REVIEW

CME CREDIT

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Improving influenza vaccination rates among adults

ABSTRACT

Influenza remains an important cause of illness and death in this country. Even though we have safe and effective vaccines, vaccination rates among the elderly and other high-risk groups remain static and well below national goals. Health care providers can boost these vaccination rates by educating themselves, by recommending that their patients be vaccinated, and by implementing evidence-based strategies such as programs to remind themselves and patients to be vaccinated, to utilize standing orders for nurses or other qualified professionals to offer and administer vaccines, and to provide feedback on performance. We should also consider alternative paradigms for vaccine delivery, and be sure to be vaccinated ourselves.

KEY POINTS

A health care provider's recommendation is one of the strongest predictors of whether a patient at high risk will be vaccinated.

Organizational strategies and system approaches can help practices improve vaccination rates.

Groups who should be vaccinated every year are those who are at increased risk for influenza and its complications, those likely to be at increased risk, and those who are likely to transmit influenza to others who may be at increased risk.

Institutions that have adopted programs to boost immunization rates among their health care workers and among elderly patients have achieved vaccination rates of up to 75% or more.

Resources are available on the Internet for setting up systems for boosting vaccination rates, such as those from the US Centers for Disease Control and Prevention at www.cdc.gov/nip.

THE MEDICAL PROFESSION must and can do a better job of vaccinating people against influenza every year. Vaccination rates are low and have not budged in recent years in the groups in whom vaccination is recommended—including doctors and nurses themselves.

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If we could vaccinate everyone who is supposed to be vaccinated, we could prevent hundreds of thousands of hospitalizations and tens of thousands of deaths every year.

All we need is a plan.

NEED FOR IMPROVEMENT

Each year in the United States, more than 200,000 people are hospitalized with influenza and its complications,[1] and 36,000 people die of it.[2] Particularly at risk are the elderly and others with medical conditions.

Granted, these are the worst cases. But even a typical bout of influenza can entail substantial misery, absence from school or work, and a trip to the doctor, all potentially preventable with vaccination. Considering that about 5% to 20% of the US population may become ill during an influenza epidemic ,influenza is a major problem.

Annual vaccination is the mainstay for preventing and controlling seasonal influenza. It also is a key strategy in preparing for pandemic influenza outbreaks. The US Advisory

*The author has indicated that she has received consulting fees or honoraria for serving on advisory committees or review panels for the GlaxoSmithKline, MedImmune, and Novartis corporations, makers of influenza vaccines.

TABLE 1

Who should get a flu shot? High-priority groups

People at high risk of influenza-associated complications
- People 65 years old and older
- Residents of long-term care facilities
- Adults and children with chronic medical conditions
- Adults and children with any condition that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration
- Children and adolescents receiving long-term aspirin therapy
- Women who will be pregnant during the influenza season
- Children 6 to 59 months old

People likely to be at high risk
- Anyone 50 to 64 years old

People likely to transmit influenza to people at high risk
- Household contacts and caregivers of high-risk persons
- Health care workers

Others
- Other people who wish to avoid influenza and not included in the groups above should also be immunized when possible

ADAPTED FROM US CENTERS FOR DISEASE CONTROL AND PREVENTION. PREVENTION AND CONTROL OF INFLUENZA. RECOMMENDATIONS OF THE ADVISORY COMMITTEE ON IMMUNIZATION PRACTICES (ACIP). MMWR 2006; 55(RR-10).

The basic facts: influenza is bad, the vaccines are good

Committee on Immunization Practices (ACIP) has defined several groups who should be vaccinated every year, ie, those who are at increased risk for influenza and its complications, those who are likely to be at increased risk, and those who are likely to transmit influenza to others who may be at increased risk (TABLE 1).[3] Although these recommendations have been in place for many of these groups for a long time, vaccination rates remain well below national goals (TABLE 2).[3,4]

WHAT WE MUST DO

Health care providers play a pivotal role in making sure that these high-priority patients get vaccinated. To enhance the rate of vaccine delivery, we need to do several things:

- Educate ourselves and other health care workers about influenza
- Recommend vaccination to our high-priority patients
- Set up systems for promoting vaccination in our practices
- Evaluate our efforts and provide feedback to providers
- Consider new locations for vaccine delivery
- Get ourselves and our staff immunized.

