

CHAPTER

3

Improving Vaccination Rates

Although the influenza immunization rates of health care personnel (HCP) reported in the literature are low, and many factors influence HCP decisions to accept or decline the vaccine each year, there is great opportunity to learn the reasons for low vaccination rates, better understand the multiple influences at play, and test strategies to raise the rates of HCP immunization. This chapter examines various strategies and factors associated with improving HCP immunization rates identified in the literature and from health care organizations participating in The Joint Commission project Strategies for Implementing Successful Influenza Immunization Programs for Health Care Personnel, in response to its open call in 2008.

Influenza Vaccination Campaigns

Influenza vaccination campaigns must be conducted annually because new strains of influenza virus circulate each year, and antibody levels only last through one influenza season. The Centers for Disease Control and Prevention (CDC) recommends an approach that includes the following elements¹:

- Educating HCP
- Offering influenza vaccine to all eligible HCP
- Providing free vaccine at the work site, using strategies that have been demonstrated to increase influenza vaccination, such as the following:
 - Using vaccination clinics
 - Using mobile carts
 - Ensuring access to vaccination during all work shifts
 - Using organizational leaders as supportive role models
- Obtaining signed declinations from HCP who have nonmedical reasons for declining the vaccine
- Using HCP influenza vaccination levels as a measure of an organization's patient safety program.

Similarly, the Society for Healthcare Epidemiology of America (SHEA), the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC), and the National Foundation for Infectious Diseases (NFID) also support the use of multifaceted programs that include all the elements listed above.²⁻⁴ See Table 3-1 on pages 30–33 for a summary of the strategies supported by APIC, CDC, NFID, and SHEA, as well as The Joint Commission's requirements, for improving HCP influenza vaccination rates.

**Table 3-1. Improvement Strategies or Requirements—
The Joint Commission and the Project’s Collaborating Organizations***

Strategy	The Joint Commission†	APIC‡	CDC (HICPAC/ACIP)§	NFID¶	SHEA#
Offer vaccine annually	Annual vaccination program is offered to HCP.**	Require annually for all HCP who provide direct patient care	Offer annually to HCP to protect staff, patients, and family members and to reduce absenteeism.	Repeat the influenza program annually	All HCP should receive influenza vaccine annually unless it is contraindicated or they actively decline.
Multifaceted programs		Implement 2006 HICPAC and ACIP recommendations.	Successful HCP vaccination programs are multifaceted.	No single strategy is sufficient; successful programs have included multiple interventions.	All health care organizations should provide annual multifaceted programs.
Education	Educate HCP and staff about, at a minimum, the influenza vaccine; nonvaccine control and prevention measures; and the diagnosis, transmission, and impact of influenza.	Implement 2006 HICPAC and ACIP recommendations.	Basic knowledge regarding influenza and the vaccine has been associated with receipt of the vaccination.	Provide education and reeducation.	<ul style="list-style-type: none"> ■ Provide targeted education about the severity of influenza illness, especially in high-risk patients. ■ Provide targeted education about vaccine efficacy and safety and dispel vaccine myths.
Campaigns/marketing		Implement 2006 HICPAC and ACIP recommendations.	Organized campaigns that promote vaccine can improve vaccination rates.	Use all possible means to deliver messages, including e-mail alerts, articles, posters, or personal announcements.	Consider using proven tools as part of the vaccination program, such as mobile carts, continuous educational campaigns, visible vaccination of leaders, off-hours clinic, and the like.

Table 3-1. Continued
Improvement Strategies or Requirements—
The Joint Commission and the Project’s Collaborating Organizations*

Strategy	The Joint Commission†	APIC‡	CDC (HICPAC/ACIP)§	NFID¶	SHEA#
Role models		Implement 2006 HICPAC and ACIP recommendations.	Vaccination of senior medical staff or opinion leaders can improve vaccination rates in members under their leadership.	See “Commitment from leadership,” page 33.	See “Campaigns/marketing,” page 30.
Improved access to vaccination	Provide influenza vaccination at sites accessible to HCP.	Implement 2006 HICPAC and ACIP recommendations.	Provide the vaccine at convenient times and places where HCP congregate using mobile carts, such as during conferences; offer incentives.	Make influenza vaccine easily accessible by using methods such as rolling carts, providing vaccinations around department meetings and in vaccine clinics, or by using “flu deputies.”	Improve access to vaccine (e.g., mobile carts, off-hours clinics).
Provide vaccine at no cost		Implement 2006 HICPAC and ACIP recommendations.	Removing cost barriers can improve vaccination rates.	Providing vaccine to HCP at no cost shows commitment to this patient safety program.	Provide vaccine at no cost to HCP.
Measurement/improvement	<ul style="list-style-type: none"> ■ Annually evaluate vaccination rates and the reasons given for declining influenza vaccination. ■ Take steps to increase influenza vaccination rates. 	Implement 2006 HICPAC and ACIP recommendations.	<ul style="list-style-type: none"> ■ HCP influenza vaccination coverage should be regularly measured, by facility area or by occupational group. ■ HCP vaccination rates should be used as an organizational quality measure in states mandating public reporting of HAIs.** 	One way to measure is to track doses and calculate the percentage of HCP who have been immunized. Tracking by location can also be useful.	Accurately track and record HCP vaccination rates at the individual and unit levels, including those obtained outside the organization’s program.

Continued

**Table 3-1. Continued
Improvement Strategies or Requirements—
The Joint Commission and the Project's Collaborating Organizations***

Strategy	The Joint Commission[†]	APIC[‡]	CDC (HICPAC/ACIP)[§]	NFID	SHEA[#]
Feedback		Implement 2006 HICPAC and ACIP recommendations.	HCP influenza vaccination coverage should be regularly reported, with ward-, unit-, and specialty-specific rates given to staff and administration.	Vaccinated HCP should know that their efforts are appreciated, and those not vaccinated should know why they should be vaccinated. Departments with good participation should be recognized.	
Signed declinations		Require informed declinations from HCP declining for reasons other than medical. Use information from declinations to develop improvement strategies for the next vaccine season.	Signed declinations can assist organizations in identifying HCP who may need more education or other interventions to overcome barriers to vaccination.		Active declination policy should be used for HCP who do not want or cannot receive the vaccine.
Policies				Create a policy statement affirming organizational commitment to increasing HCP vaccination rates.	
Program leader				Someone or some group must be in charge of the program to make it successful.	

Table 3-1. Continued
Improvement Strategies or Requirements—
The Joint Commission and the Project’s Collaborating Organizations*

Strategy	The Joint Commission [†]	APIC [‡]	CDC (HICPAC/ACIP) [§]	NFID ^{//}	SHEA [#]
Commitment from leadership				Commitment from top management through resource allocation, by accepting the vaccination themselves and by assisting in the program in visible ways demonstrates their belief in the importance of the program.	Administrative support and leadership should be provided, including financial support and human resources.
Survey for health care–associated influenza					Each organization should have a surveillance system to capture data on health care–associated influenza to assess the success of the program.

* Collaborating organizations in The Joint Commission’s Strategies for Implementing Successful Influenza Immunization Programs for Health Care Personnel Project were the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC), the Centers for Disease Control and Prevention (CDC), the National Foundation for Infectious Diseases (NFID), and the Society for Healthcare Epidemiology of America (SHEA).

† The Joint Commission: *2009 Comprehensive Accreditation Manual for Hospitals (CAMH): The Official Handbook*. Oakbrook Terrace, IL: Joint Commission Resources, 2009. Infection Prevention and Control Standard; Standard IC.02.04.01. The standard (for hospitals, IC.02.04.01) can be viewed at http://www.jointcommission.org/NR/rdonlyres/38BEBD6D-59D7-4314-9E2B-3C4571F92159/0/HAP_IC.pdf (accessed Feb. 9, 2009).

‡ Association for Professionals in Infection Control and Epidemiology, Inc.: *APIC Position Paper: Influenza Immunization of Healthcare Personnel*. 2008. http://www.apic.org/Content/NavigationMenu/PracticeGuidance/Topics/Influenza/APIC_Position_Paper_Influenza_11_7_08final_revised.pdf (accessed Apr. 23, 2009).

§ Pearson M.L., Bridges C.B., Harper S.A.: Influenza vaccination of health-care personnel: Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 55:1–16, Feb. 24, 2006. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm> (accessed Nov. 14, 2008).

// National Foundation for Infectious Diseases: *Improving Influenza Vaccination Rates in Health Care Workers: Strategies to Increase Protection for Workers and Patients*. 2004. <http://www.nfid.org/pdf/publications/hcwmonograph.pdf> (accessed Nov. 14, 2008).

Talbot T.R., et al.: SHEA position paper: Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. *Infect Control Hosp Epidemiol* 26, Nov. 2005. http://www.shea-online.org/Assets/files/position_papers/HCW_Flu_SHEA_Position_Paper.pdf (accessed Nov. 14, 2008).

** HCP: health care personnel; HAIs: health care–associated infections

Text Box 3-1. Using a Team Approach

Three organizations describe how they use a team approach to plan or oversee their programs to immunize HCP against influenza:

- NorthBay Healthcare Group in Fairfield, California, provides care in a number of settings, including hospitals, clinics, and home care. The organization has a multidisciplinary Influenza Task Force, whose members include a vice president champion and representatives from the departments of employee health, occupational health, infection prevention, pharmacy, marketing, and public relations, as well as from the Center for Primary Care. The task force meets before the start of the influenza season to begin planning their strategies for the fall campaign. It meets again at the conclusion of the season to discuss any lessons learned and write a summary performance improvement report that is submitted to the Quality Council.
- Spencer Hospital is a 99-bed hospital in Spencer, Iowa. Its Influenza Task Force has representation from administration and several members from key departments (infection prevention, employee health, and pharmacy, plus a public health immunization nurse). The task force determines vaccination goals for the upcoming influenza season, selects the campaign's theme, discusses campaign strategies, determines the incentives to use, and discusses any other issues pertinent to the campaign.
- St. Luke's hospital and clinics in Duluth, Minnesota, uses an Influenza Vaccination Committee to plan strategies for the upcoming influenza season. This committee includes the hospital epidemiologist, who is an infectious disease physician, and a clinical nurse specialist/nurse practitioner who chairs the organization's immunization committee and works closely with the infectious disease physicians. Other members include administrative representatives from nursing, the primary care clinics, and the departments of pharmacy, public relations, occupational health, home care, urgent and emergency care, and infection prevention.

Many agree that there is no “one size fits all” approach when it comes to strategies for improving vaccination rates. The intervention strategies an organization uses in its influenza vaccination program, and how those strategies are implemented, should be based on an understanding of HCP knowledge of and concerns about the vaccine.⁵⁻⁹ Such understanding facilitates the development of customer-driven interventions to enhance HCP vaccination.¹⁰

Simply having the influenza vaccine available is usually not enough, in and of itself, to entice HCP to accept vaccination. In fact, Pottinger and Herwaldt make the following observations from the literature¹¹:

- Organizations that offer the vaccine without actively promoting it have had acceptance rates of 5% to 19%.
- Organizations that actively promote the vaccination have had acceptance rates of 26% to 54%.
- Organizations that have active promotional campaigns year after year have reported acceptance rates of 61% to 97%.

