

# Increasing Annual Influenza Vaccinations Among Healthcare Workers In Rhode Island: A Social Marketing Approach

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Approximately 226,000 excess hospitalizations and 36,000 deaths occur each year in the US due to influenza-related illness.<sup>1</sup> In addition to their own risk of disease, unvaccinated healthcare workers can transmit influenza virus unknowingly to high-risk patients prior to the onset of symptoms.<sup>1</sup> Annual influenza vaccinations for healthcare workers can prevent workers from becoming ill and may decrease morbidity and mortality among patients at high risk for complications.

For the past 20 years, the Centers for Disease Control and Prevention's (CDC)'s Advisory Committee on Immunization Practices<sup>1</sup> has recommended healthcare worker annual influenza vaccination to protect both healthcare workers and patients from infection.<sup>1</sup> Despite repeated urgings, uptake of influenza vaccination remains low.<sup>2</sup> In 2004 and 2006, vaccination rates among healthcare workers were 42% nationally<sup>3</sup> and 33.9% among nursing home healthcare workers in Rhode Island.<sup>4</sup> Studies show that education alone has little effect.<sup>5</sup> A social marketing strategy<sup>6</sup> combined with "stages of change" theory may facilitate influenza immunization among healthcare workers by reducing the barriers and increasing the benefits of behavior change.

John and Cheney (2007) used data from 74 participants in eight focus groups to assess the psychographics of healthcare workers (age 30+ years) who did *not* receive influenza vaccine in 2006-2007.<sup>7</sup> The researchers found that most respondents perceived influenza as a "mild" disease and demonstrate a "low level of concern," despite the fact that 81% had one of the "high-risk" characteristics or health conditions for which CDC indicates high priority for annual influenza vaccination and 23% worked in a healthcare setting or with children. Nearly two-thirds of these healthcare workers either *never* had a flu shot or had not had one *for more than 10 years!* One-third of all participants believed the vaccine "made them sick." Another one-third distrusted the vaccine's value or "safety." The final third were not resistant, but cited some "inconvenience" as a barrier.

The authors identified three audience segments: "Plans to Get," "Needs More Information," and "Makes You Sick." They proposed new messages to promote increased participation in the first two segments, and asserted that no special efforts should be directed to members of the "makes you sick" group, who would probably not get a shot "until the price of resistance becomes too high." The authors argued that strategic use of the marketing mix (product, price, place, promotion)—usually available to social marketers—was severely limited in this case, since it is impossible to change the physical nature of the flu vaccine product, except, perhaps, for the injection and nasal methods of administration.

The Stages of Change theory<sup>8,9</sup> regards behavior change as a process, rather than an event. By understanding the stage in which each subject resides (precontemplation, contemplation, preparation, action, maintenance and relapse), practitioners can design interventions tailored to the subject's status in the process. Doing so, rather than using the "one size fits all approach," improves movement to the target behavior.

Our project combines the social marketing approach with stages of change theory to explore ways to in-

crease the uptake of influenza vaccine among healthcare workers. Social marketing helps to identify past and present behavior of healthcare workers and the underlying dimensions of their "decisional balance," "self-efficacy," and intentions toward annual vaccine use. These characterizations can fit into stages of change theory to develop strategies for increasing vaccination rates among healthcare workers.

**Table 1. Focus group participants by credentials and type of workplace**

	RNs	LPNs	CNAs	Students	Total
Hospital	14	0	0	0	14
Nursing Home	10	2	8	0	20
College	0	0	0	12	12
TOTAL	24	2	8	12	46

**Table 2a. Survey respondents by type of workplace**

Site	Number	Percent
Hospital	253	29.9
Nursing Home	372	44.0
Physician Office	22	2.6
Assisted Living	14	1.7
Home Care	39	4.6
Home Nursing Care	13	1.5
Hospice	7	0.8
Other* (school nurse, etc.)	126	14.9
TOTAL	846	100.0

**Table 2b. Survey respondents by patient content**

Patient Content	Percent
Face-to-face contact with patients?	94
<b>Patients served?</b>	
Infants	9
01-18 years	22
19-64 years	52
65+ years	79
Immuno-compromised	35
Pregnant women	9

