

Mandatory vaccination

In the SARS commission report, *Spring of fear*, Justice Campbell stresses the importance of the precautionary principle and that “we cannot wait for scientific certainty before we take reasonable steps to reduce risk”¹ In their *CMAJ* article, Gardam and Lemieux² questioned the merit of mandatory influenza vaccination policies for health care providers because of relatively poor vaccine efficacy (approximately 60%) and what they consider inadequate evidence.

Influenza vaccine is safe and provides net health benefits to both health care workers and their patients. Although we all want better vaccines, we use what is available. The 7-valent pneumococcal vaccine was just over 60% effective when introduced and the quadrivalent human papilloma virus vaccine in use protects against about two-thirds of cervical cancers.

Influenza vaccines are improving; the adjuvanted monovalent pandemic vaccine was over 90% effective.³ Flu vaccination reduced the risk of flu-related hospital admissions by 76.8% in study participants 50 years of age and older during the 2011–2012 season.⁴ Gardam and Lemieux² do not clarify the acceptable level of effectiveness or how we decide this before the arrival of the virus and clarification of the virus–vaccine match. Influenza vaccine is clearly “good enough” to save the lives of many patients. The threshold for not acting in the face of good evidence supporting patient safety should be high.

In their review of the ethical considerations, Ottenberg and colleagues⁵ found overwhelming scientific, ethical and legal justifications supporting mandating health care worker vaccination. They emphasized the professional obligations to benefit individual patients, to do no harm and also to protect public health in the face of preventable infectious disease.

Gardam and Lemieux² suggest that mandatory vaccination may be legally challenged with implications for other

mandatory programs. No evidence is provided to support this and mandatory vaccination is increasingly widespread in the United States, where institutions defending challenges on the basis of patient safety have won their cases.

If mandatory vaccination is a step too far for some of our colleagues, the British Columbia model is a well-rehearsed alternative. Staff unwilling or unable to be vaccinated can opt to wear a mask all winter. A large number of facilities using this model in the US have achieved coverage rates of 95%.

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We read with interest the *CMAJ* commentary by Gardam and Lemieux.¹ Although we agree that a better influenza vaccine is needed, we disagree that this precludes maximizing the use of the current vaccine.

As the authors noted, a recent meta-analysis found vaccination of health care workers was associated with significant reductions in nonspecific adverse patient outcomes.² They also noted that determining which deaths are attributable to influenza is difficult. Given this, nonspecific measures such as influenza-like illness and all-cause mortality are valid measures that may be less likely to miss indirect associations between influenza and mortality.

Vaccine efficacy is higher in healthy health care workers than in frail patients. A 55%–70% efficacy rate is far better than the 0% efficacy of not being vaccinated. Additionally, quoted efficacy rates are often misinterpreted. If 100 health care workers are vaccinated, 55 to 70 of them will be protected. With only half vaccinated, 27 to 35 will be protected, which leaves 65 to 73 vulnerable to infection and potentially spreading influenza to their patients. Which health care worker would you prefer provide care to your loved one?

In 2008, we at BJC HealthCare, in St. Louis, Missouri, started requiring annual influenza vaccination as a condition of employment.³ The decision was based on evidence that vaccination of health care workers could protect patients, and that despite substantial efforts made over more than a decade, more than a quarter of our health care workers were not vaccinated.⁴ For the past 5 years, our vaccination rates have remained at about 98%.

We are confident that in the future there will be better efficacy of cleaning products for *Clostridium difficile*, better gloves to protect patients and health care workers during surgery, and more rapidly effective antibiotics to prevent postoperative infections. While anticipating those advancements, we should not stop thoroughly cleaning patients' rooms, using gloves during surgical procedures, and administering perioperative antibiotics in a timely manner.

While waiting for better tools, we should use all tools currently available to protect our patients now.

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The authors respond

Regarding the letters in response to our article in *CMAJ*,¹ we agree with Van Buynder and colleagues,² and Woeltje and Babcock³ that, despite its shortcomings, the influenza vaccine is currently the best defence against influenza, and that receiving the vaccine is better than not. We are strong supporters of immunization. Where we differ is on the issue of whether receipt of the influenza vaccine should be made a mandatory condition of employment for health care workers.

We need to be honest with our audience. Although seasonal all-cause mortality is traditionally used as a convenient surrogate for more influenza-specific causes of death, this highly sensitive outcome is also very nonspecific. Other common high-mortality conditions, such as myocardial infarction, *Clostridium difficile* infections and respiratory syncytial virus infection are also more common in the winter, and all contribute to a likely highly inflated estimate of influenza deaths when using all-cause mortality in place of more specific outcomes. The true impact of the influenza

vaccine on mortality is overestimated by this approach and if we do not acknowledge this, we risk losing credibility.

We do not agree with Woeltje and Babcock's³ interpretation of influenza vaccine effectiveness. They suggest that 60% effectiveness means that most individuals will be 100% protected, and that protection is durable for the entire influenza season. That breakthrough laboratory-confirmed influenza in immunized individuals can cause milder disease is well known; that is, the vaccine can protect against more severe illness. Immunized health care workers may mistake influenza symptoms for a more benign illness and continue to work. Further, 3 recent large European studies showed that vaccine effectiveness waned to near 0 or 0 within roughly 3 months after vaccination for the 2011–2012 season.⁴⁻⁶

With any issue that raises debate, citing and critically analyzing all of the evidence is necessary, even if it does not support a given position. As an example, the study⁷ mentioned by Van Buynder and colleagues² did show a higher vaccine effectiveness in relation to influenza-related hospital admissions for the 2011–2012 season; however, the study had a very small sample size and very broad 95% confidence intervals (CIs) around the protective effect of the vaccine (95% CI 17.1–94.9).⁷ Furthermore, a much larger international study published only 1 day later calculated the overall adjusted vaccine effectiveness for the same season to be just 24.9% (95% CI 1.8–44.6), but this article⁸ was not cited.

A small number of American facilities have implemented mandatory vaccination and have seen their immunization rates increase to well over 95%. We have not seen evidence that the policy has brought about a significant reduction in both nosocomial influenza and influenza-related deaths. Vaccination rates alone should not be the outcome we are interested in.

We unreservedly support annual influenza vaccination. But we believe that “it's the best we have right now” and “it might help” are not sufficiently

valid bases upon which to compel influenza immunization for health care workers. Taking such steps may paradoxically lead to a negative impact on overall vaccination rates, including those of much more effective vaccines.

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Letters to the editor

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