Educate ourselves about influenza

To deliver the vaccine effectively, physicians and other health care workers need to know the facts about influenza, its potential seriousness, and the benefits of vaccination.

Most physicians in the United States think they already know the facts. However, in one national survey, 19% of family physicians, internists, geriatricians, and pulmonologists who responded did not strongly agree that influenza and its complications can be serious, and 26% did not strongly agree that the benefits of vaccination outweigh the risk of side effects.[5] Physicians may also overestimate the incidence of systemic side effects of vaccination and underestimate its economic benefits.[6]

Boiled down to the extreme, the facts are that influenza is bad and the vaccines are good. Other key educational messages that can address common knowledge gaps for physicians are as follows:

Influenza is common, affecting people of all ages.

Influenza can be serious, especially for the very young, the elderly, and others with high-risk medical conditions. Complications can result in hospitalization or death.

TABLE 2

Vaccination rates of selected US target groups, 2004 (adults) and 2005 (children)

TARGET GROUP	PERCENT VACCINATED
High-risk	
People 65 years and older	64.6
People with chronic illnesses	35.4
50–64 years old	45.5
18–49 years old	26.0
5–17 years old	36.6
24–59 months old	41.5
Pregnant women	12.6
All children 6–23 months old	48.4
Other target groups	21.6
Health care personnel younger than 65 years	41.9
Healthy household contacts of people at high risk	17.9
50–64 years old	33.2
18–49 years old	15.4
5–17 years old	10.8
24–59 months old	35.0
Healthy children 24–59 months old not included in household contacts above	24.5
Healthy people 50–64 years old not included in household contacts above	32.1
All target groups combined (73.1% of US population)	32.3
All other people (26.9% of US population)	14.8

ADAPTED FROM US CENTERS FOR DISEASE CONTROL AND PREVENTION. ESTIMATES OF INFLUENZA VACCINATION TARGET POPULATION SIZES IN 2006 AND RECENT VACCINE UPTAKE LEVELS. WWW.CDC.GOV/FLU/PROFESSIONALS/VACCINATION.

Influenza is the leading vaccine-preventable cause of death, killing as many people as many other serious diseases such as colon cancer, breast cancer, or Parkinson disease.

Influenza vaccines are safe. The inactivated formulations of influenza vaccines (ie, flu shots) cannot cause influenza, and in placebo-controlled trials in adults are not associated with higher rates of systemic symptoms than are placebo injections. Flu shots can be given to immunocompromised persons. The live attenuated formulations of influenza vaccines (ie, nasal spray vaccine) are also safe and can be given to otherwise eligible persons (ie, healthy persons 5 to 49 years of age), including health care workers.

Vaccination is highly cost-effective. In healthy, younger adults, vaccination reduces illness, absenteeism, and health care use and may be cost-saving. Vaccination of the elderly reduces illness, hospitalization, and death and certainly is cost-saving.

Recommend vaccination to our patients

Health care providers who understand the basic facts about influenza are in a position to deliver one of the most effective interventions known to enhance influenza vaccination rates among adults: their recommendation that the patient receive the vaccine. In fact, a health care provider's recommendation is one of the strongest predictors of whether a patient at high risk will be vaccinated.[7–9]

While discussing the topic with patients, providers can address many of the common reasons that patients give for not receiving the vaccine. For example, some patients do not know that they are at personal risk or that they are in a high-priority group for vaccination; others are concerned about side effects