## METHODS

In 2007, the Rhode Island Department of Health (HEALTH), in cooperation with the Rhode Island Adult Immunization Coalition (RIAIC) and local health care facilities, surveyed registered nurses (RNs), licensed practical nurses (LPNs), and certified nursing assistants (CNAs) about influenza vaccination. To begin, HEALTH conducted key informant interviews with 12 employee representatives of local healthcare facilities, asking about their experiences with staff vaccination campaigns. Based on those interviews, HEALTH organized five focus groups, stratified by setting (nursing homes vs. hospitals) (total N=46, Table 1). Later in 2007, HEALTH surveyed 846 RNs, LPNs, and CNAs, drawn from a range of settings. (Table 2a) A convenience sample was used to minimize costs. Nearly all respondents (94%) reported face-to-face contact with patients. (Table 2b)

## RESULTS

Focus group results mirrored previous studies.<sup>7</sup> Many respondents perceived influenza as a mild disease or severe only for a few “high-risk” groups. Some believed that they had developed “natural immunity” to influenza. Others believed they could avoid influenza by adhering to universal precautions, hand-washing and other healthy habits. Many perceived the vaccine as ineffective. Some thought it made them sick.

About two-thirds of respondents had received influenza vaccine in the previous year and about the same proportion intended to get it next year. (Table 3) Nearly half the respondents got influenza vaccine every year. Twenty percent of respondents had not received influenza vaccine in the past five years. The same proportion did not intend to get it next year. Based on these results, we sorted respondents into groups defined by stages of change theory. (Table 4)

Ninety-three percent (N=783) of respondents could be assigned to one of six stages of change. “Maintenance” comprised the largest group (N=343), followed by “action” (N=165), “relapse” (N=135), “precontemplation” (N=95), “contemplation” (N=35), and “preparation” (N=8). From the perspective of public health, respondents in “maintenance” are optimally situated, respondents in “action” are positioned to join them; and respondents in “re-

lapse” are positioned to re-join them. Respondents in “contemplation” and “preparation” show promise of moving to action and—if their trajectory is unimpeded—to “maintenance.” Unfortunately, some respondents—those 12% in “precontemplation”—neither received vaccine in the past nor intend to seek it in future. In short, these subjects would seem to require targeted interventions to assure compliance

with influenza vaccine guidelines for healthcare workers. Accordingly, we focused analysis of survey responses on two groups: respondents in “maintenance,” who represent the ideal, and respondents in “precontemplation,” who represent those least likely—on their own, without intervention—to conform to the ideal in future.

In addition to questions on vaccine history and intended use, the survey sought to measure respondents’ perceptions of susceptibility to influenza, seriousness of influenza and its sequelae, costs and benefits of influenza vaccine, and influenza vaccine guidelines. Table 5 shows the average scores on several of the individual items for respondents in “maintenance” and “precontemplation.”

Respondents were asked to rate the “severity” of influenza for oneself and others. Workers in “maintenance” and “precontemplation” perceived the severity of influenza rather similarly for infants, the elderly, persons with chronic illnesses

**Table 3. Survey respondents’ influenza vaccine history**

Influenza Vaccine History	Percent
Did you receive influenza vaccine last year?	69
How many times in the past 5 years have you received influenza vaccine?	
Never	20
Once	12
A few times	22
Every year	46
How likely are you to get influenza vaccine next year?	
Likely	62
50-50 chance	18
Unlikely	20

or compromised immunity, “people who don’t take care of themselves,” and “people my age.” That both groups perceived influenza as a lesser threat for “people my age” than others suggests that healthcare workers, regardless of stage, do not apply general risk or severity criteria to themselves. Nonetheless, respondents in both stages agreed that getting the flu themselves could have serious consequences for others—for family, coworkers, patients and the workplace generally.

Respondents were asked to comment on circumstances that might increase the likelihood of getting flu vaccine next year. Most respondents in “maintenance” did not answer these questions affirmatively, as most intended to receive the vaccine, regardless of circumstance. However, respondents in “precontemplation” indicated that they would be more likely to get the vaccine under particular circumstances, e.g., de-

**Table 4. Stages of change by influenza vaccine history**

Stage	VACCINE HISTORY			Frequency
	Last 5 years	Last year	Next year	
Precontemplation	Never	N/A	Unlikely	95
Contemplation	Never	N/A	50/50	35
Preparation	Never	N/A	Likely	8
Action	Once - few	Yes	50/50 - Likely	167
Maintenance	Every	Yes	50/50 - Likely	343
Relapse	Once - every	No	N/A	135
<b>TOTAL</b>				<b>783</b>

