

Controversy

## Mass influenza vaccination in Ontario: a sensible move

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‡ Articles under the Controversy flag appear in the form of a debate. Dr. Schabas and Dr. Demicheli were each asked to present their view of the mass vaccination program being carried out against influenza in Ontario. Dr. Demicheli's article begins on page 38. Rebuttals follow on pages 40 and 41.

A public program of universal influenza immunization is a sensible and logical extension of our long-standing program of immunization of the high-risk population. The recent decision of the Ontario government to follow this course is a bold and innovative step. If this program achieves its promise, it will become the standard for influenza control across Canada.

Influenza is an infectious disease of major public health importance. In a typical year, it will cause illness in 10%–20% of the adult population and in up to 40% of children.<sup>1</sup> Influenza is not just a nasty wintertime bug that causes misery and lost productivity, with a week-long illness of cough, fever, chills and myalgias. It is also the cause of serious illness and death for thousands. Those over the age of 65 years and younger people with serious chronic illnesses are particularly vulnerable. In addition, there is increasing evidence concerning the importance of influenza as a cause of significant illness in young children and pregnant women.<sup>2,3</sup>

The influenza vaccine is safe, effective and cost-effective in the prevention of influenza.<sup>4</sup> However, influenza immunization is a tricky business. The influenza virus has an uncanny ability to change its antigenic shape from year to year. This *antigenic drift* means that the vaccine must also be modified regularly, based on predictions about which strain will predominate in the upcoming year. This also means that individuals need to be immunized annually for reliable protection.

Despite these problems, the influenza vaccine works, and works well. In healthy adults its efficacy is between 70% and 90%.<sup>5</sup> Serious side effects are very rare. Guillain-Barré syndrome, for example, is only a complication of the vaccine in a minority of influenza seasons,<sup>4</sup> and even it occurs at a rate of about one in a million doses.<sup>6</sup>

There is compelling evidence that immunization against influenza of groups at high risk of complications is

cost-effective.<sup>7–10</sup> Moreover, there is evidence that immunization of children and healthy adults is also cost-effective,<sup>11–15</sup> although this is controversial.<sup>1,15–18</sup> This debate is, however, based on small and specialized studies that are not remotely comparable to the size of the proposed Ontario program.

Pandemic influenza is the most serious predictable public health emergency. Pandemics are caused by a major change, or *antigenic shift*, in the influenza virus. A new pandemic strain has the capacity to spread worldwide in a matter of months. Unchecked, we could expect it to infect millions of Canadians, cause hundreds of thousands of admissions to hospital and tens of thousands of deaths. Immunization is the only effective means currently at our disposal of combating an influenza pandemic. There were 3 influenza pandemics in the 20th century (1918–1919, 1957–1958 and 1968–1969). The last pandemic was more than 30 years ago. The critical question for the next pandemic is not “if,” but “how soon?”

Our current strategy of immunization of the high-risk population is ineffective at protecting those at high risk of complications. There are 2 reasons for this. First, our coverage rates are poor (Dr. Monika Naus, Ontario Provincial Epidemiologist, Communicable Diseases, Toronto, Ont.: personal communication, 2000),<sup>1,19</sup> particularly in younger people with chronic medical problems. Second, this approach of only immunizing the high-risk population does nothing to limit the spread of influenza in the community. Furthermore, an exclusively “high-risk” strategy does not adequately prepare us for a pandemic.

Individuals who receive influenza vaccination will have a net health benefit. Their chances of having influenza will be greatly reduced, with very little risk of significant adverse reactions. The magnitude of this benefit to the population as a whole will depend entirely on how many individuals are immunized. Each additional individual immunized represents a step in the right direction.

Universal immunization will greatly raise the profile of influenza control. Therefore, it is reasonable to expect that this extra attention will spill over into the high-risk groups that we have been trying to reach all along, resulting in in-

creased coverage rates for these groups. The dramatic success of the Ontario pneumococcal immunization program is an excellent example of the potential of a well-run public program (Dr. Monika Naus, Ontario Provincial Epidemiologist, Communicable Diseases, Toronto, Ont.: personal communication, 2000).

Community transmission of influenza may be reduced. The more people who are successfully immunized against influenza, the fewer who will be susceptible to infection and capable of exposing others to infection. It seems very unlikely that universal immunization with our current vaccine technology will be able to block influenza transmission entirely, as we have done with polio for example. On the other hand, it is at least possible that a successful program could significantly reduce transmission in general and the risk of exposure for vulnerable people in particular.

Immunization of schoolchildren appears to be particularly important in this regard because they spread disease very effectively to others.<sup>12,20,21</sup> This may well require specially targeted efforts, including immunization clinics in schools and day-care centres.

There really is nothing new about this strategy. For years, guidelines have recommended immunization of "people capable of transmitting influenza to those at high risk,"<sup>4</sup> namely, health care workers and others caring for high-risk individuals.<sup>4</sup> The logic here is the same.

With universal immunization, we will be better prepared for an influenza pandemic. We will have in place a vaccine procurement and delivery system capable of immunizing the entire population quickly. This is exactly what we need for pandemic control. We will also need to ensure that the appropriate vaccine is produced in time for effective pandemic control — a subject for another day.

There are admittedly many uncertainties in this argument. This is because, of course, universal immunization has never before been seriously attempted on this scale. Ontario should be congratulated for its innovative spirit, but it should also be cautioned to ensure that this program is carefully evaluated. We need to know the real effectiveness and efficiency of universal immunization.

At best, this strategy will be a major advance in influenza control. At worst, it will reduce the burden of influenza but will not be efficient, at which point it can be modified appropriately. I like those options.

This article has been peer reviewed.

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*Competing interests:* Dr. Schabas works as a part-time consultant for Aventis Pasteur Ltd., a manufacturer of the influenza vaccine.

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