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## Prenatal exposure to the 2009 pandemic H1N1 influenza vaccine on health outcomes in children

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### Introduction

During the 2009 H1N1 pandemic, less than half of pregnant women in Ontario received the recommended influenza vaccine. Commonly-cited reasons for low vaccine uptake include misconceptions about the possible impact of maternal influenza infection and vaccine safety. Providing data on previously understudied pediatric health outcomes may help increase vaccine uptake.

### Objectives and Approach

We conducted a retrospective cohort study of all live births from November 2nd, 2009 to October 31st, 2010 using the BORN Ontario province-wide birth registry containing information on H1N1 vaccination. These data were deterministically/probabilistically linked with several health administrative databases held at the Institute for Clinical Evaluative Sciences to ascertain specific immune-related pediatric health outcomes and health services utilization over 5 years of follow-up. Negative binomial regression models were used to evaluate the association between prenatal H1N1 vaccination and outcomes. Stabilized inverse probability of treatment weights (sIPTW) derived from the propensity scores were used to adjust for potential confounding.

### Results

The study cohort included 104,310 eligible infants, 31,310 (30%) of whom were born to H1N1-vaccinated women. Median follow-up time was 5 years. Using sIPTWs we were able to achieve good balance of baseline measured covariates across exposure groups, with no absolute standardized differences larger than 7%. The sIPTW-adjusted analyses indicated no significant associations between prenatal exposure to H1N1 vaccination and upper respiratory infections (adjusted rate ratio [aRR] 1.01; 95% confidence interval [CI] 0.98-1.03), lower respiratory infections (aRR 1.00; 95%CI 0.96-1.04), otitis media (aRR 1.04; 95%CI 1.00-1.07), all infections (aRR 1.00;

95%CI 0.98-1.03), and rates of urgent and in-patient health services utilization (aRR 1.00; 95%CI 0.98-1.02).

### Conclusion/Implications

Our primary findings suggest there are no associations between prenatal exposure to H1N1 vaccination and (1) the development of several immune-related health outcomes in children; (2) rates of health services utilization. Furthermore, our study provides new evidence on the long-term safety of influenza vaccination during pregnancy, which is currently lacking.