In general, multifaceted campaigns are more successful than those employing a single approach.^{1,12-14} Talbot suggested using a “bundled” strategic approach to promoting influenza vaccination, similar to an approach used in campaigns to prevent health care-associated infections. Such an approach might include the following elements¹⁵:

- Free vaccinations
- Easy access to vaccinations
- Leaders emphasizing the importance of vaccinations
- Use of informed declinations
- HCP education that stresses patient safety as a reason for accepting vaccination

Multifaceted campaigns do not have to be complicated, burdensome, or expensive to implement. Ohrt and McKinney found that offering vaccination at convenient times and locations was most important to the medical house staff and students they surveyed.¹⁶ Doebbeling et al. found that focusing improvement strategies on groups identified as having low rates of influenza immunization increases the likelihood of success.¹⁷ And in a national survey of 50 hospitals, Talbot et al. found that providing the vaccinations on weekends, using train-the-trainer programs, reporting vaccine acceptance rates to administrators and the board of trustees, sending HCP a letter from administration emphasizing the importance of vaccination, and having any form of visible leadership support for the program was associated

with higher vaccination rates than noted by organizations that did not use such strategies.¹⁸

Involvement of a multidisciplinary team in the development and promotion of the influenza vaccination program helps to ensure a well-supported and successful campaign.¹⁹ Also important is the ongoing assessment of HCP vaccination programs to evaluate their overall effectiveness.¹⁵ No matter what strategies are chosen, the goal should be to improve influenza vaccination rates. Text Box 3-1 on page 34 describes the team approach used by three organizations that participated in this Joint Commission project.

Ensuring Leadership Support

The importance of leadership involvement in and support of vaccination programs and campaigns to promote them cannot be overstated. Organizational leaders can ensure, for example, that policies are in place, cost and barriers to access are reduced or eliminated, and a culture exists in which the vaccination is not only encouraged but expected as an important component of patient and HCP safety.^{2,8,12,20} Polgreen et al. point out that organizations that implement multiple interventions, such as mobile carts, to improve access to the vaccine and educational efforts to promote acceptance of the vaccine often see the resulting improved immunization rates as a reflection of administrative support and leadership.²¹

Text Box 3-2 on page 36 features two organizations that participated in this Joint Commission project. Both have exhibited the kind of leadership involvement and support needed for a successful HCP vaccination program.

Public health and professional organizations have recommended a variety of strategies that can be used in HCP immunization programs to improve influenza vaccination rates. Several of these strategies are discussed in the following sections.

Education of HCP

The educational component of an influenza vaccination program is likely to require more extensive planning and more time to implement than any other campaign component.⁸ Content of the education will need to be decided, as well as how it will be delivered (Will presentations be live or shown via video/DVD? Will there be online self-learning modules? Will printed materials be part of the education?).

The CDC recommends that the following basic information be provided to HCP as part of any educational effort¹:

- The benefits of influenza vaccination
- The potential impact and severity of influenza illness for HCP and their patients
- The epidemiology of influenza, and its modes of transmission, diagnosis, and treatment
- Nonvaccine infection control strategies, such as antiviral medications, isolation precautions, and so on

Some authors believe vaccination education should cover additional subjects, such as the safety and efficacy of the vaccine.^{2,22} The SHEA position paper states that the ethical responsibility of HCP to protect themselves as well as their patients and coworkers should be emphasized.² Based on their experiences with HCP admitting to working with fever and respiratory symptoms, Adal et al. state that educational programs should also inform HCP of the importance of staying home from work when they have contracted influenza-like illness, no matter how mild the case.²³

Education of HCP, which reduces misinformation and misconceptions about influenza disease and the vaccine, has been associated with acceptance of the vaccine by HCP.^{24–26} Planning successful educational efforts depends on understanding the varying levels of knowledge, perceptions, and attitudes about influenza and the vaccine among HCP. Begue and Gee found that when all the concerns of HCP were addressed during educational sessions, their influenza vaccination rates rose from 21% to 38%, an increase of 50%.²⁷ Text Box 3-3 on page 37 provides examples of how two organizations participating in this Joint Commission project who, to help plan their educational programs, have sought to understand the reasons that their HCP gave for receiving, or not receiving, the influenza vaccination.

Several authors have concluded that tailoring education to address the concerns of the intended audience is more likely to result in improved vaccination rates than not focusing their educational efforts in that way.^{8,9,13,20,27–29} The following studies provide some examples:

- Christini et al. studied vaccination acceptance patterns among different groups of HCP at two tertiary care facilities and found that each group had different reasons for accepting or declining vaccination. The researchers

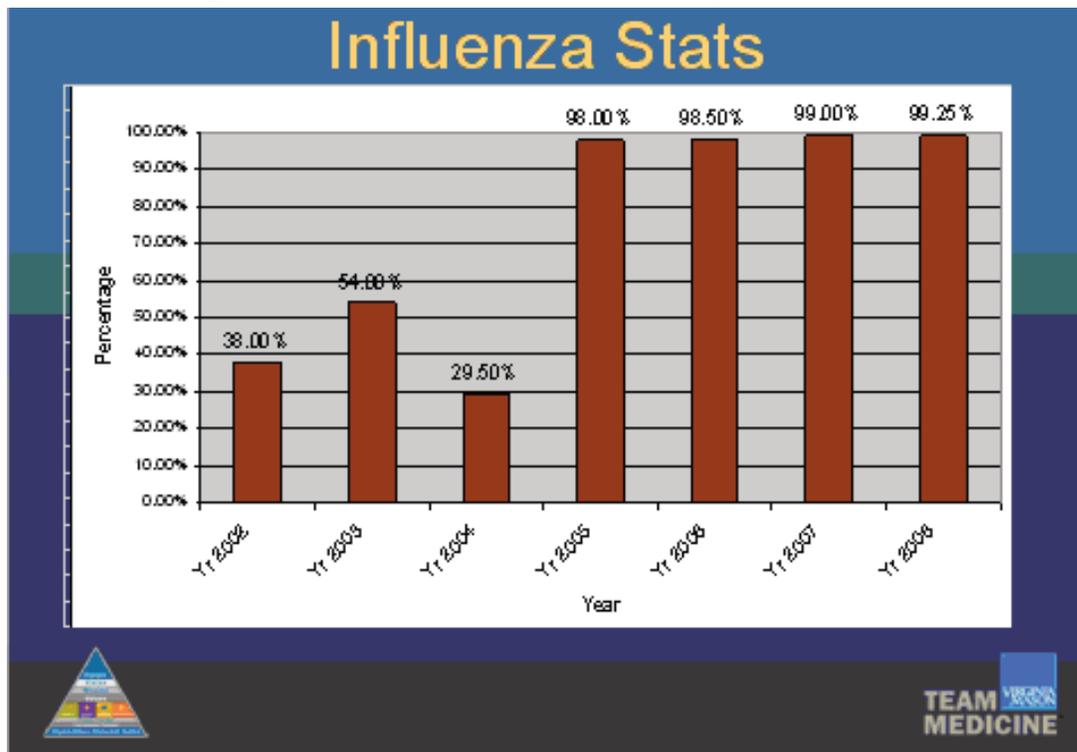
Text Box 3-2. Leadership Support

■ Beverly Hagar, supervisor of employee health at Virginia Mason Medical Center in Seattle, attributes the success of the organization’s HCP influenza immunization program to the support of senior leadership, the board of directors, and the “flu” team. (Beverly Hagar, personal communication, Feb. 9, 2009). The first health care organization in the United States to mandate influenza vaccinations as a condition of employment, Virginia Mason Medical Center allows no written declinations. Instead, HCP submit a written “request for accommodation,” which can be granted only for medical contraindications or religious objections. Each written request is carefully evaluated by an oversight group, and those whose requests are determined to be acceptable must wear a mask during work hours for the

duration of the influenza season. Nine HCP had their employment terminated as a result of the policy, though none has contested the dismissal. Their influenza vaccination rate has improved from 38% in 2002 to 99% or higher since the mandatory vaccination program was implemented in 2005 (see Figure 3-1, below).

■ Another organization that has a clear directive from its leadership is Community Health Care, Inc., an ambulatory care organization headquartered in Davenport, Iowa. Employing more than 200 HCP, Community Health Care provides medical and dental care in six locations throughout the Quad Cities in Davenport, Iowa, and Rock Island and Moline, Illinois. The organization’s CEO and board of directors charged the infection control committee with

Figure 3-1. Vaccination Rates, 2002–2008



Source: Virginia Mason Medical Center, Seattle.

Text Box 3-2 continued from previous page

developing an influenza campaign to improve vaccination rates among their HCP. To keep the voluntary program from becoming mandatory, they had to vaccinate at least 90% of the staff during the 2008–2009 influenza season. The campaign planners added mobile carts, more convenient vaccination times and locations, a revamped education program, and a campaign slogan contest. They not only reached, but exceeded, their goal: 94% of HCP were vaccinated against influenza in 2008–2009, up from the 65% to 70% vaccinated between 2005 and 2007.

propose that education be tailored to specific groups of HCP, such as nurses, physicians, technicians, and aides, based on their historic vaccination rates.²⁹

- Begue and Gee found that all their pregnant HCP refused the vaccination, despite the CDC's statement that the vaccine is recommended during pregnancy. Because these HCP usually declined the vaccine after they had consulted their obstetricians, the researchers identified the need for additional education aimed at physicians, including obstetricians, who care for specific populations.²⁷
- Goldstein et al. conducted a statewide survey of 268 health care organizations in North Carolina, including hospitals, home health agencies, dialysis centers, assisted living centers, and long term care facilities. Finding that educational messages to improve vaccination rates among HCP in assisted living centers or dialysis centers could be different from those used in hospitals or long term care facilities, they concluded that educational efforts could be tailored to the institution.¹³
- Gazmararian et al. found that organizations that included personal contact as a component of their educational efforts had higher vaccination rates than those that relied solely on printed materials.³⁰

Text Box 3-4 on page 38 provides an example of how one organization tailored education to its HCP.

Text Box 3-3. **Planning Education Based on HCP Needs**

- In its past HCP educational efforts, Community Health Care, Inc., an ambulatory care organization headquartered in Davenport, Iowa, highlighted protecting the patient as the reason HCP should be immunized against influenza. After the 2007–2008 influenza season, Community conducted a survey of its more than 200 HCP, asking those who had received the vaccination what motivated them to accept it. With a 70% response rate, the two overwhelming reasons they gave for accepting the vaccine were to (1) protect themselves and their families and (2) to avoid having to use their paid time off for illness. Campaign planners used this information when developing the educational component of the vaccination campaign for the 2008–2009 influenza season. This was one of the aspects of the program that helped to improve vaccination acceptance rates from a baseline of 65%–70% during the 2005, 2006, and 2007 seasons to 94% in 2008–2009.
- In the summer of 2008 Sanford Medical Center in Sioux Falls, South Dakota, surveyed HCP who accepted the influenza vaccine for the first time in 2007 to learn what motivated them to accept it. They found that HCP were influenced by the message that it was their responsibility as HCP to receive the vaccine to protect themselves and others. Accessibility to the vaccine and the organizational message to receive the vaccine were also key influences. They used this information to plan their 2008 staff education programs with the “ONE Thing” campaign slogan, emphasizing that getting the vaccination is the “ONE thing” they can do to prevent the spread of influenza.