Most physicians believe they are already doing the right thing

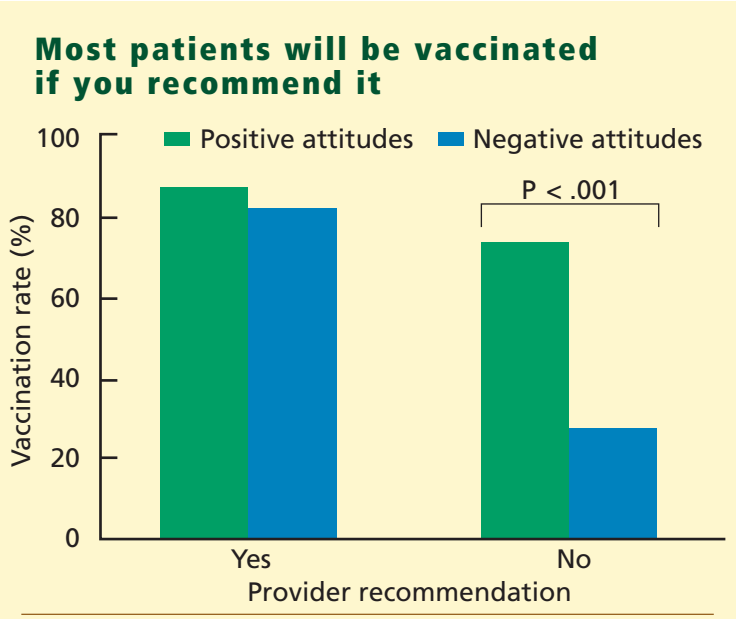

FIGURE 1. Impact of provider recommendation on influenza vaccination rates of adults at high risk with positive or negative attitudes toward vaccination.

ADAPTED FROM NICHOL KL, MACDONALD R, HAUGE M. FACTORS ASSOCIATED WITH INFLUENZA VACCINATION BEHAVIOR AMONG HIGH-RISK ADULTS. J GEN INTERN MED 1996; 11:673–677.

Only 1/5 to 1/3 of primary care physicians use standing orders for vaccination

or vaccine efficacy.[10] Even if a patient is otherwise negatively disposed toward vaccination after such discussions, a provider's strong recommendation can overcome these negative attitudes and result in acceptance of vaccination (FIGURE 1).

Set up a system

In addition to knowing the facts and recommending to patients that they be vaccinated, providers need to develop and implement strategies in their practice that ensure that vaccine is systematically offered and given.

Recent reviews have highlighted the characteristics of highly successful vaccination programs.[11–13] Many programs incorporate several evidence-based strategies.[11] In general, they aim to increase demand by sending out reminders to patients, recommending to patients that they be vaccinated, and educating them. In addition, they aim to enhance access by reducing the cost of vaccination and offering it at convenient sites, such as walk-in clinics. Physicians also receive reminders and feedback about their performance.

One of the most successful strategies is to develop standing orders that allow nurses and other qualified personnel to offer and give vaccinations under provider-approved protocols.[14] FIGURE 2 highlights how the vaccination rate in elderly patients at our institution increased and stayed high after we implemented a multifaceted program that included standing orders. Our program also included annual mailed reminders to patients, walk-in clinics to enhance convenience, access, and efficient delivery, and ongoing measurement and evaluation of the program's success.[15] Vaccination programs that include standing orders have also been successful in other hospitals[16,17] and long-term care facilities.[18]

Tool kits, patient and provider information sheets, and other materials that are useful when planning and implementing organizational and systems-based influenza vaccination programs are available on the Internet. The National Immunization Program of the US Centers for Disease Control and Prevention (CDC) offers a free document, "Strategies for Increasing Adult Vaccination Rates," at **www.cdc.gov/nip/publications/adultstrat.htm.** The Immunization Action Coalition, a nonprofit organization, offers a kit called "Adults Only Vaccination: A Step-by-Step Guide" at **www.immunize.org/guide** (cost, $75). Also see the Web site of the National Foundation for Infectious Diseases at **www.nfid.org**.

