Influenza Vaccine Programs and Pregnancy: New Canadian Evidence for Immunization

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Abstract

Among healthy pregnant women, excess deaths due to influenza were documented during pandemics, but the impact of influenza on pregnant women in non-pandemic years is not clear. In Canada, influenza immunization is recommended for pregnant women only if they have comorbidities known to place them at increased risk of complications or if they deliver during influenza season, therefore becoming a contact of a high-risk infant. The National Advisory Committee on Immunization has indicated that additional evidence, relevant to healthy pregnant Canadian women, is needed to support a recommendation for influenza immunization for all pregnant women. In this commentary we summarize new Canadian data supporting universal influenza immunization for pregnant women and discuss ways in which the Society of Obstetricians and Gynaecologists of Canada might take a leadership role in making influenza vaccination in pregnancy a priority to decrease influenza morbidity in pregnant Canadian women.

Résumé

Chez les femmes enceintes en santé, une surmortalité attribuable à l'influenza a été documentée au cours des pandémies; cependant, les effets de l'influenza sur les femmes enceintes au cours des années non pandémiques demeurent troubles. Au Canada, l'immunisation contre l'influenza est recommandée pour les femmes enceintes seulement si celles-ci présentent des comorbidités dont la capacité d'entraîner une hausse du risque de complications est connue ou si elles accouchent au cours de la saison de l'influenza (puisqu'elles deviennent ainsi un sujet contact d'un nouveau-né courant des risques élevés). Le Comité consultatif national de l'immunisation a indiqué que des données supplémentaires, applicables aux Canadiennes enceintes en santé, s'avèrent requises pour soutenir une recommandation visant l'immunisation contre l'influenza pour toutes les femmes enceintes. Dans le présent commentaire, nous résumons les nouvelles données canadiennes soutenant l'immunisation universelle contre l'influenza pour les femmes enceintes et discutons des façons par lesquelles la Société des obstétriciens et gynécologues du Canada pourrait jouer un rôle de chef de file en vue d'établir la vaccination contre l'influenza pendant la grossesse à titre de priorité pour entraîner une diminution de la morbidité de l'influenza chez les Canadiennes enceintes.

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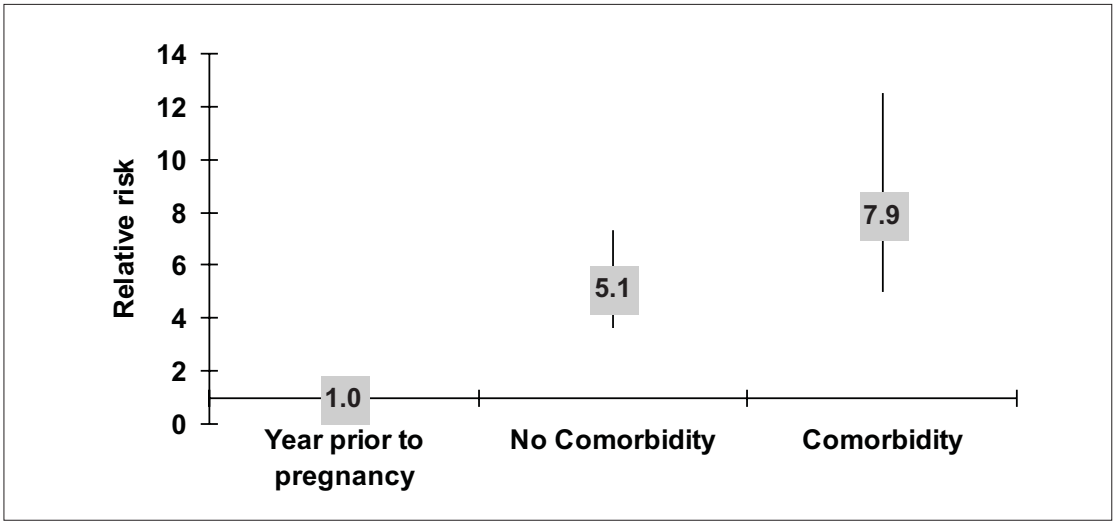
Although healthy pregnant women were shown to be at increased risk of influenza-associated complications and death during the influenza pandemics of 1918–1919 and 1957–1958,[1,2] the impact of influenza on pregnant women in non-pandemic years is not clear. In our commentary in this journal in 2004,[3] we noted that in Canada, the National Advisory Committee on Immunization includes pregnant women among those with high priority for influenza immunization only if they have recognized risk factors for complications of influenza or if they will deliver during influenza season and therefore become contacts of a high-risk infant.[4] At the time, strong evidence applicable to healthy Canadian pregnant women that would support a broader recommendation was lacking.[3,4] Two recent Canadian studies suggest that the time has come to reassess and to broaden this recommendation.[5,6]

The first study is our recently published large, population-based cohort study that found that women are at greater risk for severe influenza morbidity when pregnant, with or without comorbidities, than when not pregnant.[5] This 13-year study (1990–2002) of 134 188 women in Nova Scotia compared respiratory-related hospitalizations and respiratory-related physician office visits during influenza season in individual trimesters with these same parameters before pregnancy and in non-influenza seasons. Exposure to the

