



new information for policy makers, practitioners, and advocates to use in shaping public health laws that rest on a sound evidence base, have the best chance of adoption and implementation, and have the greatest practical likelihood of advancing the health of the public. ■

About the Author

Anthony D. Moulton, Richard A. Goodman, and Melisa L. Thombly are with the Public Health Law Program, Centers for Disease Control and Prevention (CDC), Atlanta, GA. Shawna L. Mercer and Robert A. Hahn are with the Guide to Community Preventive Services, CDC, Atlanta. Tanja Popovic is with the Office of the Director, CDC, Atlanta. Peter A. Briss is with the Coordinating Center for Environmental Health and Injury Prevention, CDC, Atlanta. Daniel M. Fox is with the Milbank Memorial Fund, New York, NY.

Requests for reprints should be sent to Anthony Moulton, Public Health Law Program, MS D-30, 1600 Clifton Rd, Atlanta, GA 30333 (e-mail: tmoulton@cdc.gov).

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Contributors

A.D. Moulton conceptualized the study and prepared the original article. A.D. Moulton and M.L. Thombly conducted searches and analyses. S.L. Mercer, T.

Popovic, P.A. Briss, R.A. Goodman, R.A. Hahn, and D.M. Fox contributed to the analytic framework, interpretation of findings, and the writing of the article.

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Requiring Influenza Vaccination for Health Care Workers

Olga Anikeeva, BHealthSci, Annette Braunack-Mayer, PhD, and Wendy Rogers, PhD, DipObs, MRCGP, FRACGP

Annual influenza vaccination for health care workers has the potential to benefit health care professionals, their patients, and their families by reducing the transmission of influenza in the health care setting. Furthermore, staff vaccination programs are cost-effective for health care insti-

tutions because of reduced staff illness and absenteeism.

Despite international recommendations and strong ethical arguments for annual influenza immunization for health care professionals, staff utilization of vaccination remains low. We have analyzed the ethical implications of a variety

of efforts to increase vaccination rates, including mandatory influenza vaccination.

A program of incentives and sanctions may increase health care worker compliance with fewer ethical impediments than mandatory vaccination. (*Am J Public Health*. 2009;99:

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IT IS GENERALLY ACCEPTED that vaccinating health care workers against influenza reduces the transmission of the virus in health care settings, decreases staff illness and absenteeism, and



indirectly benefits patients by decreasing their chance of being infected.¹ There are also very few risks associated with influenza vaccination, with the most frequently reported side effect being mild pain or swelling at the injection site. The results of a randomized double-blind controlled trial conducted over three consecutive years showed that localized pain or swelling following influenza vaccination was generally rare and that there were no absences from work because of vaccine-adverse events in the study population.² Influenza vaccination programs for health care workers are cost-effective in both direct medical costs and indirect costs of staff absenteeism.² Vaccinating employees and reducing absenteeism can save employers US\$2.58 for every dollar invested in an influenza vaccination program.³ The influenza vaccine is approximately 80% effective in healthy adults, with the effectiveness being even higher when there is a close match between the vaccine and the circulating strain of the virus.⁴

Evidence on whether vaccinating health care workers against influenza is beneficial for patients has been surprisingly inconclusive. For example, a recent systematic review had equivocal findings on the effect of staff vaccination on the rates of influenza among elderly patients.⁵ There have been a number of smaller, recent studies that have shown some improvement in patient outcomes when staff were immunized against influenza.^{6,7} In all studies, the quality of evidence is undermined by relatively low levels of vaccination among health care workers, even in intervention

groups. For example, Carman et al.'s study in long-term-care geriatric hospitals across west and central Scotland found that the vaccination rate for health care workers was only 50.9% compared with 4.9% when it was not explicitly offered.⁶

There is evidence that vaccinating healthy people younger than 60 years (which includes health care workers) results in decreases of influenza cases among those groups.⁵ Reduction in virus transmission may be particularly important in institutions and wards caring for young children, immunocompromised individuals, or the elderly. The vaccine is only 60% to 70% effective for individuals 65 years and older; despite approximately 80% of this population being immunized against influenza,⁸ they remain susceptible to infection if exposed to the virus. In elder-care settings, influenza among staff precedes illness among residents, suggesting that health care workers introduce the virus into the setting.⁹

These findings highlight the fact that, despite the value of vaccination, health care workers are notoriously noncompliant with vaccination regimes. International guidelines recommend annual vaccination for all health care workers with patient contact,¹⁰ but worldwide, rates of influenza immunization among health care workers range between 2% and 60%,¹¹ well below the 83% to 94% required for the whole population to be resistant to spread of an influenza virus.¹²