Ofstead et al. surveyed 513 nurses at Mayo Clinic in Rochester, Minnesota, who had received education about influenza and the vaccination as part of a long-standing and multifaceted program. The researchers found that only

Text Box 3-4. Tailoring Education to HCP

During the 2006–2007 and 2007–2008 influenza seasons, Beaufort Memorial Hospital in Beaufort, South Carolina, had seen influenza vaccination acceptance rates hover in the upper 40% range for its approximately 1,200 HCP. One way the organization increased the vaccination acceptance rate in 2008 was by having the employee health nurse add a question to the annual employee health questionnaire, asking if the HCP had received the influenza vaccine during the past influenza season. For those who said they had not received the vaccine, she provided one-on-one education about the vaccine and its importance. For those who said they had received it, she gave positive reinforcement. This was one of the strategies the hospital used to improve its vaccination rate to 66% during the 2008–2009 influenza season.

Text Box 3-5. Targeting Interventions

Cleveland Clinic in Cleveland, Ohio, developed an intranet program to capture the organization's influenza vaccination rates. Beginning with the 2005–2006 influenza season, HCP accessed the intranet and selected either “vaccine received,” “contraindicated,” or “declined.” The database permits real-time monitoring of vaccination rates by location, which facilitates targeted interventions in subgroups of HCP whose rates are lower. For example, when the infection preventionist noticed low participation and vaccination among staff in the solid organ transplant unit, she addressed the concern with senior transplant surgeons; as a result, a “catch-up” vaccination effort was provided in February 2006.

Source: Bertin M., et al.: *Novel use of the intranet to document health care personnel participation in a mandatory influenza vaccination reporting program.* Am J Infect Control 35:33–37, Feb. 2007.

about two-thirds of those who said they had received all the information they needed intended to receive the vaccine.³¹ Other researchers have also concluded that education alone may be insufficient to improve rates of vaccination.^{9,25,32}

Social Marketing

The Social Marketing Institute defines *social marketing* as “the planning and implementation of programs designed to bring about social change using concepts from commercial marketing.” It is an approach to changing behavior that is used by organizations such as the Agency for Healthcare Research and Quality, the CDC, the American Cancer Society, the AARP (formerly the American Association of Retired Persons), and many others. The social marketing approach disseminates information with the goal of changing individual behavior to realize a future benefit.³³ Examples of social marketing campaigns are those conducted by the Ad Council to reduce teenage smoking, drinking, and drug use. Articles focusing on how the tools of social marketing are being used to influence HCP behavior have been published in the infection prevention literature.^{10,34}

Social marketers aim to understand the perceptions, needs, and wants of individuals. Their goal is to persuade people to behave in ways that will be of individual, as well as collective, benefit.³³ They segment target populations according to the motivations and perceptions that underlie individual behaviors rather than using a single approach to a population.¹⁰ Infection preventionists can, for example, use different customer-driven strategies with different groups and decide which groups to target to maximize limited resources. Mah et al. described how they used the social marketing approach to better understand HCP perceptions, motivations, and preferences surrounding influenza vaccinations at a Canadian cancer center. They found that HCP perceptions of the influenza vaccination differed by past frequency of vaccine acceptance (that is, no participation, moderate participation, or frequent participation) and planned their vaccination promotion strategies based on these differences.¹⁰

A social marketing campaign may include conducting surveys to capture information about HCP attitudes and beliefs about influenza vaccination and what motivates them to receive or decline it. Results can then be used to design a campaign targeted to the most resistant HCP. Text Box 3-5,

at left, describes how one organization used its intranet to gather useful information about vaccination acceptance rates and target interventions accordingly.

Getting the Message Out

Health care personnel need to know when and where education will be offered or is available, when and where the vaccinations will be provided, and the importance of getting the vaccination. Promoting the vaccinations to HCP can take many forms and take place in many venues, including the following¹²:

- E-mail notices and reminders, which quickly provides information to large numbers of HCP
- Employee newsletters, which may take more time to develop than e-mail messages but which reach HCP who do not have access to e-mail. The NFID recommends publishing a series of articles during the course of the influenza season, starting with announcements of the upcoming influenza campaign and the importance of the vaccinations, followed by regular updates on acceptance rates, reminders of when and how to get the vaccine, and any policy-related issues, such as deadlines for either accepting or declining the vaccine.
- Posters, which deliver educational messages, advertise vaccination times and locations, or both
- Screen savers that remind staff to get their vaccinations
- Messages delivered in person at staff meetings or health fairs
- Stickers worn by HCP, indicating that they have received the vaccination

Organizations participating in this Joint Commission project have used many creative approaches to “get the word out” about their influenza vaccination campaigns, as described in Text Box 3-6 on pages 40–43.

Keeping the Campaign Going

The CDC recommends keeping the vaccination campaign going through the winter and spring, as influenza activity typically peaks in February and can continue until April or May.³⁵ According to the National Health Interview Survey, during the 2005–2006 and 2006–2007 influenza seasons,

approximately 84% of all vaccinations were given between September and November (see Figure 3-5, on page 44).³⁶ Because many people, including HCP, remain unvaccinated at the end of November, the CDC recommends promoting influenza vaccinations during National Influenza Vaccination Week (usually in December) and throughout the remainder of the influenza season, which can continue into April or May.³⁵ Adal et al. suggest that an opportune time to remind HCP of the importance and availability of the vaccination is early in the course of a community outbreak.²³ Text Box 3-7 on page 45 describes how two organizations keep their influenza campaigns active throughout the influenza season to maximize the number of HCP who accept the vaccine.

Convenience of and Accessibility to Vaccinations

Easy and convenient access to vaccination is likely to improve vaccination rates among HCP.^{7,9,16,20,23,26,27,30,37,38}

Consider the following approaches:

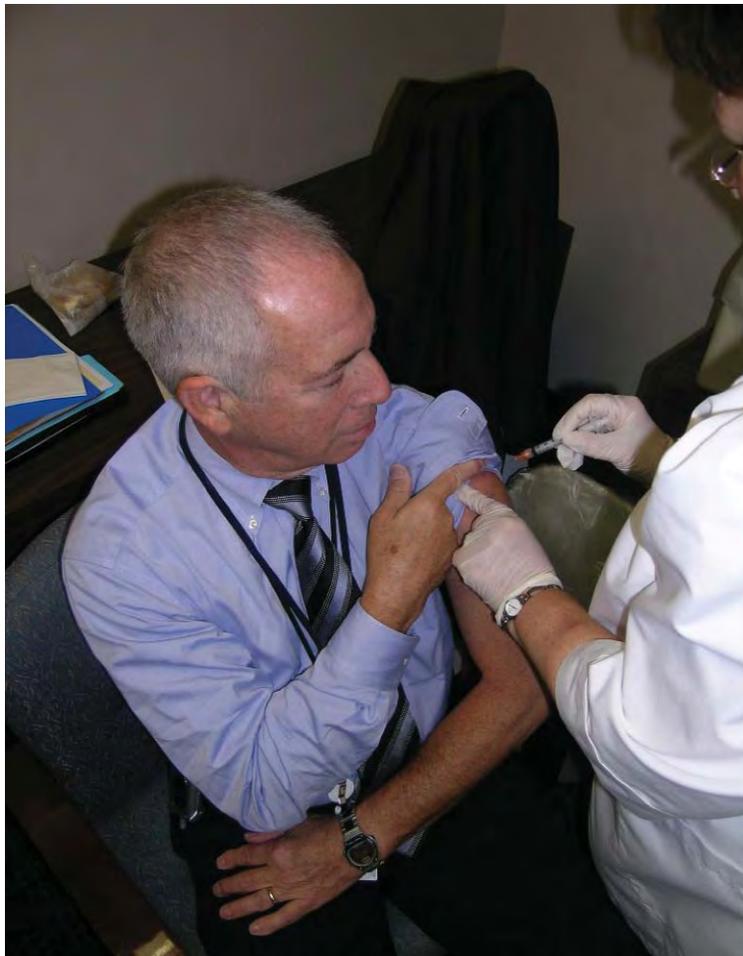
- Offer vaccinations at various times and locations; ensure that staff on all shifts, including weekends, are afforded access; offer the vaccine in common areas such as cafeterias or building entrances; and offer the vaccine when meetings are taking place and during shift changes. Offer vaccinations in the employee health office or preestablished vaccination clinics, with convenient times available for all staff on all shifts, either on a “walk-in” basis or by appointment.
- It is important to ensure a quick, streamlined process for vaccinating staff. Some organizations have preannounced “vaccine days,” during which the vaccine is offered to all staff on designated days.³² Kimura et al. found that holding one or more vaccine days combined with an educational program improved vaccine acceptance by HCP in several long term care facilities in California in 2002.³⁹
- Use of mobile carts, which involves taking the vaccine to units or departments and vaccinating HCP during their work shifts, offers not only convenience but the opportunity for face-to-face interaction with HCP and an opportunity to educate staff and answer questions. Consider the following studies:
 - Pachucki et al. used mobile carts to immunize 294 HCP working on their wards during an influenza

Text Box 3-6. Organizations Get the Word Out

■ CentraState Healthcare System in Freehold, New Jersey, holds a campaign “kickoff” with a presentation to department heads by the senior vice president/medical director and the employee health manager, followed by vaccinations at a management council meeting attended by top management. The organization uses this as a photo opportunity as part of its marketing campaign; for

example, a picture of the senior vice president/medical director receiving his vaccination appears in their October newsletter, which goes to all HCP (see Figure 3-2, below). In addition, CentraState has special T-shirts for everyone receiving an influenza vaccination, and the “vaccine deputies” can also wear them while giving the vaccinations (see Figure 3-3 on page 41).

Figure 3-2. Senior Management Sets an Example



Dr. Ben Weinstein, M.D., Ph.D., senior vice president/medical director for CentraState Medical Center in Freehold, New Jersey, receives his influenza vaccination from the employee health nurse at the management council meeting.

Text Box 3-6 continued from previous page

- Sanford Medical Center in Sioux Falls, South Dakota, has a “One Thing” campaign, with T-shirts for vaccinators and stickers for staff badges that say “I have done the ONE thing.” The campaign is based on educational themes such as “If you could do the ONE thing to prevent 36,000 deaths and 220,000 hospitalizations, would you do it?” and “If you could do the ONE thing to protect yourself, your coworkers, your patients, and your loved ones, would you do it?” and so on.
- In 2008 the Hospital of the University of Pennsylvania in Philadelphia developed the inspirational video *Baby, Be Wise—Immunize*. The hospital used HCP volunteers

Figure 3-3. Vaccine Deputy Promotes Vaccinations



Deputy Hazen, vaccine deputy for CentraState’s vaccination program, wears a T-shirt and badge promoting the influenza campaign.

Continued

Text Box 3-6 continued from previous page

and members of PennYo's Acappella Choir to sing about concerns over the vaccine's safety and efficacy, which had been gleaned from HCP signed declinations during the previous influenza season. The video is shown at "flu fairs" and is available on the hospital's intranet, television network, and YouTube (<http://www.youtube.com/watch?v=ruGgZbAVnko>).

- Loyola University in Maywood, Illinois, raises awareness of its annual influenza campaign by showing pictures of senior leadership getting their influenza vaccinations on flat-screen monitors across the campus. Along with the pictures, the monitors play a jingle about the vaccination campaign to catch the attention of HCP and add a little humor to the process of getting everyone vaccinated. It was such a success when it debuted during the 2007–2008 campaign educational sessions that staff asked whether a new video would be coming out for the 2008–2009 season. By popular demand, the video team created a two-minute DVD for the 2008–2009 season, with

lyrics sung to the tune of the "Beer Barrel Polka"; ambulatory managers and the vice president sang the refrain:

Pro-TECT our pa-tients,
Go get your flu shot to-day.
Pro-TECT our patients,
We'll wash our hands night and day.
Pro-TECT our pa-tients,
Ev'-ry one must do their part.
Now's the time to do the right thing,
Go and get your flu shot now.