Figure. Relative risk of third trimester hospitalization during influenza season among women with and without comorbidities compared with the influenza season in the year prior to pregnancy (vertical bars show 95% confidence intervals)*



*Adapted from Dodds et al.[5]

influenza season was associated with a markedly increased risk of respiratory-related hospitalization in pregnant women during the third trimester, with or without comorbidities, compared with exposure to the influenza season in the year before pregnancy (Figure). For women without comorbidities, this translates into an excess of 4.3 hospitalizations per 10 000 women-months in influenza season compared with non-influenza season. Although the rate of excess hospitalization among healthy pregnant women exposed to influenza in the third trimester (65/100 000) is lower than that reported among healthy children under two years of age (90–1038/100 000),[7–10] it is comparable to the rate among American adults aged 15 to 44 years with comorbidities (56–110/100 000),[11] a high-risk category for whom annual influenza immunization is recommended.

This finding of excess hospitalization rates in influenza season among healthy pregnant women is further supported by the study of Schanzer et al. presented at the 7th Canadian Immunization Conference in December 2006 and published in this issue.[6] Using Canadian Institute of Health Information data, they found that during the four-week peak of influenza activity each year from 1994–1999, 60% of admissions of otherwise healthy pregnant women in Canada for acute respiratory conditions could be attributed to influenza.

ABBREVIATIONS

NACI National Advisory Committee on Immunization

These two large Canadian studies demonstrating the increased risk of respiratory-related hospitalizations in healthy pregnant women during influenza season concur with the earlier findings of Neuzil et al. in a low socioeconomic inner-city population in Tennessee.[7] The broader, population-based Canadian studies expand the evidence beyond women in the low socioeconomic class. Although there remains a relatively limited amount of data upon which to base decisions, we believe that the three studies together provide solid evidence for NACI to consider recommending that all pregnant women be considered a high priority group for immunization against influenza, not only pregnant women with comorbidities.

Expansion of the recommendations must be based not only on the demonstration of increased influenza-associated morbidity, as shown in the three studies, but also on demonstration of the safety and efficacy of influenza vaccine during pregnancy. Inactivated influenza vaccine has been administered to pregnant women for more than 40 years and has not been associated with serious side effects in women, with congenital malformations, or with adverse perinatal outcomes, even when given during the first trimester of pregnancy.[12] Thus, the vaccine is considered safe in all stages of pregnancy.[4]

Although the immune response mounted by pregnant women to influenza vaccine is comparable to that observed in healthy non-pregnant women,[12] the low immunization rates in the pregnant population have made it difficult to demonstrate vaccine effectiveness during pregnancy.[13,14] In our study, during the years in which influenza

a immunization data were available (1999 onwards), only 2.6% of pregnant women in the study cohort received influenza vaccine.[5] Despite the well-recognized increase in influenza-associated morbidity among pregnant women with comorbidities, the longstanding NACI recommendation for influenza immunization in this population, and the proven track record of vaccine safety, only 6.7% of the high-priority pregnant women in Nova Scotia received influenza vaccine. The vaccination rates observed in our study were slightly lower than those reported in California between 1997–2002,[13] but higher than those reported in the Tennessee Medicaid population.[14]

Recent work by Halperin et al. suggests that low immunization rates among pregnant women in Nova Scotia may result, at least in part, from a failure of health care providers to offer the vaccine.[15] Their survey of 445 pregnant women carried out in 2005 explored key factors that influence acceptance of influenza vaccine in pregnancy. Although 60% of the 445 pregnant women respondents stated that they would be willing to have the vaccine while pregnant if their doctor recommended it, only 15% said their doctor had discussed influenza vaccination with them during pregnancy. Reasons for the failure of health care providers to offer influenza vaccine during pregnancy are not clear, but compliance with current recommendations may be reduced by the complexity of the recommendations. Current NACI recommendations in pregnant women require assessment of both maternal health status and timing of anticipated delivery in relation to the local influenza season in order to determine whether an individual woman should be immunized. Broadening the immunization recommendation to include all pregnant women enables easy identification of the target population and may facilitate the implementation of publicly funded immunization programs designed to maximize vaccine coverage in this high-risk population.

There is now compelling evidence that influenza is a serious problem for pregnant women in Canada. Despite this evidence, the rate of influenza immunization remains dismally low, even for women with comorbidities. In order to decrease influenza morbidity for pregnant women in Canada we believe that it is vital that the Society of Obstetricians and Gynaecologists of Canada take a leadership role in making influenza vaccination during pregnancy a priority. This can be accomplished by

- advocating for the expansion of the NACI influenza immunization recommendations to include all pregnant women among identified high-priority categories.
- lobbying provincial and territorial governments to fund influenza immunization programs for all pregnant women.
- engaging in a concerted collaborative effort to educate all who provide care for pregnant women about influenza morbidity, influenza vaccine safety in pregnancy, and the positive influence that physician recommendation of vaccine has on vaccine uptake.
- working with public health and other organizations to develop a public campaign to educate pregnant women about the risks of influenza and the safety and benefits of vaccine, and to develop effective strategic delivery programs that enhance access to and uptake of influenza vaccine in pregnancy.

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