Unfortunately, most health care providers have not yet incorporated evidence-based strategies for improving vaccination rates into their practices. Recent national surveys found that fewer than 25% of primary care physicians use telephone or mailed reminders to patients, and only 20% to 33% use standing orders.[7,19] Clearly, there is much room for improvement; fortunately, many providers who currently do not use these kinds of interventions would be willing to try them.[19]

Keep track of performance

An essential component of any continuous-improvement or quality-assurance program is measurement and feedback on performance.[20,21] Providers generally believe in "doing the right thing," and in fact they believe that they are already doing the right thing. Measurement provides objective information regarding current performance, helps

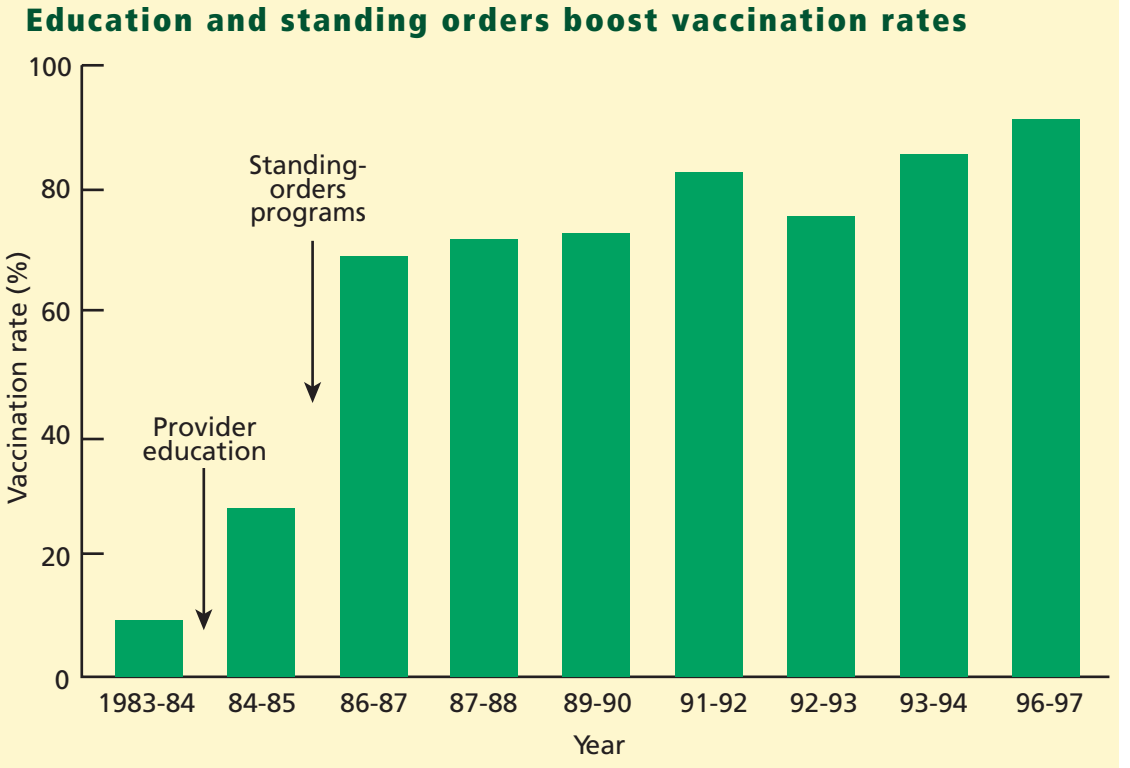

FIGURE 2. Impact over 10 years of a standing-orders program on influenza vaccination rates of elderly primary care patients at a VA Medical Center.