Health care institutions have used a variety of methods to increase immunization rates among employees, including education, reminder notices, small incentives,

easy access to free vaccination, active promotion within the workplace, and compulsory vaccination as a condition of employment.^{13–19} Most of these programs have achieved only small increases in vaccination rates, apart from employment-related mandatory vaccination.¹⁹ For example, a program in Australian Capital Territory elder-care facilities included the provision of reminders and information about the importance and benefits of influenza vaccination, but resulted in only 28% of staff obtaining vaccination.¹⁸ Similarly, in a tertiary Australian hospital in which an influenza vaccination promotion program had been in place since 2001, only 24% of staff reported being fully vaccinated despite 96% of staff indicating that they were willing to update their vaccination status.¹⁷ In the United States, surveyed health care institutions have reported staff influenza vaccination rates ranging from 15% to 40%, despite national recommendations that health care workers receive vaccinations annually.¹⁴ A study conducted in neonatal intensive care units in the United States found that influenza immunization compliance rates among staff ranged between 15% and 20% and that 76% of staff continued to care for patients despite reporting flu-like symptoms.²⁰ In the United Kingdom, less than 25% of health care workers are vaccinated against influenza each year despite being aware of the potential benefits of vaccination.¹⁶

Many reasons for this low level of acceptance have been proposed; however, it seems most likely that continued resistance to accepting vaccination is largely

because of attitudinal barriers.²¹ Most health care workers believe that they are healthy and thus will derive no benefit from vaccination or that the risk of adverse events following immunization outweighs the benefits. Alternatively, they are simply unaware of the recommendations for annual influenza immunization.²⁰ It is possible that some health care workers may be conscientious objectors to vaccination; however, active refusals are unlikely to be a significant contributor to the low levels of vaccination among health care workers.

Health care workers vary considerably in their health care knowledge, educational level, primary work environment, race, and culture. These factors affect the use of vaccination. For example, health care workers 50 years and older, of higher socioeconomic status, and with greater duration of employment at the same institution are more likely to accept vaccination than are those of lower socioeconomic status and shorter duration of employment, suggesting they are more familiar with influenza vaccination recommendations or possible risks and benefits to health care workers and patients.²² To be effective, interventions to raise immunization rates need to identify specific barriers and concerns expressed by health care workers about influenza immunization and then target them through the implementation of policies, education programs, and improved access to vaccination.¹⁴

Programs that actively target previously identified barriers have had a greater impact than have generic programs on staff vaccination rates. Increases in



acceptance rates and reduced staff illness and absenteeism have been achieved by improving access to vaccination with a mobile unit, addressing common misconceptions through staff education, making vaccination free of charge, and offering small incentives to staff members who participated in the program.^{13,23} Targeting previously identified barriers resulted in increases in vaccination rates from 42% to 77% over a period of three years in one setting and from 4.9% to 50.9% in another.^{13,16} A US program that combined free vaccination with an educational component increased influenza vaccination coverage rates from 5% to 44% in one year.²⁴ These rates, however, remain significantly below the 83% to 94% levels required to achieve herd immunity.

Despite considerable evidence that the vaccination of health care workers benefits workers, their patients, their families, and their institutions, few health care professionals take advantage of vaccination programs unless these programs are actively promoted or required as a condition of employment. Even when programs are actively promoted, the increases in vaccination rates generally remain below levels required to achieve herd immunity and, therefore, are unlikely to secure the potential benefits from high rates of vaccination.

ETHICAL ISSUES

The conclusions in the previous paragraph raise a number of ethical issues for designing and implementing influenza immunization programs. Simply put, given

inadequate acceptance of voluntary vaccination programs, should health care workers be required to accept influenza vaccination?

To answer this question, we must understand the ethical arguments that are generally offered in favor of health worker vaccination for influenza. Currently, most medical codes of ethics have general statements implying that health care workers have particular duties that relate to their specialist training, access to resources, and ability to provide health care.²⁵ It is worth noting that professional codes of ethics do not specifically indicate whether health professionals ought to accept influenza vaccination. Such codes do not explicitly state how health care workers should prepare for and act during infectious disease outbreaks and make no mention of health care worker vaccination.²⁶ Even if they did, it is difficult to see how the obligation to accept an influenza vaccine could be linked explicitly to professional training or skills, because there is nothing special about being vaccinated. One could equally demand that all visitors to hospitals be vaccinated. If we wish to find an ethical justification for health care worker vaccination, we need to turn to the widely accepted ethical principles of nonmaleficence and beneficence.

