

For reasons of space, letters may be edited for brevity and clarity.

Effect of flu immunization programs on ED volumes

To the Editor:

The Groll and Henry article on the effect of influenza immunization programs on ED volumes is an excellent effort to identify some of the predictors of ED usage and volume,¹ but several issues should be highlighted.

First, the extent of coverage of the population in question is critical to the assessment of the impact of immunization. This was pointed out by the authors in the Discussion, under "Limitations," but it cannot be overstated. If a significant proportion of the population does not receive vaccine in the first place, the program's impact will be muted or nonexistent. A Health Canada telephone survey of over 3500 individuals from across Canada during the 2000–2001 flu season showed that close to 70% of adults 65 years and older received influenza vaccine during the 2000–2001 influenza season. In contrast, only 40% of those 18 to 64 years of age with high-risk medical conditions and 55% of health care workers were immunized during that season.² Are these immunization rates sufficient to influence ED volumes? Not likely!

In addition, if one is trying to assess the impact of a provincial influenza immunization campaign, ED volumes are only one outcome measure — and not a sensitive one. As Groll and Henry demonstrated, influenza and pneumonia make up a small proportion of total ED visits. At St. Paul's Hospital, pneumonia, for example, accounts for about 1% of ED visits. Consequently, other

factors will have a much more profound impact on ED volumes, potentially obscuring small but meaningful benefits of a vaccination program. These other factors might include the development of new ED facilities, creation of a fast-track area, changing community demographics, changing ED processes, and even ED overcrowding itself — which has negative effects on publicity and ED volumes. The authors of this article made no attempt to compare year-by-year changes in ED volumes of influenza and pneumonia alone.

We recently measured the impact of a mass pneumococcal/influenza vaccination campaign on our ED. In November 1999 more than 8000 residents of the Downtown East Side of Vancouver were vaccinated, and we showed a 25% decrease in both ED cases of influenza and pneumonia year over year.³ The drop in pneumonia volumes was seen in both admitted and discharged patients, but was not seen in lower mainland hospitals outside the Downtown (i.e., vaccination) area.

Finally, the major reason for enhanced influenza immunization programs and, even ED immunization programs, is not to decrease ED volumes, even though this is a stated objective of the Ontario government. The influenza vaccine prevents illness in approximately 70% to 90% of healthy persons younger than age 65 years. Among elderly persons living outside nursing homes or similar chronic care facilities, influenza vaccine is 30%–70% effective in preventing hospitalization for pneumonia and influenza.⁴ Providing the vaccine in our EDs represents a community service and a way of decreasing morbidity and mortality in our patient population. Many of our patients, especially the disadvantaged and

indigent, use our facilities as their only source of medical care. We should wholeheartedly embrace the concept of ED influenza immunization in the same way we routinely provide tetanus prophylaxis.

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[One of the authors responds:]

I thank Dr. Grafstein for his interest in our research regarding the impact of the Ontario universal immunization program on ED volume,¹ and I appreciate the opportunity to respond to some of the issues he has highlighted.

I agree with Dr. Grafstein that the issue of immunization coverage is critical when evaluating the success of an immunization program. The lack of any systematic method of collection of this data by the Ontario government prior to implementing a now \$81-million program is something the Ontario taxpayers should be concerned about.

However, even on the assumption that 100% of Ontarians were immunized and all influenza eliminated in

Ontario, our research¹ and others² have found that respiratory disease accounts for approximately 10% of the admissions to the ED in Ontario, and we found that over a 5-year period influenza and pneumonia combined accounted for 0.34% of visits. Based on these numbers, we concluded that even by removing all influenza cases it is hard to see how this will significantly impact overall ED volume.

As Dr. Grafstein points out, the outcome of reducing ED volume is not a sensitive measure, and there are many different and very complex issues that combine to affect ED volume. He further mentions, and I would like to stress, that this outcome was chosen by the Ontario government as 1 of only 2 reasons for implementing this program.³ I would like to add that it is not an outcome that would be chosen by most researchers examining the efficacy of such a program without sufficient empirical evidence that influenza had a major impact on ED volume. However, because it was the reason given for initiating a universal immunization campaign this is why we chose to study it.

Finally, I would like to separate the issue of the potential public health benefits of vaccination for influenza from that of ED volume. As stated by Dr. Grafstein, immunization has been shown to reduce mortality and morbidity in populations at high risk for complications from influenza,^{4,5} and Ontario has been providing free influenza vaccinations to this population since 1984. Although the cost and effectiveness of mass immunization programs for low-risk individuals has been questioned,⁶⁻¹⁰ targeting and enhancing the immunization rates of high-risk people may be a more cost-efficient and efficacious way to further reduce hospitalization and mortality within the population. One way to accomplish this goal may be ED immunization programs. Our study fo-

cused only on the goal of reducing ED volume and the ability of a universal influenza immunization program to achieve this end.

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To the Editor:

Groll and Henry¹ are to be commended for tackling the complex and controversial issue of influenza and its relationship to ED utilization. They com-

pared annual influenza rates across Ontario with total winter ED visits at selected EDs and found that the two were not related. They concluded that influenza does not impact ED volume and that influenza vaccination is unlikely to alleviate ED overcrowding. These conclusions have substantial public health implications. However, we are concerned that their methods may be flawed and their conclusions premature.

For each city, their analysis was based on 5 observations (i.e., 5 years). Not only was the power to detect a difference limited, but such a small number of observations may seriously compromise the stability of the statistical model used. Further, the use of such standard models to examine longitudinal data is often plagued by autocorrelation, since the data does not fulfill the assumption that observations are independent from each other (e.g., the volume of a given ED in one year is associated with its volume the next).

The outcome measure was also problematic. As the authors note, total ED volume fluctuates widely due to many factors, and ED overcrowding has not been shown to be related to ED volume in several studies.^{2,3} This is mainly because the majority of ED patients are young, low-acuity patients, often with minor injuries, who are unlikely to contribute substantially to overcrowding.⁴ Hence, the increasing overcrowding likely relates not so much to changes in total ED volume, but to an older and sicker ED patient population, more of whom may require admission than in the past.

If influenza is a contributor to this phenomenon, one would be more likely to detect the effect by focusing on older patients with complications of influenza likely requiring admission, such as pneumonia, asthma/COPD and congestive heart failure, all of which