Worksite strategies for increasing influenza vaccination rates among industrial employees and dependents

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Introduction

Seasonal influenza affects 5% to 20% of the U.S. population annually.[1] During a recent season, influenza caused 44 million lost work days and was responsible for $10.4 billion in direct medical costs, with a total economic burden of $87 billion (0.79% GDP).[2] Despite a CDC recommendation for universal influenza vaccination,[3] only 35% of working age adults were vaccinated in 2010-2011.

This prospective, multi-site, controlled study evaluated the impact of evidence-based interventions that were intended to increase immunization rates among industrial employees and their dependents. Customized educational approaches and expanded worksite access to free vaccine were used in a setting where 30% of employees were vaccinated historically.[4]

Methods

Data collection

A baseline survey was conducted to assess employees' experience, knowledge, and beliefs about influenza and vaccination. Results were used to design customized interventions. The impact of the worksite campaign was evaluated using a follow-up survey, administrative records, and claims data.

Intervention strategies

Researchers collaborated with factory managers to design interventions intended to gain leadership support, address employee concerns and misconceptions, and reduce barriers to vaccination. Strategies included:

- Management briefings to gain leadership buy-in and participation
- Training for health coaches, clinic staff, and local artists to ensure that they had a good understanding of influenza and vaccination, and enlist their support for the program
- Distribution of educational flyers, home mailers, newsletter articles, posters, and cartoons to address gaps in knowledge, misconceptions, and concerns about vaccination
- Contact with local physicians to encourage universal vaccination
- Negotiations with the mass vaccinator to improve convenient access to free vaccine

Sites

Research sites included three factories within a large U.S. manufacturing corporation. (See Table 1)

- Site A: Interventions for employees
  - Enhanced educational program targeting employees
  - Free vaccine for employees and contractors on all shifts during three days, and by request in the health center
- Site B: Interventions for employees and families
  - Enhanced educational program for employees, with additional components targeting families
  - Free vaccine for employees, contractors, and their dependents during four events that involved fun activities for children and were held in community venues
  - Free vaccine actively offered to all employees and contractors visiting the health center during the entire influenza season and during four in-factory events
- Site C: Control/standard program
  - Minimal education using standard corporate materials
  - Free vaccine offered onsite to employees only by a mass vaccinator (one event)

Table 1: Characteristics of sites and employees

Site	Type of intervention	Covered workers	Total covered members	Employee gender (% male)	Mean age (years)	Surveys completed (2010)	Surveys completed (2011)
A	Employees only	2,195	4,690	65%	43	497	250
B	Employees/ dependents	2,634	5,368	64%	46	503	517
C	Control	1,682	3,462	67%	44	NA	493
TOTAL		**6,511**	**13,520**	**65%**	**45**	**1,000**	**1,260**

Results

Impact of influenza-like illness (ILI)

ILI was responsible for considerable absenteeism, presenteeism, and out-of-pocket expenses:

- 45% had ILI during the previous year
  - 82% came to work sick
  - 25%–38% were absent due to ILI
  - 14%–19% were absent due to caregiving for ILI
- Lost wages and out-of-pocket expenses cost employees >$600,000 at each factory

Learning about health topics at work

- Most employees preferred to read written materials (80%) or speak privately with a healthcare provider (63%)
- Preferred sources of advice about vaccination included healthcare providers (84%), family members (71%), and worksite clinic staff (69%)

Immunization at employer-sponsored events

- Vaccine uptake increased at both intervention sites, and decreased at the control site (Figure 1)
- Most immunized employees and dependents received vaccine at employer-sponsored events (Figure 2)
- Half of immunized employees would not have received vaccine if it were not available free at work (Figure 2)
- There was a strong association between employee and dependent vaccination status (e.g., at Site B, 94% of spouses of vaccinated workers were vaccinated; only 10% of spouses of unvaccinated workers were vaccinated) (Figure 3)

Figure 1: Influenza vaccine administered at study sites

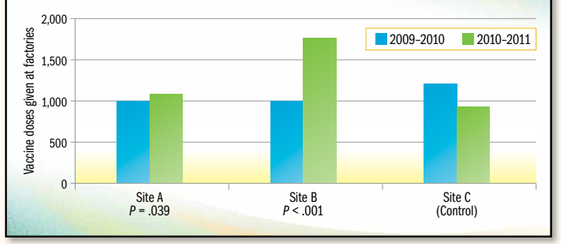


Figure 2: Importance of employer-sponsored vaccination for both employees and families