- St. Luke's Hospital in Duluth, Minnesota, tried something new for its 2008–2009 campaign: It had large banners professionally made for the hospital and clinics, emblazoned with the organization's logo and the phrase "We're putting our patients' health first! We got the flu

Figure 3-4. Staff-Autographed Banners



Staff-autographed banner hangs in St. Luke's Hospital, Duluth, Minnesota, during the hospital's influenza campaign in 2008–2009.

Text Box 3-6 continued from previous page

shot!" As HCP received their vaccinations, they were offered the opportunity to sign their names to the banner with a bright pen. The banners were then hung in prominent locations (see Figure 3-4 on page 42).

- SUNY Upstate Medical University in Syracuse, New York, started something new in its 2008–2009 influenza campaign, called the “Red Dot Flu Campaign.” Everyone

receiving an influenza vaccination was given a half-inch red dot, placed on the upper-right corner of the identification card HCP wear at all times. This makes it apparent to everyone, including patients, who has (and has not) received the vaccine. This effort has been helpful in raising awareness and stimulating discussion, which has led to increased vaccination rates.

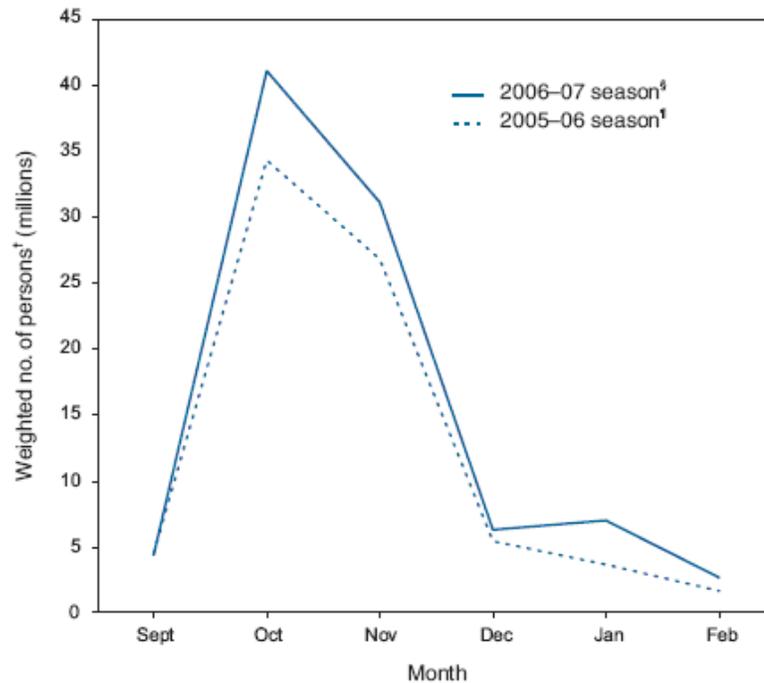
outbreak over a period of seven days; the mobile carts visited each ward at least twice on every shift. Personnel from the organization’s infection prevention department, who staffed the carts, actively sought out HCP and asked them about their immunization status; the unvaccinated staff were educated about influenza disease, its serious health consequences, and the importance of receiving the vaccination. This strategy was also used the following influenza season and was associated with a marked increase in HCP receiving the influenza vaccination.⁴⁰

- The Veterans Affairs Medical Center in Minneapolis implemented a mobile cart program in 1985, and the organization’s HCP influenza vaccination rate increased steadily from less than 25% in the early 1980s to 65% during the 2003–2004 season.³² Each year the program is reviewed and endorsed by the infection control committee, and one employee health nurse and two infection prevention nurses set aside two weeks in October to take mobile carts throughout the organization. The scheduled locations of the mobile carts are advertised to staff, and HCP are encouraged to “go to the cart” if it is more convenient for them to be vaccinated at a time and location other than the scheduled time in their own work area. Educational materials are provided prior to the arrival of the mobile carts, but the nurses also educate employees, answer their questions, and emphasize other infection prevention measures, such as hand hygiene.
- The use of peer vaccinators has been a useful component of some vaccination programs. Referred to as vaccine

deputies or “flu” deputies in some organizations, these trained HCP provide the vaccination to other HCP. The peer vaccinators are oriented to the procedures and paperwork associated with vaccine administration and seek out staff in their work areas. One group of researchers, however, did not see an association between the use of peer vaccinators and increased vaccination rates, suggesting to the researchers that the effectiveness of this strategy may depend on the motivation and commitment of individual vaccinators.²⁰ Others, including the following researchers, see peer vaccinators as useful:

- Sartor et al. used 15 vaccination teams, each comprising one nurse and one physician, to take the vaccinations to HCP in patient care areas. The teams made their visits on preannounced dates, visiting each unit at least three times on all shifts. They also targeted areas of the hospital with historically low vaccination rates, such as the physical therapy and obstetrics departments. This approach led to a significant increase in their HCP influenza vaccination rate, from 6% and 7% in 1998 and 1999, respectively, before implementation to 32% in 2000 and 35% in 2001, after implementation.³⁷
- Mayo Clinic in Rochester, Minnesota, added the Peer Vaccination Program to its existing large vaccination clinics in 2000, in an effort to vaccinate its approximately 25,000 HCP. The Peer Vaccination Program nurses vaccinated their coworkers in their respective work areas, thereby minimizing the logistical difficulties and expense associated with staffing additional vaccination clinics. This practice afforded HCP the convenience of having someone in their work area

Figure 3-5. Estimated Number of Persons Reporting Vaccination for Influenza, by Month—National Health Interview Survey, United States, 2005–2006 and 2006–2007 Influenza Seasons



* Respondents were asked two series of questions: “During the past 12 months, have you had a flu shot?” “A flu shot is usually given in the fall and protects against influenza for the flu season.” “During what month and year did you receive your most recent flu shot?” and “During the past 12 months, have you had a flu vaccine sprayed in your nose by a doctor or other health professional?” “A health professional may have let you spray it.” “This vaccine is usually given in the fall and protects against influenza for the flu season.” “During what month and year did you receive your most recent flu nasal spray?”

† Estimates are based on 1-month sampling weights.

§ Persons aged ≥ 6 months for whom month of influenza vaccination was reported in interviews conducted in March 2007.

¶ Persons aged ≥ 6 months for whom month of influenza vaccination was reported in interviews conducted in March 2006.

SOURCE: 2006 National Health Interview Survey final data and 2007 National Health Interview Survey preliminary data. Estimates for the 2006–07 influenza season might change as more data become available. Estimates are based on household interviews of the civilian noninstitutionalized population. Additional information available at <http://www.cdc.gov/nchs/nhis.htm>.

Source: Centers for Disease Control and Prevention: Notice to readers: National Influenza Vaccination Week—November 26–December 2, 2007. *Morb Mortal Wkly Rep* 56:1216–1217, Nov. 23, 2007. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5646a3.htm#fig> (accessed Feb. 9, 2009).

able to vaccinate them. Despite vaccine shortages that year, they were able to vaccinate more than 42% of their HCP.³²

Whatever approaches you use to make the vaccine more accessible, offer it as many times as possible and at varying times over all shifts, rather than once or a small number of times, to help reach the most staff.

Text Box 3-8 on page 46 cites examples of how some organizations ensure that HCP have ready access to vaccinations at convenient times and locations.

Free Vaccinations

By assuming the cost of the vaccine for their HCP, organizations indicate their support for and commitment to this important infection prevention and patient safety strategy.¹² Providing vaccine at no cost removes yet another barrier to vaccination and has been recommended by the CDC,¹ NFID,⁴ and SHEA.² When Steiner et al. conducted a survey of HCP in their hospital to evaluate factors associated with acceptance of influenza vaccination and willingness to pay for the vaccine, one-third said they would not be willing to pay anything out-of-pocket.⁴¹ Song et al. saw their vaccination rates increase from 42% in 2002–2003 to 78% in 2003–2004 when they switched from offering the vaccine “at cost” to offering it at no cost.⁷

Role Models

Vaccination of senior staff, organizational leaders, or opinion leaders has been associated with better vaccine acceptance rates among HCP. Sartor et al. demonstrated a significant association between vaccination of the chief or associate professor of a large teaching hospital in France and vaccine acceptance by medical staff.³⁷ Nafzinger and Herwaldt surveyed the attitudes of internal medicine residents at two Iowa hospitals about their reasons for accepting or declining the influenza vaccine; they found that faculty, especially infectious disease physicians, appeared to increase vaccine acceptance among residents by establishing a social norm.²⁶ The influence of attending physicians on behavior has also been noted in the hand hygiene literature.^{42,43}

Stamford Hospital in Stamford, Connecticut, announces the kickoff of its influenza campaign with a picture of the hospital’s CEO getting the first vaccination of

Text Box 3-7. Organizations with Season-long Campaigns

- Campbell County Memorial Hospital in Gillette, Wyoming, had vaccinated 83% of its HCP by mid-January 2009, but the hospital has a “final push” each year at the end of January–early February to encourage HCP who have not yet received the vaccine to accept it. The employee health nurse sends each manager a list of HCP who need the vaccine or who need to show proof of vaccination from another source, a copy of which is sent to the manager’s vice president. Managers can then follow up with their staff. Vaccinations are available to HCP throughout the influenza season, as long as the vaccine supply lasts.
- CentraState Healthcare System in Freehold, New Jersey, conducts an “It’s Not Too Late” campaign each January to spotlight vaccinations for HCP. It offers a gift-card incentive via a raffle drawing throughout the campaign for HCP who receive their vaccination, although the earlier in the campaign staff receive the vaccinations, the higher the value of their gift cards. During the 2008–2009 influenza season the employee health nurse also “advertised” the resistance of the influenza virus to the antiviral drug oseltamivir, which motivated some worried staff to come in for the vaccine after the first of the year.

the season, which the hospital publicizes in the weekly staff news update (see Figure 3-7 on page 47).