ADAPTED FROM NICHOL KL. TEN-YEAR DURABILITY AND SUCCESS OF AN ORGANIZED PROGRAM TO INCREASE INFLUENZA AND PNEUMOCOCCAL VACCINATION RATES AMONG HIGH-RISK ADULTS. AM J MED 1998; 105:385–392.

Vaccination of health care workers is a patient safety issue

to highlight areas in need of attention for improving performance, and provides evidence on the effectiveness of any interventions that have been implemented.

However, many physicians do not currently measure influenza immunization rates in their practices. In a national survey of generalist and medical subspecialty physicians, only 38% of generalists and 20% of medical subspecialty physicians monitored vaccination rates for their elderly patients as part of any ongoing performance assessment in their practice.[7] Undoubtedly, many of these providers overestimate their current performance and therefore fail to recognize the need for improvement.

The CDC and other agencies provide information about vaccination rates in selected target groups on the national level and by state. These data confirm the need for more effective vaccine delivery within our country. However, to improve, we also need data for specific health care systems, clinical practices, and providers.

Immunization registries and computerized administrative and clinical data are obvious sources for these specific vaccination rates, and many physicians would welcome this information.[19] Because many patients receive influenza vaccinations somewhere other than at their primary care provider's office, patient surveys can also be useful. An additional source of information is the pharmacy, specifically to track the utilization of vaccine doses every season and correlating that with the numbers of target persons in the practice.[15]

Give shots at the senior center

Traditionally, health care services are provided in the office of the physician or other health care provider. More and more adults, however, are interested in receiving immu-

nizations in nontraditional settings such as pharmacies, grocery stores, senior centers, and at work.[22] Nonphysician providers such as pharmacists can play a key role in these settings by educating patients and offering and administering needed vaccines.[23,24]

The national Behavioral Risk Factor Surveillance System survey found that many people receive their influenza vaccinations in these nontraditional settings.[25] The reasons given for seeking vaccination outside of the physician's office include convenience and cost.[22,26] Vaccination in these settings has also been shown to be safe.[27]

From the health care provider's perspective, encouraging patients to seek immunization in a nontraditional setting may be a complementary strategy for the provider's overall approach to encouraging vaccination, especially if patients do not otherwise have routinely scheduled appointments, if the practice is small and challenged by the logistics of establishing a vaccination program, or if vaccine supply is uneven within the community.

Only 42% of health care workers were vaccinated in 2005

Get yourself vaccinated

Physicians should also make sure that they and their clinical staff are immunized every year. Immunization of health care workers provides personal protection and reduces absenteeism. Health care workers who have been immunized are also more likely to vaccinate their patients.[7]

Most important is the issue of patient safety: we should all be vaccinated to avoid transmitting influenza to our patients.[3] Even though they have been included in the high-priority groups targeted for vaccination for many years, health care workers still have low immunization rates, with only 42% being vaccinated in 2004.[4] These rates have changed little since 1997.[28]

National organizations and others have championed the cause. The ACIP and the Healthcare Infection Control and Prevention Advisory Committee (HICPAC) recently issued joint guidelines emphasizing the importance of health care worker vaccination and highlighting important elements of successful programs to vaccinate health care workers.[29] These key elements include educating providers about the rationale for annual vaccination as well as the safety and effectiveness of current vaccines, offering shots for free at convenient times and places, recruiting high-level management to support the program, and assessing vaccination rates and reasons for refusal. Hospitals and other institutions that implemented organized programs that use strategies such as these have achieved vaccination rates as high as 75% or more.[30]

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has also identified health care worker vaccination as an important patient safety issue and will include vaccination programs in its accreditation standards beginning in 2007.[31]

Citing many years of low immunization rates among health care workers, some experts have even called for mandatory influenza vaccination of health care workers.[32,33] However, a consensus among all groups has not yet been reached on that issue,[34,35] and some institutions have been unable to implement mandatory vaccination of health care workers despite their intentions to do so.[36] Even as these issues are debated and resolved, we should continue developing and implementing voluntary programs. We can make progress!

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