

Should flu vaccination be mandatory for healthcare workers?

Amy Behrman believes that mandatory vaccination is needed to protect vulnerable patients, but **Will Offley** argues that evidence on effectiveness is not sufficient to over-ride healthcare workers' right to choose



bmj.com "Should it be compulsory for healthcare workers to be vaccinated against flu?"

Yes: 515 (49%)

No: 526 (51%)

Total votes cast: 1041

➤ Editorial: Influenza vaccination in healthcare professionals (*BMJ* 2012;344:e2217)

➤ Views & reviews: Resisting the needle: why I won't have the flu jab (*BMJ* 2011;343:d6554)

➤ Research: Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health service use among residents (*BMJ* 2006;333:1241)

Amy Behrman medical director, occupational medicine, University of Pennsylvania Health System, 3400 Spruce St, Philadelphia, PA 19104, USA
behrman@mail.med.upenn.edu

YES Advocacy for influenza vaccination begins with recognising the impact of the disease. Globally, seasonal flu causes an estimated 300 000-500 000 deaths and 3-5 million cases of severe disease every year.¹ Methods that distinguish between flu and other viruses causing flu-like illnesses estimate that flu infections and complications cause an average 226 000 hospital admissions annually in the United States, including 3000-49 000 deaths, depending on seasonal severity.² Flu vaccines are estimated to prevent thousands of admissions and millions of illnesses annually with current usage.³⁻⁵

Complications and deaths from flu are high-est in elderly people, infants, and patients with compromised cardiopulmonary or immune systems.¹⁻² These vulnerable populations are most likely to enter healthcare settings and least likely to mount effective immune responses to vaccination.²⁻⁶ Flu vaccines have excellent safety records⁶ and are most effective (59% reduction in laboratory proved flu⁶ and 47-73% reduction in flu-like illness³) in healthy non-elderly adults, precisely the demographic of most healthcare workers.

Nosocomial transmission is well documented.⁷ Flu infection control should include, in addition to vaccination, hand hygiene, isolation of infected

Will Offley casualty nurse, Emergency Department, Vancouver General Hospital, Vancouver, Canada
willo@lynx.bc.ca

NO The debate around compulsory influenza vaccination for healthcare workers revolves around one central question: does current scientific evidence justify over-ruling the right to informed consent to an invasive and imperfect medical procedure, with documented risks of adverse effects. Many in this debate answer in the affirmative. For them, patient safety outweighs the right of healthcare workers to refuse flu vaccines. They argue that compulsory vaccination is consistent with the ethic to "do no harm" and protects vulnerable people from contracting flu from their caregivers. The only problem is that there is no persuasive scientific evidence to support this view.

Benefits are unproved

Vaccinating healthcare workers against flu has not been shown to reduce the transmission of flu to patients. A recent Cochrane review of five studies (four cluster randomised studies and one cohort trial of nearly 20 000 healthcare workers) concluded that "there is no evidence that only vaccinating healthcare workers prevents laboratory-proven influenza or its complications

patients, targeted masking, and leave of absence for healthcare workers with flu-like illness.⁸ Vaccination is a keystone intervention, differing from others by reducing risk in all encounters without repeated effort or time from busy healthcare workers.

Annual vaccination is therefore widely recommended to reduce the risk of healthcare acquired flu.²⁻⁸⁻¹³ Advocates and opponents of mandatory vaccination share goals of enhancing patient and staff safety. Disagreements centre on evidence of efficacy, ethical concerns, and how best to achieve meaningful levels of immunisation. My institution's evolution to a mandatory policy epitomises the issues.

Mandatory vaccination in practice

The University of Pennsylvania Health System has 18 000 staff. Immunisations are free for all vaccine preventable occupational infections. Flu vaccine has been offered annually since 2003 but was initially voluntary. Uptake by healthcare workers averaged <40%, and many staff avoided immunisation even during years with clear evidence of hospital transmission. Despite prioritisation of flu vaccination through enhanced availability on all units and shifts and at "flu fairs" with educational materials, over two years, vaccination rose to an unimpressive 45%.

