

ABSTRACT

# Effect of expanded recommendations for pediatric seasonal influenza vaccination: an international comparison

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## Objective

The objective of this study is to estimate the effect of expanding recommendations for routine seasonal influenza vaccination to include 24–59-month-old children.

## Introduction

Seasonal influenza epidemics are responsible for over 200,000 hospitalizations in the United States per year, and 39,000 of them are in children.<sup>1,2</sup> In the United States, the Advisory Committee on Immunization Practices guides immunization practices, including influenza vaccination, with recommendations revised on an annual basis. For the 2006–2007 flu season, the Advisory Committee on Immunization Practices recommendations for influenza vaccination began including healthy children aged 24–59 months (two to four years), a shift that added 10.6 million children to the target group.<sup>3</sup>

Canada has a parallel federal organization, the National Advisory Committee on Immunization, which is responsible for guiding the use of vaccines. Recommendations made by the National Advisory Committee on Immunization and the Advisory Committee on Immunization Practices around seasonal influenza vaccination was concordant until the 2006–2007 season. Starting in the 2010–2011 season, the National Advisory Committee on Immunization has further expanded its recommendations to additional pediatric age groups by including two- to four-year-olds for targeted seasonal influenza vaccination.

We took advantage of this divergence in policy between two neighboring countries with similar annual seasonal influenza epidemics to try to understand the effects of the policy change in the United States to expand influenza vaccination coverage to other pediatric populations.

## Methods

We analyzed emergency department (ED) data captured by Automated Epidemiologic Geotemporal Integrated Surveillance System (AEGIS), the population health monitoring

system for the Massachusetts Department of Public Health (South Street, MA, USA), from Children's Hospital Boston (Boston, MA, USA) for the 2000–2001 to 2008–2009 influenza seasons. Comparable data was extracted from the electronic records of Montreal Children's Hospital (Montreal, Quebec, Canada) to make an international comparison of rates of ED visits for influenza-like illness (ILI) following the United States vaccination policy change. Adjusting for virological factors that impact variation in influenza epidemic intensity, seasonal trends, and all-cause ED utilization, we looked for early evidence of an effect of this policy change by evaluating the post-policy change response of ILI-related ED visits to Children's Hospital Boston, using Montreal Children's Hospital as a control, for four different pediatric age groups.

## Results

We observed a 34% decline in the rate of ILI-related ED visits among two- to four-year-olds for Children's Hospital Boston relative to Montreal Children's Hospital following the 2006 policy change (RR ratio 0.66; 95% confidence interval: 0.59–0.75) (Table 1). We also observed smaller, marginally significant declines of 11–17% for the other age groups studied (Table 1).

## Conclusions

Preschool-aged children have been identified as important to the household and community spread of influenza, due in

**Table 1** Post-/pre-immunization policy change ratios of ILI-related ED visits to Children's Hospital Boston relative to Montreal Children's Hospital for four different pediatric age groups

Age group	Adjusted rate ratio (95% CI)	P
0–1	0.89 (0.81, 0.99)	0.03
2–4	0.66 (0.59, 0.75)	<0.001
5–9	0.83 (0.70, 0.98)	0.03
10–18	0.83 (0.70, 0.98)	0.03

part to infection rates averaging 25–43% per season, higher than any other age group.<sup>4</sup> We observed a significant decline in ILI-related ED visits by two- to four-year-old children at Children's Hospital Boston relative to a control hospital, Montreal Children's Hospital, following the 2006–2007 divergence in pediatric influenza immunization policy. Interestingly, we also saw smaller decline in rates among other pediatric age groups, a finding that is consistent with previous evidence that vaccinating preschool-aged children also reduces population-wide morbidity due to influenza.<sup>5</sup>

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### References

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