Seasonal Influenza Vaccination Coverage Among Pregnant Women in Rhode Island

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Pregnant women have increased morbidity and mortality from influenza infection, due to the physiologic changes associated with pregnancy. The Advisory Committee on Immunization Practices (ACIP) recommends influenza vaccination for all women who are pregnant or will be pregnant during influenza season, with trivalent inactivated influenza vaccine (TIV). TIV has been considered safe and effective during any stage of pregnancy. In addition, a recent study conducted in Bangladesh demonstrated that influenza vaccination during pregnancy had a significant effect in reduction of influenza illness among their infants up to 6 months of age. The American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Family Physicians (AAFP) also recommend routine vaccination of all pregnant women. Despite these recommendations, the National Health Interview Survey showed that only 24% of pregnant women received influenza vaccine during the 2007-2008 influenza season.

This report describes the trends of influenza vaccination coverage among pregnant women in Rhode Island, characteristics related to influenza vaccination during pregnancy, and reasons for not being vaccinated.

Methods

Data from the 2002-2007 Rhode Island Pregnancy Risk Assessment Monitoring System (PRAMS) were analyzed to assess influenza vaccination coverage rates among pregnant women. PRAMS, a surveillance project of the Centers for Disease Control and Prevention (CDC) and state health departments, collects state-specific, population-based data on maternal behaviors and experiences before, during, and shortly after delivery of a live infant. Rhode Island has collected PRAMS data since 2002; each year, about 1,400 Rhode Island recent mothers respond to the survey.

Rhode Island included three influenza immunization questions in the PRAMS survey: 1) “Did you get a flu vaccination during your most recent pregnancy?” (Data have been collected since 2002); 2) If not “What were your reasons for not getting a flu shot during your most recent pregnancy?” (Data were collected only for 2002 and 2003); and 3) “At any time during your most recent pregnancy, did a doctor, nurse, or other health care worker offer you a flu vaccination or tell you to get one?” (Data have been collected since 2004). PRAMS data were weighted to represent all Rhode Island women who have delivered a live infant each year, and were analyzed to estimate influenza vaccination coverage, 95% confidence intervals, and chi-square p-values. SUDAAN software was used for data analyses, which takes into account the complex sample design of the survey. Response rates for the years of data examined were 70% or higher.

Results

The percentage of women who received influenza vaccine during their pregnancy increased significantly from 18.2% in 2002 to 33.4% in 2007 (p<0.0001). Although vaccination coverage rates increased consistently during the period, a substantial increase was observed from 2004 to 2005 (8.1 percentage points or 37% increase; p<0.0001), and a marginal increase was observed from 2006 to 2007 (3.0 percentage points or 10% increase; p=0.1674). The percentage of women who reported that their health care providers recommended
or offered influenza vaccine during pregnancy also significantly increased from 33.0% in 2004 to 47.7% in 2007 (p<0.0001). A similar substantial increase in the recommendations/offers was observed from 2004 to 2005 (13.6 percentage points or 41% increase; p<0.0001), but there was no significant increase during 2005-2007. (Figure 1)

In the 2002-2003 PRAMS survey, pregnant women who did not get vaccinated were asked to give the reasons (multiple reasons were allowed). The reasons included: My doctor did not mention anything about a flu shot during my pregnancy (57.4%); I wanted to avoid medications during my pregnancy (25.7%); I was worried that the flu shot might harm my baby (22.0%); I was worried about side effects of the flu shot for me (15.0%); My doctor recommended against getting a flu shot (2.3%); My doctor did not have the vaccine (1.0%). Other reasons included: I don’t normally get the flu shot; I was in the first trimester of pregnancy during the flu season; I was not pregnant during the flu season. (Figure 2)

Influenza vaccination coverage during pregnancy was significantly higher among Hispanic women (37.5%), women with > high school education (34.0%), women who had annual household incomes $50,000 (34.7%), married women (33.7%), and women with intended pregnancy (33.1%) than for their counterparts. Women who were recommended or offered influenza vaccine by their health care providers were 15 times more likely to be vaccinated than women who were not recommended or offered the vaccine (62.9% vs. 4.1%). (Table 1)

**DISCUSSION**

Although the influenza vaccination coverage among pregnant women increased significantly from 2002 to 2007, the rate is still alarmingly low. Only one third of Rhode Island women received influenza vaccine during their pregnancy in 2007.

Among other characteristics, influenza vaccination was strongly associated with health care provider recommendations/offers: when health care providers recommended or offered influenza vaccine, pregnant women were much more likely to get vaccinated. Of considerable concern, in 2007, less than one half of Rhode Island women (47.7%) reported that their health care provider recommended or offered influenza vaccination during their pregnancy. Consistently, in 2002-2003, the reported major reason for not getting vaccinated was that their doctor did not mention anything about influenza vaccination during their pregnancy.

A substantial increase in influenza vaccination coverage and recommendations/offers for vaccination observed from 2004 to 2005 could be, in part, related to changes in ACIP recommendations in May 2004, stating that due to the increased risk for influenza-related complications, pregnant women could be vaccinated during all trimesters of pregnancy. Prior to this change, influenza vaccination was recommended only for women who would be in their second or third trimester of pregnancy during the flu season.

This study has some limitations: 1) PRAMS data are self-reported by women 2-6 months postpartum and therefore their reporting on influenza vaccination and provider recommendations may be subject to recall bias, and 2) data on reasons for not getting an influenza vaccination were collected only for 2002 and 2003, which were prior to changes in ACIP recommendations for pregnant women.
The findings of this study indicate that health care providers play a critical role in the acceptance of influenza vaccine by pregnant women. To improve influenza vaccination coverage among pregnant, health care providers should use the first prenatal care encounter to educate women about the risk of influenza complications during pregnancy and the protective effect of influenza vaccination on women and their infants, and providers should offer vaccination at the earliest opportunity during influenza season.

REFERENCES

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Disclosure of Financial Interests
The authors have no financial interests to disclose.

Note: This work was originally presented at the 43rd National Immunization Conference, Dallas, TX; March 30, 2009. Abstract at [http://cdc.confex.com/cdc/nic2009/webprogram/Paper18186.html](http://cdc.confex.com/cdc/nic2009/webprogram/Paper18186.html).

The CDC published a related article in partnership with the Rhode Island Department of Health: “Receipt of Influenza Vaccine During Pregnancy Among Women With Live Births - Georgia and Rhode Island, 2004-2007”; MMWR 2009;58:972-5. Abstract at [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5835a2.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5835a2.htm)