We implemented declination forms in 2006-07 to survey the concerns of unvaccinated staff. As in other institutions, many declined because

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(lower respiratory tract infection, hospitalization or death due to lower respiratory tract infection) in individuals in [long term care] and thus no evidence to mandate compulsory vaccination of healthcare workers."²⁶

Several of Canada's leading flu researchers have also noted the lack of evidence that vaccination of healthcare workers reduces the incidence of flu in patients.²⁷ Even groups that support mandatory immunisation such as the Centers for Disease Control and Prevention (CDC)²⁸ and Association of Medical Microbiology and Infectious Disease Canada²⁹ have had to acknowledge the lack of data to support this assertion.

The argument for mandatory vaccination rests on several major fallacies that combine to inflate the perceived effect and virulence of flu and exaggerate the effectiveness of flu vaccines. First, the burden of disease represented by flu is often expressed by referring to surveillance statistics. In the United States, the CDC attributes 3000 to 49 000 deaths annually to flu.³⁰ However, its final data for 2010 show that of the 50 097 deaths recorded for flu and pneumonia combined, only

they underestimated flu morbidity, feared vaccination would cause illness, or believed “clean living” would prevent transmission. Vaccination rates crept to 50%. In 2008, we further increased outreach, including a music video addressing the concerns highlighted in the survey (www.youtube.com/watch?v=ruGgZbAVnko). Talented staff participated enthusiastically; the video played continuously; compliance inched to 54%.

By 2009, we perceived limits to non-mandatory immunisation despite maximal efforts. In an anonymous survey, 85% of medical staff supported mandatory immunisation, with 90% agreeing that healthcare workers have an ethical obligation to be vaccinated annually.¹⁴ Evidence for patient benefit from immunisation of staff working in long term care, although imperfect, supported our aim to improve compliance among our healthcare workers.¹⁵⁻¹⁹ Other mandatory programmes had achieved strikingly increased compliance without safety problems.^{20 21}

In 2009, our health system approved a mandatory policy for all staff. Implementation was complicated by the H1N1 epidemic, with dual vaccine shortages necessitating a tiered approach to prioritise medically compromised staff and those caring for the most vulnerable patients. Despite this, 99% of staff were vaccinated for seasonal flu.

Subsequently, medical and religious exemptions have remained stable at <2%, while the mandatory policy is largely accepted as integral to patient and

staff safety. Exempted staff are transferred from vulnerable patient units while flu circulates. Non-compliant staff face escalating penalties (starting with written warnings), which have been successful without having to terminate employment. Nosocomial flu has decreased from significant to negligible since 2010, albeit with complementary policies for hand hygiene, isolation of those with flu-like illnesses, testing healthcare workers with flu symptoms, and leave of absence for staff with transmissible illnesses. A preliminary safety review of 40 560 staff immunisations over three years found 29 associated clinical complaints, of which eight (0.02%) were systemic symptoms possibly related to vaccination. The remaining 21 (0.05%) were arm pain likely related to injection. All symptoms resolved fully.

Mandatory vaccination is effective and ethical

Recent studies robustly support the effectiveness of mandatory policies in improving vaccination rates.^{7 20-22} Proving that vaccination of healthcare workers decreases the risk of transmission is more difficult for reasons including suboptimal immunisation rates, variable viral severity and vaccine effectiveness, visitor exposures, evolving laboratory diagnostics, and the confounding effects of other infection control interventions. Nevertheless, existing research from long term care facilities supports increasing healthcare workers vaccination to improve patient outcomes.^{8 15-19} Although acute

500 were from flu.³¹ In addition, the threat from seasonal flu is dropping, not increasing. Mortality in the US has dropped from 30-40/100 000 cases in the mid-1930s to fewer than 5/100 000 from the 1950s onwards, and before the advent of mass public immunisation campaigns.³²