Declinations

The CDC’s 2006 immunization recommendations include obtaining signed declinations from HCP when they decline vaccinations.¹ SHEA’s position paper also recommends signed declinations for HCP who cannot receive the vaccine or who do not want the vaccine.² Having reluctant HCP read a declination form may cause them to reflect on their decision and perhaps lead them to participate.¹⁹ However, obtaining signed declination statements has been somewhat controversial, and limited data are available

Text Box 3-8. HCP Have Easy Access to Vaccinations

- Albert Einstein Healthcare Network in Philadelphia holds multiple vaccination clinics throughout the network, arranges to have trained unit-based vaccinators in all clinical areas, and has roving vaccination teams that visit units to ensure vaccination coverage on all shifts at all work sites.
- Catawba Service Unit in Rock Hill, South Carolina, provides ambulatory care in medical and dental offices and takes advantage of its fall staff meeting to vaccinate its 26 HCP against influenza. The staff also receives an annual tuberculin skin test at the same time.
- Rome Memorial Hospital in Rome, New York, offers influenza vaccinations at specific clinic times for approximately three weeks each fall and then seeks out unvaccinated staff by visiting units and encouraging staff to get the vaccination. The hospital has also enlisted the help of the night supervisor to vaccinate HCP on the night shift.
- Sanford Medical Center in Sioux Falls, South Dakota, is part of a large health system of clinics and affiliate hospitals that uses “roaming vaccinators” to reach HCP on all shifts, including weekends. It has developed a voucher system for HCP who do not have easy access to the vaccine, which allows them to receive the vaccine at no charge at any Sanford location close to their home. If HCP do not have ready access to a Sanford facility, they can arrange to receive the vaccine at a convenient location at no charge.
- Tri-City Regional Medical Center in Hawaiian Gardens, California, uses mobile vaccination carts to vaccinate staff by going to places where HCP are working. The medical center has also found it useful to have an influenza vaccination station available on the day HCP come in to pick up their paychecks. In addition, HCP know that a mobile cart is kept in the supervisor’s office so HCP on all shifts, including weekends, can be vaccinated.
- Beaufort Memorial Hospital in Beaufort, South Carolina, added a “roving flu vaccination cart” in 2008, staffed by nurses from the Nurse Advisory Board. The roving flu vaccination cart went to the units and other areas of the hospital on both the day and night shifts. The nurses also gave out healthy snacks, chocolate kisses, and stickers they printed from the CDC Web site (see Figure 3-6, below). The staff appreciated the convenience of having the vaccinations in their home units and departments. The hospital believes that the roving carts were a key factor in raising the 2008 influenza vaccination rate from 46% in 2007–2008 to 66% in 2008–2009.

Figure 3-6. Vaccination Sticker



Sticker printed from CDC Web site and given to Beaufort Memorial Hospital HCP after receiving their influenza vaccination.

Figure 3-7. CEO Gets His Vaccination

Stamford Hospital's president and CEO, Brian Grissler, kicks off the organization's "Fight the Flu" campaign by getting his vaccination from senior infection preventionist Brenda Grant, R.N., M.P.H., C.I.C.

regarding the effectiveness of using declinations as a strategy for improving influenza vaccination rates among HCP.⁴⁴ The American College of Occupational and Environmental Medicine has expressed concern over the use of declination statements, preferring more positive reinforcements to increase vaccination rates.⁴⁵ In a national survey of 50 hospitals, Talbot et al. did not find a significant difference in HCP influenza vaccination rates between hospitals that required a signed declination form for those refusing vaccination and those that did not.¹⁸ Others point to the success in raising hepatitis B vaccination rates among HCP to 71% by incorporating, among other things, signed declination statements when organizations began implementing the Occupational Safety and Health Administration's 1991 Bloodborne Pathogen Standard requirements.^{46,47} Willis and Wortley point out that the signed declinations can help identify HCP needing additional education.⁴⁸ Many agree that there is an association between use of declination state-

ments and improved influenza vaccination rates; a few examples follow:

- Polgreen et al. describe a study by the Infectious Diseases Society of America Emerging Infections Network in which 22 health care organizations implemented declination policies. An analysis of influenza vaccination rates both before and after implementation of the policy revealed a statistically significant mean increase of 11.6% ($p = .001$); 18 of the 22 organizations had also concurrently implemented other strategies aimed at increasing rates, such as new vaccination locations or educational campaigns. The researchers found that organizations with relatively lower vaccination rates prior to implementation of the declination policy tended to have greater increases in vaccination rates after the policy was introduced than did organizations that had relatively higher vaccination rates. Although declinations were

considered mandatory in 13 of the 22 organizations, there were no penalties for HCP who did not sign the declinations.⁴⁴

- In an earlier publication, Polgreen et al. described a survey of almost 1,000 infectious disease consultants regarding their vaccination programs and rates. They found that while influenza vaccination rates were significantly higher in organizations requiring HCP to sign declinations ($p = .004$), such declinations were not commonly used in the 2005–2006 influenza season and were actually one of the least implemented of the CDC’s 2006 recommendations.²¹
- During the 2006–2007 influenza season, Ribner et al. introduced a form that included the vaccination consent, medical contraindications for the vaccine, and reasons for declining the vaccine in a health care system with more than 9,000 employees. The overall vaccination rate improved from 43% of all HCP in 2005–2006 to 66.5% during the 2006–2007 season. While they had also implemented other measures to improve their vaccination rates and therefore could not attribute the increase solely to the use of the new forms, they were able to use the reasons for declining the vaccine that were captured on the forms to plan their strategies for future campaigns.⁴⁹
- Bertin et al. describe an influenza vaccination program in their large tertiary care health care system. Between 1997 and 2003, they consistently averaged below the 38% national HCP vaccination rate. Beginning with the 2004–2005 influenza season, a year of vaccine shortages, HCP were required to complete a paper form on which they either accepted or declined the vaccination; vaccination rates increased to 38.2%. Beginning with the 2005–2006 season, HCP had to log onto the intranet and select either “vaccine received,” “contraindicated,” or “declined”; if they declined, a screen with education about vaccination would appear. In that year, 55% indicated “vaccine received.” The authors stated their belief that requiring HCP to either sign the declination form or to accept the vaccination showed the organization’s commitment to the influenza vaccination program and motivated many HCP to accept vaccination for the first time that year.⁵⁰

- Borlaug et al. describe their survey of Wisconsin hospitals and long term care facilities as part of the Wisconsin Division of Public Health’s statewide program to improve influenza vaccination rates among HCP working in those facilities. The researchers found small but significant associations between facilities requiring signed declinations and better vaccine acceptance rates, as follows⁵¹:
 - Of the 103 hospitals that reported influenza vaccination rates, 15 used signed declination forms. HCP vaccination rates were higher in hospitals that required the signed forms than in those that did not (65% versus 56%; $p = .02$).
 - Of the 268 long term care facilities that reported influenza vaccination rates, 43 used signed declination forms; rates of HCP vaccination among long term care facilities requiring the signed forms were higher than vaccination rates in those that did not (50% versus 30%; $p = .01$).

Talbot identifies the following key facets of declination forms that influence their effectiveness¹⁵:

- Having a statement stressing that the HCP has received education regarding the rationale for the vaccination and that declining the vaccination puts patients at risk. This has a greater impact than a simple “yes or no” declination.
- Having consequences for failure to sign the declination
- Having a statement about the organization leadership’s expectations and the importance they place on vaccination

Managing declinations can be resource intensive, so if they are used within an influenza vaccination program, consideration should be given to who will track them and how. But written declinations do provide valuable information that influenza vaccination program planners and program managers can use to select appropriate strategies for improving vaccination rates. Organizations participating in this Joint Commission project that have used declinations to improve their influenza vaccination rates are highlighted in Text Box 3-9 on page 49. As you can see from these examples, organizations that have established one-on-one contact

Text Box 3-9. Declinations Improve Vaccination Rates

- Campbell County Memorial Hospital, a 90-bed acute care hospital in Gillette, Wyoming, began requiring HCP to either receive the vaccination or decline in 2007–2008. While they offer the vaccination during scheduled influenza clinics, use mobile vaccination carts, and have vaccine available on all nursing units, HCP who do not want the vaccine can decline only by going to the employee health office. The employee health nurse first provides individualized education on influenza disease and the vaccine’s effectiveness and safety. If HCP still wish to decline, a reason for doing so must be stated. The reasons for HCP declining the vaccine are tabulated at the end of the influenza season and used when planning the educational component of the next influenza campaign. Vaccination rates have steadily increased from 43% in 2005 to 92% in 2008–2009.
- St. Louis University Hospital (Tenet) in St. Louis uses employee health clinic and mobile vaccination personnel to make the vaccination available to its 1,750 HCP. Beginning with the 2007 influenza season, the organization required HCP to either accept the vaccination or formally decline in person at the employee health office. Declinations are entered electronically by the employee health nurse, so this process is centrally managed and controlled. Failure of HCP to accept the vaccination or complete the declination process by a preset deadline results in their payroll being locked down so they cannot “clock in” again until they do so. With this program, called “Not So Inclined to Decline,” the hospital’s vaccination rates have steadily improved from 34% in 2004–2005 to 67% in 2008–2009.
- The Chattanooga-Hamilton County Health Department in Chattanooga, Tennessee, strives to vaccinate its more than 280 HCP each year. Beginning in 2006, it developed a formal educational program and implemented a declination form, requiring health department HCP to either take the vaccine or sign the form. The vaccination rates improved from 58% in 2004–2005 to 62% in 2005–2006 and approximately 80% in 2006–2007 and 2007–2008.
- Cleveland Clinic implemented an intranet program in 2005, available on all of the organization’s computers and workstations, to capture the vaccination status of 20,000 HCP. The program was expanded in 2008 to include more than 38,000 HCP who work in the 10 hospitals that comprise the Cleveland Clinic Health Care System. HCP are required to access the Web site and select either “vaccine received,” “vaccine contraindicated,” or “declined;” if the “declined” field is selected, an educational screen about the vaccination appears. Cleveland Clinic vaccination acceptance rates increased from 38% in 2004–2005 to 55% in 2005–2006, with rates remaining in the 50% range in subsequent years.
- Loyola University Health System in Maywood, Illinois, had seen the influenza vaccination acceptance rate among its 7,700 HCP increase gradually from 35% to 51% in 2005, then level off at 61% in both 2006–2007 and 2007–2008. Determined to improve those rates, in 2008, the organization implemented an online declination process that tracks HCP by job description. Vaccination rates improved to 73% the first year this process was used, and the reasons stated for declining the vaccination will be used in planning next season’s influenza education.
- Stamford Hospital in Stamford, Connecticut, requires its 2,400 HCP to complete a mandatory education module that includes information on influenza and the vaccination. Beginning with the 2008–2009 influenza season, HCP were required to either accept the vaccination or sign a declination form. Failure to do either negatively affects the HCP performance review. Vaccine acceptance rates, which had been in the low 50% range since 2004–2005, increased to 64.7% in 2008–2009.

Text Box 3-10.
Cigna Medical Group

Cigna Medical Group in Phoenix is a multispecialty medical group practice, a division of CIGNA HealthCare, CIGNA Corporation, with 25 locations and 1,700 HCP throughout the Phoenix Valley. Assistance in managing the influenza vaccination program comes from “flu coordinators,” with one coordinator assigned to each location. Each fall the Flu Committee hosts a “Flu Education Day” that includes a luncheon to which all coordinators are invited. Plans for the upcoming influenza vaccination campaign are discussed, new and updated information is shared, and techniques that worked and pitfalls to avoid from the last vaccination campaign are conveyed during breakout sessions. The coordinators administer the vaccinations, and the employee health nurse is responsible for keeping the logs, consents, and declinations. Vaccination acceptance rates have been above 70% for three consecutive influenza seasons.

- Researchers in Atlanta studied 12 area hospitals to gain insight into the relationship between hospital policies and HCP influenza vaccination rates. The three hospitals with the highest vaccination rates (59%, 47%, and 46%) implemented the greatest number of policies that HCP seemed to view as convenient, neutral, or containing positive incentives (for example, the vaccine was provided free of charge, vaccination carts were used on wards and in other locations, vaccination clinics were scheduled). The two hospitals with the lowest vaccination rates (34% and 27%) had implemented the fewest such policies.³⁰
- Researchers in North Carolina studied 268 health care organizations of various types throughout the state, surveying a sample of hospitals, long term care facilities, home health agencies, assisted living facilities, and dialysis centers. They found that only 38% of those surveyed reported having formal written policies pertaining to employee influenza vaccination; 70% of those surveyed reported the existence of written policies, but dialysis centers and assisted living facilities were less likely to have such policies than others (26% and 14%, respectively). Only 2% of the organizations mandated annual HCP vaccinations.¹³

with HCP who wish to decline have seen more dramatic improvement in their vaccination rates than organizations that have passive programs, but even passive declination programs have demonstrated improvement.