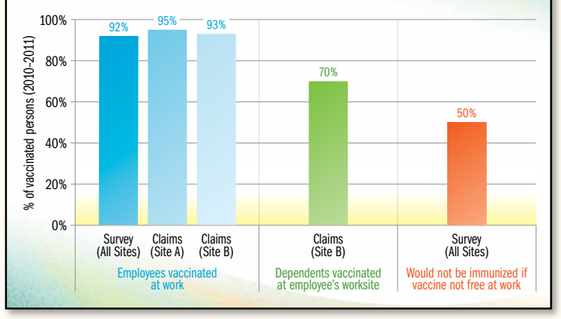
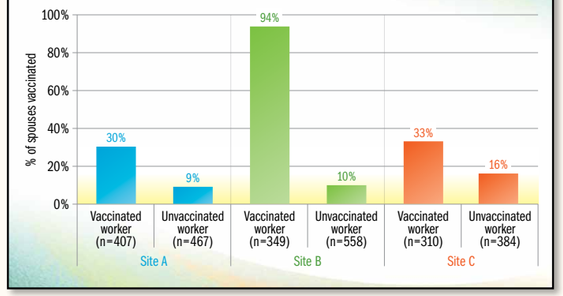


Figure 3: Strong association between employee and spouse vaccination status (Claims data)



Impact of customized educational interventions

- 46% of employees indicated information from the employer impacted decisions about vaccination (convenient access to free vaccine being most commonly cited)
- Customized educational interventions had a negligible impact on knowledge and beliefs about influenza (Figure 4)
- There were no appreciable changes in reasons for accepting or declining vaccination (Figure 5)

Figure 4: No change in knowledge and beliefs following customized educational interventions

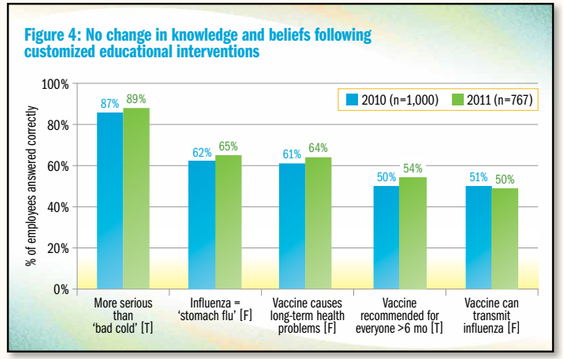
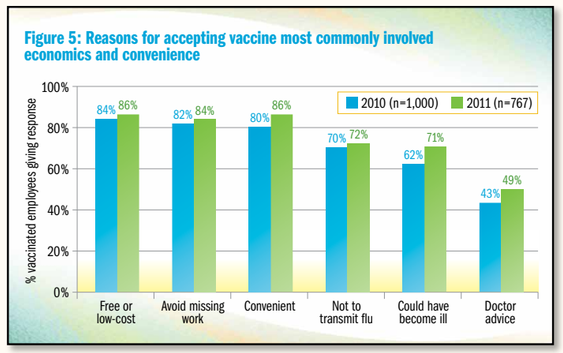


Figure 5: Reasons for accepting vaccine most commonly involved economics and convenience



Discussion and conclusions

Nearly half of these industrial employees had ILI, which had a profound impact on employee health, productivity, and finances. A multifaceted program was effective at increasing vaccine uptake among employees, even though it did not substantially change knowledge or beliefs. The worksite immunization program was essential for reaching employees and their families with influenza vaccine, and half of employees would not have received vaccine if it were not available free at work.

Interpretation and implications

- Convenient access to free vaccine is the most important driver of worksite immunization
- Poor health knowledge is a barrier to vaccination, but customized educational interventions are not sufficient to change beliefs or behavior
- Consideration should be given to repositioning vaccination from a medical treatment paradigm to a community initiative offered with other worksite health promotion programs
- Worksite vaccination programs are essential and need optimization because:
  - The healthcare system is not reaching the people
  - Employees trust worksite clinic staff
  - There is a strong association between employee and family immunization
  - Both workers and families embrace worksite vaccination
  - There are extensive cost benefits with worksite programs
- Combining vaccination campaign activities with other preventive health services may maximize participation, decrease costs, and support improved health of employees and communities

To reduce the impact of influenza on the workforce, employers should focus on providing convenient access to free vaccine for both employees and their dependents.

These findings will be published in the *Journal of Occupational and Environmental Medicine*.[4]

References

1. Centers for Disease Control and Prevention. Seasonal influenza: Questions & answers. 2011; http://www.cdc.gov/flu/about/qa/disease.htm. Accessed August 1, 2012.
2. Molinari NA, Ortega-Sanchez IR, Messonnier ML, et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine.* Jun 28 2007;25(27):5086-96.
3. Fiore AE, Uyeki TM, Broder K, et al. Prevention and control of influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. *MMWR Recomm Rep.* Aug 6 2010;59 (RR-8):1-62.
4. Ofstead CL, Sherman BW, Wetzler HP, Dirlam Langlay AM, Mueller NJ, Ward JM, Ritter DR, Poland GA. Effectiveness of worksite interventions to increase influenza vaccination rates among employees and families. *JOEM*. In press.

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