The duty to do no harm, or nonmaleficence, can be understood to mean that health care workers have a duty not to place patients at undue risk of harm.¹⁹ Applied to influenza vaccination, this principle suggests that health care workers have an obligation to their patients to take reasonable actions to prevent transmission of

the virus.¹⁹ Thus, it may be argued that it is ethically required for health care workers to accept influenza vaccination to minimize the risk of harm to patients.

The duty of beneficence requires health care workers to act in the best interests of their patients. Understood broadly, the duty of beneficence includes not only the provision of specific medical interventions but also at least a *prima facie* duty to take reasonable steps to secure good outcomes for their patients. If we accept this broad definition, the duty of beneficence could be construed to require annual influenza vaccination, because this would give health care workers greater immunity and increase their capacity to provide care during outbreaks of influenza.

Of course, duties of beneficence and nonmaleficence are not unlimited.²⁷ We do not require health care workers to risk their lives or endanger their colleagues in the interests of their patients. When health care workers choose to endanger their own lives, we may describe their actions as “heroic,” which suggests that we consider them to have gone beyond what duty requires.²⁸ A World Health Organization report on ethical public health responses to an influenza pandemic proposes a number of factors that may limit health care workers’ obligations.²⁹ According to the report,

Judgments about the scope of any particular worker’s moral obligations must take into account factors such as the urgency of the need for that individual’s services and the difficulty of replacing him or her; the risks to the worker and, indirectly, to his or her family; the existence of competing

moral obligations, such as family caregiving responsibilities; and his or her duties to care for present and future patients.²⁹

In the case of health worker influenza vaccination, most of these factors are not relevant. Vaccination does carry with it some risk of harm, but the harms are mostly minor and a matter of short-term inconvenience. Being vaccinated does not place a health care worker’s family or patients at risk. It is plausible that being vaccinated might impair one’s ability to fulfill responsibilities, at least in the short term, but it is hard to see how receiving a vaccination could have a serious or long-lasting impact on fulfilling obligations to family or friends. To the extent that there are competing moral obligations, these appear to be limited to duties to self.²⁷

A duty to self can be interpreted in two ways. First, we could interpret the duty to self as an obligation to protect oneself from harm; in this situation, it seems that being vaccinated would assist rather than hamper the capacity to fulfill this duty. The only exception would be people who are unable to accept the vaccine for medical reasons (for example, because of food allergies). Second, we could regard the duty to self as an obligation to be true to one’s values and commitments. We do allow health care workers to place personal values above patient best interest in some situations. For example, many countries allow health care workers to absent themselves from providing services they oppose on conscientious grounds (e.g., abortion services). Similarly, one might argue that health care



workers ought to be vaccinated against influenza unless it would conflict with strongly held personal beliefs about vaccination. Relatively few health care workers are likely to fall into this category.

On the basis of the arguments above, it seems that health care workers have an obligation to accept influenza vaccination, on the grounds of beneficence and non-maleficence. The two exceptions to this general rule would be health care workers who are unable to accept the vaccine for medical reasons or who conscientiously object to vaccination. Because these exceptions are likely to affect only a few health care workers, we are left with the following question: in the absence of successful voluntary programs, is it morally justified to compel health care workers to be vaccinated?

COMPULSION, SANCTIONS, AND INCENTIVES

The benefits of compulsory vaccination are obvious: high levels of protection for patients and health care workers, decreased transmission of disease, and fewer absentee days.³⁰ Compulsory vaccination would meet the ethical requirements of nonmaleficence and beneficence. The only known way to ensure high rates of vaccination is to require it for employment. Some employers require proof of immunity against hepatitis B and rubella.³⁰ This practice has been accepted by health care workers, and the majority of them are protected against these infectious agents.²¹ Childhood immunization programs are required for

attendance at state schools in some jurisdictions, and as with influenza vaccinations, such programs provide benefits both for the individual and for the wider population. In the United States, mandatory vaccination for children before they enroll in school has become widely accepted and has been very effective, with coverage rates between 90% and 95%.

Mandated vaccination, at least for some conditions and in some settings, can become acceptable to the community. However, we need to be cautious before assuming that acceptance of a mandatory vaccination program in these limited settings will translate to acceptance of mandatory influenza vaccination for health workers.