Policies

Health care organizations affirm their commitment to improving influenza vaccination rates among their HCP when they create written policy statements.¹² The literature, however, contains little about which policies or combination of policies should be implemented to improve influenza vaccination rates.

Adal et al. recommend work-release policies encouraging HCP to not work until they have recovered from their influenza illness.²³ Gazmararian et al. point out that having a policy does not necessarily mean it has been well implemented and suggest that organizations monitor the influence of policies over time to determine which seem to improve vaccination rates.³⁰ Only a few researchers, including the following, have studied the use of formal written policies on rates of HCP influenza vaccination:

The successful implementation of policies requires adequate resources (both time and money), assigned responsibility for policy implementation, and organizational commitment.⁵²

Focused Responsibility

No matter how large or small, each health care organization should have an individual or a group in charge of the HCP influenza vaccination program in order to be successful over time.¹² Fedson describes the vaccination program for medical residents in the General Medicine Clinic at the University of Virginia Health Services Center. When the responsibility for vaccinating residents during the weekly half-day outpatient clinic sessions was assigned to all nursing staff in 1986, vaccination rates rose from 24% in 1986 to 75% in 1988. In 1989, when this responsibility shifted to one nurse, the rates increased to 93% in 1989, 94% in 1990, and 99% in 1991. The impact on vaccination programs when key personnel are lost became apparent when the rates fell to 82% and 63% in 1992 and 1993, respectively, when this nurse and the clinic director were absent.⁵³

Assigning responsibility for the HCP influenza vaccination program has been used successfully by Cigna Medical Group in Phoenix, Arizona, as described in Text Box 3-10 on page 50.

Incentives

Incentives that have been offered to HCP who have accepted influenza vaccination have included nominal gifts, such as notepads or pens; coupons for coffee or ice cream; drawing for prizes; candy; T-shirts; buttons or stickers that could be placed on name badges indicating that the HCP was vaccinated; and financial incentives such as discounts on benefits, consideration of vaccination status during merit increases, or decisions about granting time off.²⁶ Incentives might help to increase HCP vaccination rates, though their ability to motivate in and of themselves is unclear. Anikeeva et al. suggest that incentives may play a role when coupled with education and minor sanctions.⁵⁴ Various levels of success have been reported with using incentives to increase HCP vaccination rates, as noted by the following researchers:

- Doratotaj et al. compared influenza acceptance rates between HCP who received no interventions beyond the usual influenza campaign and those receiving either a vaccine educational letter, a raffle ticket offering a \$3,000 Caribbean vacation for two, or both. They found no significant difference in vaccination rates ($p = .66$) between those who had received no additional interventions (38% vaccinated), those who received only the letter (39% vaccinated), those who received only the raffle ticket (42% vaccinated), and those who received both (44.5% vaccinated).⁵⁵
- During the 2002–2003 influenza season, Mayo Clinic added an incentive program to its influenza clinics in which HCP could sign up for small gifts such as movie tickets or health books, which were then distributed through a drawing at the conclusion of the vaccination season. Vaccination coverage increased to 56.4% that year, an improvement from the previous year's 42.6%.³²
- Virginia Mason Medical Center in Seattle has held a kickoff tailgate party with the Seattle Seahawks football team each fall since 2005. Virginia Mason staff and Seattle Seahawks who participate in the medical center's tailgate party enjoy food and prizes. The NFL players,

cheerleaders, and mascots help to highlight the importance of the influenza vaccinations by also being vaccinated, along with the medical center staff. Virginia Mason's Beverly Hagar reports that, at the tailgate party in 2008, the organization vaccinated 1,010 HCP in just three hours (Beverly Hagar personal communication, Feb. 9, 2009).

Various vaccination incentives used by other organizations that participated in this Joint Commission project are described in Text Box 3-11 on pages 52–54.

Linking Vaccinations to a Required Activity

Another approach to improving influenza vaccination rates is to provide the vaccination at the same time as another required activity, such as during annual mandatory tuberculin skin testing.⁸ Steiner et al. describe how they gave influenza vaccinations to 62% of their 5,400 HCP during the 1999–2000 influenza season. They gave two-thirds of these vaccinations during one week in October, when the required tuberculosis screenings for all HCP were taking place.⁴¹ Vaccinating HCP might also take place in conjunction with other annual mandatory requirements, such as reviews of various safety and infection control topics.²² Such “one-stop shopping” permits convenient access to the vaccination for HCP and demonstrates a respect for their time. Text Box 3-12 on page 55 gives examples of organizations participating in this project that have offered influenza vaccinations to HCP in conjunction with other required activities.

Mass vaccination strategies can be useful in providing influenza vaccine to large numbers of individuals.⁵⁶ The Infectious Diseases Society of America has stressed the interrelatedness of seasonal and pandemic influenza responses and has taken the position that each influenza season should be used to test vaccine distribution plans and procedures. Exercising such a vaccination strategy is important in testing issues such as staffing, clinic location and layout, record keeping, communication, and coordination.⁵⁶ Some health care organizations have used pandemic preparedness drills to deliver influenza vaccinations in order to improve influenza vaccination rates while allowing the health care organizations to test their capacity to quickly vaccinate large numbers of HCP as part of their disaster preparedness activities. Kuntz et al. describe how they tested the effect of a six-day pandemic influenza drill on their HCP influenza vaccina-

Text Box 3-11. Organizations Use Incentives

- Albert Einstein Healthcare Network in Philadelphia has tied participation in its HCP influenza vaccination program to the organization's Code of Conduct policy, which is aligned with the patient safety program. Beginning with the 2008–2009 influenza season, all HCP must either accept the vaccine, show proof of having received it elsewhere, or decline the vaccine. Those who do are eligible for an employee bonus payment (if one is offered that year); those who do not are ineligible for a bonus. The organization believes that this has been a factor in increasing HCP vaccination acceptance rates from 33% in 2006–2007 to 59% in 2007–2008 and to 71.1% in 2008–2009; during the 2008–2009 influenza season only 8.4% of the network's HCP either did not receive the vaccine or decline it.
- CentraState Healthcare System in Freehold, New Jersey, began offering the following incentives to HCP beginning with the 2006–2007 campaign:
 - Subsidized immunizations to spouses and adult dependents of HCP
 - Raffles for gift cards during the “early bird special”; the earlier HCP get their vaccinations, the larger the amounts of the gift card they could win
 - A gift card for the “deputy vaccinator” who vaccinates the most HCP
 - An “It’s Not Too Late” campaign in January, also offering gift cards as incentives, to reach any unvaccinated HCP

Figure 3-8. CentraState Healthcare System T-shirts



Text Box 3-11 continued from previous page

- Starting with the 2008–2009 campaign, for each vaccinated HCP, a T-shirt with the words, “I got my flu shot. Have you gotten yours?” on the front and “Protect yourself, your patients, your loved ones— you just may save a life . . .” and a “No Flu” logo on the back (see Figure 3-8, page 52).
- A “buddy” drawing for any HCP who brings another for a first influenza vaccination

HCP enjoy these incentives, which have played a part in raising the organization’s vaccination rate from less than 33% prior to 2005 to 50% in 2007–2008 and approximately 55% in 2008–2009.

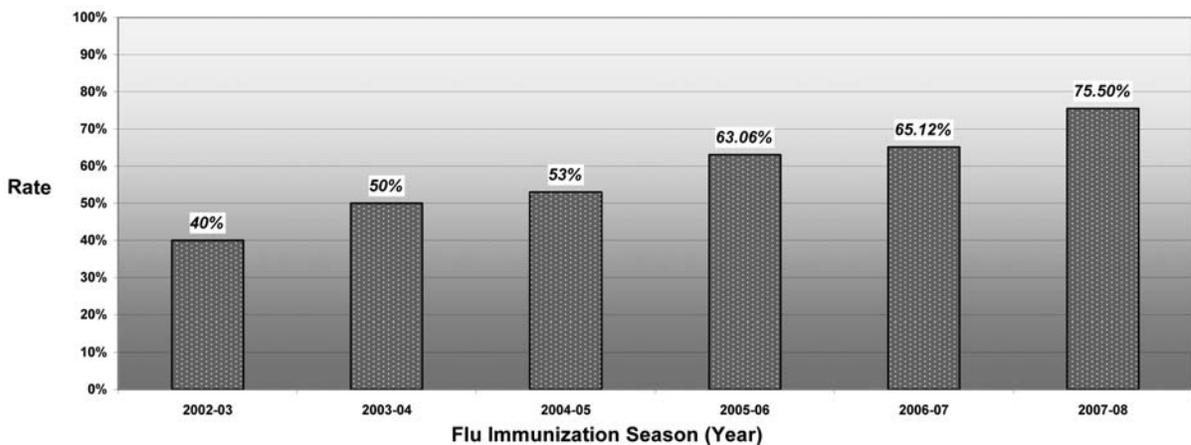
- Community Health Care, Inc., employing more than 200 HCP and headquartered in Davenport, Iowa, is an ambulatory care organization providing medical and dental

care in six locations throughout the Quad Cities area in Davenport, Iowa, and Rock Island and Moline, Illinois. Community Health Care began using the following vaccination incentives during the 2008–2009 influenza season:

- The organization held a campaign slogan contest, with the winner and runner-up receiving gift certificates to local restaurants. The winning slogan, “Coughs and Sneezes Spread Diseases,” was used in educational and marketing materials and informational handouts.
- Staff members were divided into 10 teams; each team that vaccinates 90% of its members can wear jeans to work for two weeks in January.

In 2008 the organization achieved a 94% HCP vaccination rate, up from 65% in 2005–2006, 68% in 2006–2007, and 70% in 2007–2008.

Figure 3-9. Lebanon VA Medical Center Employee Influenza Immunization Participation



2002-03 Flu shots provided at single location - in an Employee health clinic
2003-04 A roving flu shot cart was added to supplement clinic distribution
2004-05 Flu shots given at Quality Festival, however this was the year of vaccine shortage and the staff eligible was limited. The rate reflects percent of those who participated dependent on those eligible.
2005-06 Incentive added, all participants received a "59 minute" time off slip
2006-07 Continued with all previously identified methods
2007-08 Added awarding 4 hour time off slips to 20 randomly drawn participating employees, & gave the department with best participation a pizza lunch.