**Table 5. Perceptions about influenza and influenza vaccine by stages of change (Precontemplation vs. Maintenance)**

<b>How severe are the potential health consequences of influenza? [Response range: From 1, "mild," to 3, "severe"]</b>	<b>Precon</b>	<b>Maint</b>
For infants?	2.5	2.6
For elderly?	2.8	2.9
For people who are immuno-compromised or chronically ill?	2.9	2.9
For people who don't take care of themselves?	2.5	2.5
For people my age?	1.6	1.8
<b>How important are the following consequences of influenza for you? [Response range: From 1, "not important," to 3, "important"]</b>		
The burden on my co-workers when I am sick and can't go to work	2.6	2.8
The financial burden when I have to miss work	2.3	2.4
The possibility of spreading the flu to patients	2.8	3.0
The possibility of spreading the flu to family members or co-workers	2.9	3.0
The burden on my family when I can't take care of them	2.5	2.6
Having to stay home and miss out on life	2.1	2.3
The financial burden on the healthcare system	2.3	2.5
<b>Would you be more likely to get the flu vaccine next year if: [Response range: From 0, "no," to 1, "yes"]</b>		
<i>Lessen Barriers to Receipt of Vaccine?</i>		
The vaccine was offered to you free, or covered by your insurance.	0.04	0.05
You had more time to get the vaccine or it was more easily accessed.	0.03	0.02
It was offered in another form, rather than a shot.	0.03	0.00
<i>Personal Contingencies?</i>		
Someone close to you was immuno-compromised.	0.22	0.02
You had a bad case of the flu in the past.	0.16	0.03
You were diagnosed with a serious chronic disease.	0.33	0.02
<i>General Contingencies?</i>		
There was a really bad flu season.	0.06	0.03
Your doctor recommended it.	0.05	0.02
<i>Summary Position</i>		
It was required for all direct care healthcare workers.	0.37	0.03
Nothing would make me more likely to get vaccinated next year.	0.45	0.00
<b>Do you agree or disagree with the following statements? [Response range: From 1, "disagree," to 3, "agree"]</b>	<b>Pre-con</b>	<b>Maint</b>
<b>Influenza Vaccine vs. Other Preventive Measures</b>		
It's better to build up natural immunity than to take flu vaccine.	3.6	1.7
Taking good care of myself is as good or better than getting flu vacc.	4.0	2.7
<b>Side Effects of Influenza Vaccine</b>		
I'm worried about the possible side effects of vaccine...	3.8	2.8
The flu vaccine can cause the flu.	2.9	1.8
<b>Mandating the Use of Influenza Vaccine</b>		
Vaccines should be mandated for healthcare workers.	2.0	4.1
All patients over 50 should get the flu vaccine.	3.2	4.5
Vaccines should be mandated for school entry.	2.8	4.3

veloping high risk chronic illnesses or having a family member with compromised immunity. Notably, respondents in "precontemplation" resisted the idea of getting flu vaccine if it were required:

45% said that "nothing" would make them more likely to get influenza vaccine next year. On the basis of these responses, it is possible to divide respondents in "precontemplation" into three groups: 1)

those who would accept vaccine if vulnerability of self or family increased; 2) those who would accept vaccine if it were mandated; and 3) those who would *not* accept vaccine under any circumstances.

**Table 6: Evaluation of common vaccines by stages of change (Precontemplation vs. Maintenance)**

Rate the usefulness of each of the following vaccines. [Response range: From 1, “not useful,” to 3, “useful”]	Pre-con	Maint
Smallpox vaccine	2.8	2.8
Hepatitis B vaccine	2.7	2.9
Chickenpox vaccine	2.6	2.8
HPV vaccine	2.5	2.8
Pneumococcal vaccine	2.3	2.9
Influenza vaccine	2.1	2.9

We also asked respondents to evaluate influenza vaccine in relation to other preventives, such as good hygiene and healthy life style. Respondents in “precontemplation” were *more likely* than respondents in “maintenance” to agree that “natural immunity” and “taking good care of myself” were preferable to getting vaccine, that they “worried about side-effects” of influenza vaccine, and that “flu vaccine causes the flu.” They were *less likely* than respondents in “maintenance” to support vaccine mandates for health care workers, people over 50, and school entry.

