at Baystate Health, 2006-2009 influenza seasons.

Conclusions

- Rates of vaccination remained low despite educational intervention and employment of nurse champions
- Misconceptions about influenza vaccination persisted
- Education alone is unlikely to be effective in increasing influenza vaccination rates in large tertiary health systems
- Nurse champions had a positive, though modest effect on vaccination rates in the intervention site
- Further studies of interventions in large hospital system in combination with other strategies that address barriers to vaccination success are needed

References

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