Continued

Text Box 3-11 continued from previous page

- Lebanon VA Medical Center in Lebanon, Pennsylvania, is a teaching hospital that provides a wide range of patient care services and employs 1,300 HCP. The organization raised its HCP influenza vaccination rate from 53% in 2004–2005 to 63% in 2005–2006, when it gave vaccine recipients a 59-minute time-off slip that HCP could use at their discretion. When a raffle for 20 four-hour time-off slips for vaccinated HCP was added to the incentive package in 2007–2008, the vaccination rate jumped to more than 75%. The organization also awarded the department with the highest participation a pizza lunch (see Figure 3-9, page 53). The department lunch was added to spark healthy competition among departments.
- Spencer Hospital in Spencer, Iowa, has 99 beds and employs 560 HCP. Influenza vaccination was tied to the hospital's group incentive plan, beginning in 2009; to be eligible, HCP must have accepted the vaccination or provided physician documentation of a medical contraindication to the vaccination during the 2008–2009 influenza season. This contributed to improved vaccine acceptance rates, which had been 80% or higher in 2006–2007 and 2007–2008 but increased to 98% in 2008–2009.
- Two organizations vaccinate both HCP and their dependents at no cost:
 - St. John's Regional Medical Center in Joplin, Missouri, a 367-bed facility with 3,000 HCP, has been offering free vaccine (both the trivalent inactivated influenza vaccine and the live, attenuated influenza vaccine) to HCP and dependents since 2004. Vaccination rates prior to 2004 were approximately 40% but have steadily improved to 49% in 2005–2006, 57% in 2006–2007 and 2007–2008, and 60% in 2008–2009. The organization believes that offering the vaccine to family members has boosted HCP acceptance, particularly when HCP see how easy it is for their children to receive the live, attenuated vaccine.
 - St. Joseph's Hospital in Buckhannon, West Virginia, is a 69-bed hospital with 400 HCP. St. Joseph's has provided free influenza vaccinations to HCP and their spouses and dependent children since 2005. The hospital provided 52 vaccinations to HCP families in 2005–2006; the number has increased to 68 in 2008–2009. The HCP influenza vaccination rates have also improved, from 70% in 2005–2006 to between 78% and 85% in the 2006–2009 influenza seasons.
- Upper Chesapeake Health in Bel Air, Maryland, is a community-based, two-hospital system that offers the following incentives to its 2,700 HCP who accept the influenza vaccination:
 - A reduction of \$2 per pay period for health benefits (\$52 per year) beginning in 2006–2007
 - A reward system of stars through which HCP can purchase items from a catalog
 - Eligibility for a random drawing of \$15 gift cards.Since reducing the cost of health benefits by \$2 per pay period, the vaccination acceptance rates have improved from 41% in 2004–2005 and 42% in 2005–2006 to 52% in 2006–2007.
- The Wisconsin Division of Public Health Bureau of Communicable Diseases, headquartered in Madison, Wisconsin, began a statewide program in 2005 to increase vaccination rates among hospital and long term care HCP. The division obtained baseline vaccination rates to determine the extent to which the recommendations of the National Foundation for Infectious Diseases had been incorporated into hospital and long term care influenza vaccination programs, and it established an "80% Club" for organizations that achieved a staff influenza vaccination rate of 80% or higher during the 2005–2006 influenza season. Those that vaccinated at least 80% of HCP had their organization's name published in a newsletter that was distributed to hospital infection preventionists, long term care directors of nursing, and local health department staff statewide. The program has continued in subsequent influenza seasons, with HCP vaccination rates increasing in both the hospitals (mean vaccination rates increased from 58% in 2005–2006 to 67% in 2007–2008) and long term care facilities (mean vaccination rates increased from 50% in 2005–2006 to 65% in 2007–2008).

tion rates at the University of Iowa Hospitals and Clinics in 2005. Using peer vaccinators and mobile vaccination teams in addition to the employee health clinic, they vaccinated 51% of their HCP (6,539 of 12,873), a 10% increase over their 2003 vaccination rate. The authors note, however, that the drill required such extensive resources that they were unable to conduct another drill the following year.⁵⁷

Organizations participating in the Strategies for Implementing Successful Influenza Immunization Programs for Health Care Personnel Project that have used this approach to deliver influenza vaccinations to HCP while testing their emergency preparedness are described in Text Box 3-13, pages 56–57.

Mandating Influenza Vaccinations*

Variations on mandatory programs have been described in the literature and described by those who submitted information during the Strategies for Implementing Successful Influenza Immunization Programs for HCP Project's open call in 2008, including the following three:

1. HCP either receive the vaccination each year or sign a written declination, but no penalties are associated with not signing the form. The following are examples:
 - In a study of a large Georgia health care system, Ribner et al. noted that employees were required to sign a form either consenting to the vaccination, documenting any medical contraindications to it, or declining the vaccination. Each week, supervisors received an updated list of the HCP who had not completed one of the sections of the form, but no formal disciplinary action was identified for failing to participate.⁴⁹
 - Polgreen et al. concluded that declinations without penalties will probably not help to improve HCP influenza vaccination rates.⁴⁴
 - Cleveland Clinic in Cleveland, Ohio, provides HCP with an intranet application to indicate whether they have received or declined the influenza vaccination. Although there are no consequences to an individual

* See Appendix 4-1, pages 73–80, which contains a summary of organizations with position statements, opinions, or requirements regarding HCP influenza vaccinations and to the more detailed discussion in Chapter 2 regarding the moral, ethical, and legal implications of mandatory vaccination programs.

Text Box 3-12. Linking Influenza Vaccinations to Another Mandatory Activity

- CentraState Healthcare System in Freehold, New Jersey, relies on its “vaccine deputies” to give influenza vaccinations during mandatory HCP “Skills Days”—sessions that HCP must attend to demonstrate various competencies. CentraState also provides vaccinations to new HCP at the time of their post-offer physical well into March of each year.
- The Drake Center in Cincinnati is owned by a local hospital network, with centralized employee health services for their 1,000 HCP. Beginning with the 2008–2009 influenza season, it combined its mandatory tuberculin skin testing and influenza vaccination program, offering both during eight two-hour blocks of time over a period of five weeks; as a result, 100% of their HCP received their skin test and were offered influenza vaccinations at the same time. The vaccination acceptance rate increased from 31% in 2007–2008 to 50% in 2008–2009. The organization plans to continue this approach in years to come.

for nonparticipation, the vaccination rate for that person's unit or division will be lower than others, and this information will be visible to all managers via the intranet's open dashboard.

2. HCP either receive the vaccination each year or sign a written declination, with penalties or disincentives associated with not signing the form. Text Box 3-14 on page 58 provides examples of organizations participating in this project that have such programs.
3. All HCP receive the vaccine; signed declinations or requests for accommodation are allowed only for HCP who have a medical contraindication or religious objection, and adherence to policy is a condition of employment. The following are some examples:
 - Virginia Mason Medical Center in Seattle was the first hospital in the country to implement a truly mandatory policy for HCP influenza vaccinations.

Text Box 3-13. Mass Vaccination Strategies

■ Franciscan Health System in Tacoma, Washington, is a three-hospital system that increased its HCP influenza vaccination rates by 50% in one year, achieving a 66% vaccine acceptance rate among its 5,500 HCP during the 2007–2008 season, up from 44% the previous year. The Employee Health Department collaborated with the Disaster Preparedness Department in a joint program incorporating mass dispensing of HCP influenza vaccine with a preparedness drill at all three sites, using no additional funds or resources. On the day of the drill, Franciscan set up at least nine vaccination stations at each site, enlisting volunteers to direct flow, answer nonclinical questions, and review consent forms for completeness. Clinical staff giving the immunizations included staff from the pharmacy, nursing students, and additional registered nurse volunteers. Vaccinated HCP passed their paperwork to another volunteer, who placed a sticker on their identification badge to show that they had participated in the drill and had received the vaccination. Franciscan also used “roving teams” of vaccinators to go to high-risk departments such as the operating room or intensive care units and departments where HCP cannot easily leave their work areas to be vaccinated. A sticker on an identification badge quickly revealed HCP who had already been vaccinated. In all, these roving teams accounted for 25% of all the vaccinations given during the drill. The results of this drill were impressive:

- Eight hundred staff, volunteers, and physicians were vaccinated during the four-hour drill at the organization’s largest facility; over the course of the previous year’s entire influenza campaign, a total of 1,790 HCP were vaccinated.
- Two hundred seventy-six HCP received vaccinations in four hours at one of the smaller hospitals, compared with 345 who received the vaccine during the previous year’s influenza campaign.
- Three hundred HCP were vaccinated during the four-hour drill at the remaining hospital, compared with 512 HCP who were immunized during the previous year’s entire campaign.

After the drill, influenza vaccinations continued to be

offered, with employee health staff going to areas where staff had received a low volume of vaccinations during the drill. The organization intends to continue this practice each year. It learned a great deal from this initial exercise, including the following:

- Having everything set up well in advance of the drill is important to ensure that the drill starts on time and that all supplies and human resources are in place.
 - It is important to identify a “just in time” competency assessment tool for the vaccinators.
 - A drill of this nature tests the organization’s ability to obtain supplies quickly, which may become necessary if some items are depleted or are not in place when the drill starts.
- Good Samaritan Hospital Medical Center in West Islip, New York, has used its emergency point-of-distribution drills to deliver influenza vaccinations to its 4,000 HCP each year since the 2005–2006 influenza season. It became evident that timing the drill to coincide with the kickoff of the influenza campaign dramatically increased the initial number of vaccinations; in the 2007 drill, Good Samaritan vaccinated 400 HCP in four hours. It has found that this is not only an efficient and effective way to provide influenza vaccinations to its HCP but that it also permits the organization to test its capabilities for the mass distribution of a product, as would be required in case of a disaster.
- Loyola University Health System in Maywood, Illinois, conducted a mock bird influenza disaster preparedness drill in 2008, seeing an average of 490 HCP and administering 225 influenza vaccinations per hour during the first 8 hours of the 24-hour drill. A total of 2,420 of the 7,700 HCP were vaccinated at 59 vaccination sites, with an additional 2,706 declining or indicating that they had received the vaccine elsewhere. This vaccination drill was so successful that the organization is considering making it an annual event.
- For the past three influenza seasons, Rome Memorial Hospital in Rome, New York, has started its influenza

Text Box 3-13 continued from previous page

campaign with a point-of-distribution drill during which it gives vaccinations to approximately 300 of its 1,100 HCP in one day. It follows up with vaccinations offered at specific times over another three-week period; it also vaccinates HCP who are newly hired during the influenza season. The organization has seen its vaccination acceptance rates steadily increase from 34% in 2005–2006 to above 70% in 2008–2009.

- Spencer Hospital in Spencer, Iowa, added practicing its pandemic influenza mass vaccination plan to its 2008 influenza campaign, vaccinating more than 85% of its almost 600 HCP in two days. It continues to offer the vaccinations after the drill. This contributed to the organization’s increased vaccination acceptance rate, improving from 88% in 2007–2008 to 98% in 2008–2009.

Requests for accommodation (*not* declinations) based solely on religious grounds or for medical reasons are evaluated on a case-by-case basis. If they are approved, nonvaccinated staff are required to wear a mask during influenza season.⁵⁸ Ultimately, HCP can be terminated under the policy, as were seven in the first year; only two have been terminated in the years since. Beverly Hagar of Virginia Mason Medical Center reports that influenza vaccination rates in 2002–2004, when the program included education and voluntary vaccinations, were 38%, 54%, and 29.5%, respectively; since the mandatory policy’s implementation in 2005, vaccination rates have been at 98%–99.25%. (Beverly Hagar personal communication, Feb. 9, 2009.)