There are ethical arguments against compulsion that need to be considered, which revolve around the rights of health care workers and respecting their autonomy. Compulsory programs achieve high vaccination rates but limit the capacity of health care workers to make autonomous choices about their own health care.¹⁹ In general, people have a right to accept or refuse medical intervention. Compulsion is reserved for situations in which people are incapable of making their own decisions or in which there is an imminent and serious danger to others. Neither of these conditions is met in relation to influenza vaccination, because health care workers are competent to make decisions about their health care, and, for any individual health care worker, it would be difficult to claim that they were an imminent threat to the safety of others in the absence of an established infection. In addition, we

rarely compel individuals to undertake medical interventions solely for the benefit of others. We do not, for example, compel blood or organ donations even when these may be lifesaving for the recipient.

Mandatory vaccination can be seen as coercive and invasive, especially if linked to sanctions such as loss of employment. There are risks of damaging workplace relationships and of alienating employees who are forced to have vaccinations to keep their jobs. There are also risks of legal consequences, including liability suits in the case of serious side effects from vaccination, and there have been legal challenges against mandatory influenza vaccination.³¹ To date, the courts have found that mandatory influenza vaccination is not warranted.^{31,32} Compulsory approaches undermine trust, can be counterproductive, and may be unjust if they disadvantage individuals who are unable to be vaccinated for various reasons.

For these ethical reasons, a noncompulsory program is ethically preferable to a mandatory one. But given the very strong ethical reasons for vaccination of health care workers and the failure of purely voluntary programs, a program with incentives and sanctions can be justified. Incentives might include financial rewards, prizes, or public approbation for health care workers who choose to accept influenza immunization. For example, there could be honorable mentions or rewards for hospital units or wards whose staff vaccination rate reached a set percentage. Positive incentives would

eliminate potential infringements of health care workers' rights and would likely remain cost-effective for participating health care institutions.

It is possible that health care workers will perceive financial incentives differently on the basis of their salary levels. It is important to ensure that the financial incentives are not so large that they may be perceived as coercive for health care workers with relatively low incomes. In fact, seemingly trivial incentives appear to have a significant positive impact on influenza vaccination rates. For example, a US program that offered movie tickets and health books to employees who received an influenza vaccination resulted in an increase in vaccination coverage rates from 42.6% to 56.4% in one year.¹³ Another US community hospital offered a coupon for a free frozen yogurt to all employees who obtained an influenza vaccination.²⁴ This modest reward proved to be very popular, with nearly 75% of coupons redeemed by vaccine recipients.²⁴ Facilitated voluntary programs such as these avoid the ethical harms of coercion.

When small financial incentives are coupled with education, support, and minor sanctions, it is possible that vaccination rates will reach the level needed for the whole population to be resistant to the spread of influenza. A voluntary program with incentives could be supported by measures that require health care workers who do not wish to be vaccinated to actively decline the vaccination.³¹ If the program had sanctions for those who did not actively



decline, health care workers would receive the message that the employer takes influenza vaccination very seriously. Sanctions might include suspension of minor privileges or limits on areas in which staff may work. Of course, this kind of program must be accompanied by other measures to reduce barriers related to education, access, cost, and insurance, and accompanied by appropriate compensation for workers who experience vaccination-related adverse events. The number of adverse events is likely to be small, but financial benefits and health care for those adversely affected are important both on grounds of fairness and to encourage participation.

CONCLUSION

It is unlikely that purely voluntary programs will achieve vaccination rates among health care workers that are sufficient to meet the ethical obligations of beneficence and nonmaleficence. The empirical evidence shows that ethical duties alone are not sufficient to motivate health care workers to become vaccinated. The same evidence shows that the most successful option for increasing influenza vaccination rates is to make annual immunization of health care workers mandatory. As we have noted, there are problems with making vaccination compulsory, especially in societies that prize personal freedom and respect for individual choices.¹² Mandatory influenza vaccination may be met with resistance because of infringement of the personal choices of health care workers. An ethically

preferable solution is to offer incentives for vaccination with a facilitated voluntary program that reduces known barriers, backed up by active declination and sanctions for refusal to actively consent to or refuse vaccination. ■

About the Author

Olga Anikeeva and Annette Braunack-Mayer are with the Discipline of Public Health, School of Population Health and Clinical Practice, University of Adelaide, Adelaide, Australia. Wendy Rogers is with the Department of Medical Education, Flinders University, Adelaide.

Requests for reprints should be sent to Annette Braunack-Mayer, Discipline of Public Health, School of Population Health and Clinical Practice, Mail Drop 207, The University of Adelaide, Adelaide SA 5005, Australia (e-mail: annette.braunackmayer@adelaide.edu.au).

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Contributors

O. Anikeeva undertook the literature review and led the writing. A. Braunack-Mayer and W. Rogers originated the study and supervised all aspects of its implementation. All authors helped to conceptualize ideas, interpret findings, and review drafts of the essay.

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Human Participant Protection

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