Another problem is that flu vaccines only protect against flu. However, 85% of flu-like illness is not caused by flu but by any of about 200 viral and bacterial pathogens, none of which is prevented by seasonal flu vaccines.³² Furthermore, the ability of flu vaccines to prevent true flu varies considerably from year to year. It has varied from a reported high of 93%³³ to a low of 4.6% in a nine year study from California.³⁴ In 2012, vaccine effectiveness against the dominant A(H3N2) flu was 47% in the US³⁵ and 45% in Canada.³⁶

European studies conducted during the 2011-12 season and involving more than 9000 participants have reported that the effectiveness of flu vaccine dropped by more than 50% within four months of being vaccinated.³⁷ Thus vaccination imparts only partial immunity to begin with, and even that does not seem to last for the full length of a flu season.

It is therefore unsurprising that the American College of Occupational and Environmental Medicine has adopted a position against

compulsory flu vaccination, stating that current evidence regarding its ability to protect patients “is inadequate to override the worker’s autonomy to refuse vaccination.”¹³ The US Occupational Safety and Health Administration, which is responsible for workplace health and safety, has stated that “there is insufficient evidence for the federal government to promote mandatory influenza vaccination programs that may result in employment termination.”³⁸

Risks of vaccination

Flu vaccines are relatively safe, not absolutely safe. Adverse effects, while uncommon, are nonetheless real, particularly (but not exclusively) for children and adolescents. Studies indicate that individuals receiving trivalent inactivated vaccine have a one in a million chance of contracting Guillain-Barré syndrome³⁹ and a 13% higher incidence of oculorespiratory syndrome.⁴⁰ Happily, most of these reactions have been limited to certain manufacturers and formulations, although not all were discovered before the vaccine was administered.⁴¹ A Canadian study also found a 1.4 to 2.5 higher rate of pandemic H1N1 flu among people who had received the 2008 seasonal flu vaccine, which did not contain this strain.⁴²

Flu vaccines have excellent safety records and are most effective in healthy non-elderly adults

and ambulatory care patients are likely to be discharged before nosocomial flu can be recognised, the principles of transmission and immunity are the same.^{8 23 24} More definitive studies and better vaccines are wanted,^{1 6 7} but existing vaccines are safe and effective for healthy adults.^{2 4 6} Mandatory policies make them more effective.

Finally, healthcare workers have an ethical imperative to prevent harm to patients.²⁵ Healthcare workers can infect patients,^{7 8} and flu vaccination reduces adult infections,^{1 3 6 24} therefore vaccination of healthcare workers should reduce risk while setting an example for patients and communities to get recommended immunisations. Maximising compliance should optimise outcomes.^{8 19 23} Ideally, healthcare workers will take individual responsibility for being fully immunised. When this does not occur, healthcare institutions have an ethical obligation to intervene, just as they do to optimise handwashing and minimise surgical site errors. Mandatory vaccination policies accomplish this.

Healthcare institutions should maximise the use and benefit of a vaccine that is moderately effective, extremely safe, and logically likely to reduce the risk of healthcare acquired flu for vulnerable patients as well as decrease illness among healthcare workers. First do no harm.

Ethical rights of staff

Compulsory vaccination against seasonal flu is based on an exaggerated threat and an exaggerated cure. Despite a lack of reliable, disinterested scientific evidence to show that healthcare workers are an important source of transmission to our patients, mandatory vaccination is promoted as a panacea without due regard to risks. Compulsion strips healthcare providers of a basic right guaranteed to every other patient—the right to informed consent.

Healthcare workers can and must make a real contribution to protecting patients from flu—by isolating patients with symptoms of respiratory infection, improving infection control, covering our coughs, washing our hands, and, above all, staying home when we are sick. But until there is more persuasive evidence, it is neither a breach of ethics nor a disservice to patients to insist that flu vaccination remains a personal decision based on informed consent.

Competing interests: WO is a participant in Concerned Health Care Providers, a voluntary advocacy organisation of healthcare staff in British Columbia that formed in opposition to mandatory flu immunisation.

Provenance and peer review: Commissioned; externally peer reviewed.

References are in the version on bmj.com.

Cite this as: *BMJ* 2013;347:f6705