- The U.S. Department of Defense requires all military personnel who provide patient care in the Military Health System to receive influenza vaccinations each year. Only documented medical or religious reasons are accepted for declination. In a memorandum from the assistant secretary of defense in April 2008, the policy was broadened to require, rather than just recommend, the annual vaccination of civilian HCP who provide direct patient care. The policy is expected to be fully implemented by the 2009–2010 influenza season.⁵⁹
- Barnes Jewish Healthcare is a large Midwestern health care organization with acute, long term care, and home care services, employing more than 26,000 HCP. Barnes delivers services to residents primarily in the greater St. Louis, southern Illinois, and mid-Missouri regions. In 2008 Barnes made influenza vaccination a condition of employment, although HCP could request medical or religious exemptions.

Such requests were reviewed on an individual basis, and granted requests were either permanent or temporary (that is, for one year only). HCP who were either not vaccinated or exempted by December 2008 were not scheduled for work; those still not vaccinated or exempted by January 15, 2009, were terminated. Overall results were as follows:

- ▲ Of 25,982 HCP, 25,560 (98.4%) received the influenza vaccine (up from 72% the previous year).
- ▲ Of 25,982 HCP, 321 (1.2%) received medical exemptions.
- ▲ Ninety (0.3%) received religious exemptions.
- ▲ Eleven (0.04%) were not vaccinated or exempted.

The organization found that fewer HCP requested medical or religious exemptions in 2008 than had signed declinations in 2007.⁶⁰

Measuring Influenza Vaccination Rates and Their Impact

As noted in Table 3-1 on pages 30–33, measuring influenza vaccination rates is recognized by The Joint Commission, APIC, CDC, and SHEA and endorsed by NFID as an important component of an organization’s influenza vaccination program. Only through measurement is it possible to determine whether performance is getting better, getting worse, or staying the same.

Organizations that require HCP to either receive the influenza vaccination or sign a declination statement often determine their “rate of participation,” or the percentage of all staff who did one or the other. Although a 100% participation rate may be the policy, the goal should always be to increase the percentage of HCP accepting the vaccination and decrease the percentage declining it.

Text Box 3-14. Mandatory Participation with Penalties

- Albert Einstein Healthcare Network in Philadelphia has incorporated its HCP influenza vaccination program into its Code of Conduct policy, which is aligned with the organization's patient safety program. Beginning with the 2008–2009 influenza season, all HCP must accept the vaccine, show proof of having received it elsewhere, or decline it online. Those who do one of these three are eligible for an employee bonus payment if one is offered that year, while those who do not are ineligible for a bonus. The organization has seen its HCP vaccination acceptance rate increase from 33% in 2006–2007 to 59% in 2007–2008 (the first year in which signed declinations were requested) to 70.5% in 2008–2009 (the first year in which vaccination or declination was mandated).
- Stamford Hospital in Stamford, Connecticut, requires its 2,400 HCP to either accept the influenza vaccination or sign a declination form, a policy that started with the 2008–2009 influenza season. Failure to do so negatively impacts HCP performance reviews. Vaccine acceptance rates, which had been in the low 50% range since 2004–2005, increased to 64.7% in 2008–2009.
- Northbay Healthcare Group in Fairfield, California, has required its almost 2,000 HCP to either receive the influenza vaccine (on site or elsewhere) or sign a declination as a condition of employment. This policy has been in effect since 2006. Two weeks before the mid-November deadline (and again one week before), the management team receives a list of HCP who have not received the vaccine or signed the declination. The vice president receives the list three days before the deadline. HCP not adhering to the policy are taken off the work schedule until they comply. This is the same approach the organization takes with other mandatory requirements, such as the annual tuberculin skin testing requirement. Participation rates (take the vaccine or sign a declination form) have been at the 99% to 100% level since the requirement began, and the vaccination acceptance rates have improved from 57% in the 2005–2006 influenza season to about 70% each year since then.

Before launching a campaign to improve influenza vaccination rates among HCP, it is important to understand the true historical rate of vaccination within an organization. As several authors have pointed out, HCP who have received the vaccination in venues outside the formal organization program, such as in physicians' offices, local pharmacies, and the like, should be captured and included with the number of HCP who received the vaccination within the organization's program. Capturing all HCP who have been vaccinated, regardless of where they were vaccinated, provides a more accurate picture of the number and percentage of HCP who are protected.^{2,28} Bearman et al. found that 34 (64%) of the 53 medical house staff who had not received the vaccination through their organization had received it elsewhere; when the number of house staff vaccinated elsewhere was combined with the number who had received it in their organization, the vaccination acceptance rate rose from 48% to a true rate of 75%.⁶¹

The Healthcare Infection Control Practices Advisory Committee (HICPAC) has recommended using HCP influenza vaccination rates as a measure of quality in states that mandate public reporting of health care–associated infections, a recommendation that has been endorsed by the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC), the Council of State and Territorial Epidemiologists, and the Society for Healthcare Epidemiology of America.⁶² Such publicly reported rates can provide information to help the public gauge organizations' infection prevention programs and can also drive organizations' performance improvement.

Another way to measure and gain insight into how well your organization's influenza vaccination program is working is to routinely conduct surveillance for health care–associated influenza in your patients. This is one of the recommendations in the SHEA 2005 position paper, as prospective surveillance during the influenza season permits recognition of cases that might otherwise go unnoticed unless they are part of a larger outbreak.² You need to decide who will conduct the surveillance and how, what signs or symptoms to use to define *influenza-like illness*, and what laboratory specimens and tests to use to confirm the diagnosis of influenza before influenza season begins. Your decisions are likely to depend on your organization's available resources.² The following are a few of the studies that have examined the use of active surveillance for health care–associated influenza:

- Salgado et al. describe their active hospitalwide surveillance to detect health care–associated influenza in a tertiary care academic hospital in Virginia; surveillance was performed by infection preventionists. They determined that patients admitted three or more days before developing symptoms such as cough and fever with or without myalgia, coryza, or sore throat would meet their definition of possible health care–associated influenza. When they identified patients with these symptoms, they placed them in isolation and ordered diagnostic tests.¹⁴
- Monto et al. report on influenza surveillance among elderly residents of long term care facilities in Michigan from November through April during two influenza seasons. Staff collected throat swab specimens when residents developed a cough and fever of at least 99.5°F (37.5°C). When two or more cases of laboratory-confirmed influenza were identified in a long term care facility in a given five-day period, the staff implemented outbreak control measures. The authors conclude that this type of active surveillance is important to identify influenza activity and manage outbreaks.⁶³
- Adal et al. describe the active surveillance performed by their infection preventionists at a Virginia university hospital. The laboratory reported all positive influenza tests to the infection preventionists, nursing and medical staff reported suspect cases to them, and the infection preventionists actively sought to identify patients during clinical rounds. A case of health care–associated influenza was defined as having onset more than 72 hours after admission, with fever and respiratory symptoms.²³

Some researchers have acknowledged limitations of active surveillance for health care–associated influenza:

- Researchers in the Netherlands studied the symptoms of patients in three tertiary care units during two influenza seasons to determine how useful the symptoms of influenza (such as fever and cough) are in predicting influenza virus infection in their hospitalized patients. They note that scant information is available in the literature to support the combination of symptoms with the greatest value for identifying possible health care–associ-

ated influenza. Up to 50% of patients with influenza do not develop any signs or symptoms yet still shed the virus. The researchers conclude that the positive predictive value of fever, cough, and other symptoms to diagnose health care–associated influenza is low, and many cases will remain unidentified. They suggest that accurate rapid diagnostic tests would be needed for all patients to determine the burden of disease or to prevent or contain outbreaks.⁶⁴

- French researchers reviewed the literature on health care–associated influenza outbreaks and noted that the lack of standardized information makes comparisons between studies difficult. They conclude that using only a clinical definition of influenza, without systematic laboratory diagnostic tests, could underestimate the incidence of influenza in patients who acquire it while hospitalized.⁶⁵
- Call et al. also reviewed the literature for studies pertaining to the diagnosis of influenza based on clinical signs and symptoms. They conclude that, while useful in identifying patients with influenza-like illness, clinical findings alone are not useful for confirming or excluding the diagnosis of influenza.⁶⁶

Feedback to Personnel

The CDC has recommended that organizations “Monitor HCP influenza vaccination coverage and declines at regular intervals during influenza season and provide feedback of ward-, unit-, and specialty-specific rates to staff and administration.”^{1(p. 2)} The NFID¹² also highlights the role of feedback in improving influenza vaccination rates, noting the important influence of facts and figures on HCP perception of vaccination rates. Other researchers have seen the impact of feedback in improving HCP influenza vaccination rates:

- Salgado et al. cite the use of posted HCP vaccine acceptance rates at the University of Virginia in areas of the hospital frequented by HCP as being partly responsible for increasing vaccination rates to 70%.⁶⁷
- Pottinger et al. studied the impact of feedback to residency program directors or chief residents on influenza vaccination rates of the residents they supervised at the University of Iowa Hospital and Clinics. The vaccination

Text Box 3-15. Providing Feedback

- The Albert Einstein Healthcare Network in Philadelphia uses a Web-based database that tracks HCP vaccinations and declinations, scanning forms to reduce manual input. Managers can view the status of HCP participation within their own departments
- Cleveland Clinic in Cleveland, Ohio, has an intranet application that provides an inexpensive way to capture HCP vaccination information and declinations, with real-time monitoring of vaccination rates by location. The application is linked to the human resource department's database, which creates a daily dashboard that provides feedback to administrators and managers on HCP participation.
- The infection prevention staff at Community Health Care, Inc., in Davenport, Iowa, provides weekly feedback to managers and supervisors by sending them a list of the HCP who have not yet been vaccinated. This allows managers or supervisors to encourage HCP in their departments to get the vaccination.

rate in the group whose supervisors received the feedback was 38%; the vaccination rate in the group whose supervisors received no feedback was only 13%. These researchers suggest that vaccination rates in HCP may improve if HCP are aware that their vaccination status is being monitored.⁶⁸

- Talbot et al. conducted a nationwide survey that included 50 hospitals in 33 states, with a total of 368,696 HCP. They asked the organizations about specific aspects of their HCP influenza programs for the 2007–2008 season and found that reporting HCP vaccination rates to the board of trustees was associated with higher vaccination rates.¹⁸

In addition, providing feedback at regular intervals allows managers and supervisors to encourage HCP they supervise to get vaccinated.

Text Box 3-15, at left, gives some examples of how organizations participating in this project have provided feedback.

Summary

This chapter looks at the elements of a successful influenza vaccination campaign—that is, one that results in increased rates of immunized HCP each year.

Responses from health care organizations as well as a review of the literature reveal that the following elements are key:

- Surveying HCP to learn their reasons for acceptance or declination of the vaccine and using their answers to inform campaign design
- Making vaccination free
- Making vaccination convenient
- Making vaccination available to all HCP
- Having campaigns that are multifaceted
- Having ongoing, active, and visible promotional campaigns
- Offering incentives for vaccination
- Having leaders serve as role models for vaccination
- Offering well-planned educational efforts tailored to HCP
- Advertising vaccine availability in print and electronic media
- Making a group or an individual responsible for the program
- Having HCP sign declination letters, as needed

This chapter also examines strategies to raise the rates of HCP influenza vaccination, including linking vaccinations to a required activity and making vaccinations mandatory. Finally, it is key to measure influenza vaccination rates, as it is only through measurement that one can determine whether performance is getting better, getting worse, or staying the same.

We hope others will use the strategies detailed in this chapter to improve immunization rates among HCP.

Many organizations have taken positions on and issued guidelines for vaccinating HCP against influenza. Their guidelines, legislative and regulatory efforts, position papers, and accreditation considerations are the subject of Chapter 4.

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