Finally, we asked respondents to evaluate influenza vaccine in relation to other vaccines. Most respondents thought that all the vaccines (smallpox, hepatitis-B, chickenpox, HPV, pneumococcus, influenza) were useful. However, respondents in “maintenance” were more likely to rate influenza vaccine as “useful” compared to respondents in “precontemplation.” (Table 6)

## DISCUSSIONS AND RECOMMENDATIONS

Our results indicate that the attitudes, perceptions and behaviors of healthcare workers in Rhode Island mirrored those reported among healthcare workers in other national studies.<sup>5</sup> On the one hand, workers who regularly took annual flu vaccine perceived a beneficial exchange, involving few barriers and many benefits— such as protecting oneself, loved ones, patients and even co-workers from influenza. They were even likely to support policies requiring annual vaccination for themselves and other health professionals — an exchange of individual choice for achievement of a larger good. On the other hand, those who did not get flu vaccine every year anticipated a poor exchange, involving few benefits and several substantial risks. They did not see

themselves as susceptible to influenza (some, because they perceived themselves as “naturally immune”), or they perceived themselves as sufficiently protected because they practiced healthy behaviors and good hygiene. Many worried about the efficacy, safety and side effects of the vaccine; some believed it “caused” the flu.

The dynamics of the exchange for those in the vaccine non-use group permits the differentiation of three “audiences.” One audience would receive influenza vaccine if there were a significant change in personal susceptibility or seriousness — such as when they themselves or a family member became “high risk” for the sequelae of influenza. Another audience would receive vaccine if mandated by some public or corporate policy — an exchange of individual discretion for ability to continue working in a specific setting. The third audience would not receive the vaccine, even if it were mandated for work — demonstrating an unwillingness to exchange personal choice for benefits that they regard as dubious, unnecessary, or even harmful.

The combination of a social marketing approach with Stages of Change theory points to plausible strategies to achieve the target behavior. Without making any recommendation, we suggest three possible approaches. An *information/education/promotion campaign* may be sufficient to change some of the underlying misconceptions about influenza and vaccine use — such as the notion that influenza vaccine transmits influenza. However, research indicates that information *alone* will not result in significant changes in behavior—even if misconceptions are resolved. Nevertheless, by becoming aware of these misconceptions, physicians may address concerns about vaccine side-effects and safety among their healthcare colleagues. A second

approach involves *strengthening the organizational commitment and active support for annual vaccine use in the workplace.* Most healthcare settings in Rhode Island already support annual flu vaccination; however, their vaccination campaign strategies vary. The re-doubling of efforts involving top-down organizational support and participation, a strong culture of immunization expectation, and free/convenient access to vaccine may bolster compliance. Healthcare workers tend to have strong occupational ties due to the extensive social and professional support they provide each other at work. Physician groups can play an instrumental role in workforce immunization efforts by means of strong, obvious support. Finally, *public or private policies requiring annual flu vaccine use as a condition of employment* may be the most effective — albeit politically difficult — way to protect patients, co-workers and institutional financial viability from the annual effects of influenza. There is strong support for vaccine use in the occupational culture of health care workers. As our nation addresses the “global economy,” “worldwide population,” “emerging infectious diseases” and pandemics, the trade-offs between individual choice and public health will sharpen. Physician professional associations can have a decisive voice in this discussion through advocacy efforts with their own members and colleagues in other professions.

In effect, mandates “change the offer” of the product. (Note: Each product has three components: the “actual” product or service, e.g., influenza vaccine; the “behavior” product, e.g., routine annual immunization; and the “benefits” product, e.g., personal immunity, continuity of work, or assurance that one will not infect vulnerable patients or family members.)<sup>10</sup> Mandates switch the key “benefits” of influenza vaccine from “immunity” to “ability to continue in the profession and/or work setting.” Work-related mandates for influenza vaccine would move many resistant workers from “precontemplation” to “action” and then “maintenance” stages of behavior change. In the words of one behavior change expert, “those who are prone will easily respond to educational messages, while those who are resistant will need the force of law imposed upon them.”<sup>11</sup> Mandates

may induce *some* healthcare workers to change professions (or work settings) to avoid the vaccine; but over time, this effect could benefit society by realigning the values and perceptions of healthcare workers with the requirements of healthcare work.

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