Pertussis vaccination in pregnant women

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National Adult and Influenza Immunization Summit
May 12, 2015

Background

- Highest incidence of pertussis is in infants <1 year
  - 2,269 of the pertussis cases in 2012 were in infants <3 months
    - 15 of those infants died
  - Half of infants <1 year who get pertussis are hospitalized

Source: CDC, National Notifiable Diseases Surveillance System and Supplemental Pertussis Surveillance System
Strategies to protect infants from pertussis

- Infant vaccination with Diphtheria, tetanus, and acellular pertussis vaccine (DTaP)
  - Doses given at 2, 4, 6 and 15-18 months
  - Infants <2 months not protected
  - Vaccine efficacy after 1 dose ranges from 68%-84%
    - Efficacy after 3 doses approximately 84%-95%

- Vaccination of pregnant women with Tetanus, diphtheria, and acellular pertussis vaccine (Tdap)
  - Evidence for maternal antibody transfer
  - Studies from the UK have shown high efficacy for protection against pertussis in infants < 2 months

ACIP recommendations for Tdap vaccination of pregnant women

- October 2005
  - Women should receive Tdap before pregnancy; women not vaccinated before pregnancy should receive Tdap in the immediate postpartum period. “Cocooning” (vaccination of close contacts of infants < 12 months) also recommended.

- October 2011
  - Tdap vaccine recommended during pregnancy (after 20 weeks gestation) for women who had not been previously vaccinated.

- October 2012
  - Tdap recommended during each pregnancy (preferably between 27-36 weeks gestation), regardless of previous vaccination.
Measuring Tdap coverage in pregnant women

• **Michigan Medicaid study**
  - Tdap coverage during pregnancy assessed from Medicaid claims data among women who delivered their first live-born infant during November 2011-February 2013 and were enrolled in Michigan Medicaid for at least 1 month between 20 weeks gestation and live birth (n=15,181).

• **Vaccine Safety Datalink sites**
  - Tdap coverage assessed after end of pregnancy from electronic medical records and claims data among women seeking care at 7 large medical care organizations that are part of CDC’s Vaccine Safety Datalink (n=82,681 in 2012).

• **Pregnancy Risk Assessment Monitoring System (PRAMS)**
  - Survey of women with recent live births sampled from birth certificates in participating states. Tdap vaccination coverage assessed among women who had a live birth during September-December 2011 in 17 states and New York City (n=5,499).

Measuring Tdap coverage in pregnant women (cont.)

• **Internet panel survey**
  - Conducted in early April each year to assess influenza vaccination coverage and vaccination-related KABs among pregnant women
    - Questions about receipt of Tdap vaccination included since April 2012
    - Questions about provider recommendation and offer of Tdap added in 2015
  - Participants recruited from a pre-existing, national general population opt-in internet panel
  - Women who report being pregnant anytime since the preceding August are eligible for the survey
  - Approximately 1,800 respondents each year
### Tdap coverage during pregnancy* by select demographic characteristics, Internet panel survey, 2013-2014†

<table>
<thead>
<tr>
<th></th>
<th>Unweighted n</th>
<th>Percent vaccinated</th>
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<tbody>
<tr>
<td>Total</td>
<td>1,678</td>
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<tr>
<td>Age (years)</td>
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<tr>
<td>18-24</td>
<td>399</td>
<td>13.7</td>
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<tr>
<td>25-34</td>
<td>970</td>
<td>17.0</td>
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<tr>
<td>35-49</td>
<td>309</td>
<td>10.8</td>
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<tr>
<td>Race/ethnicity</td>
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<tr>
<td>Black, non-Hispanic</td>
<td>161</td>
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<td>White, non-Hispanic</td>
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<tr>
<td>Other, non-Hispanic</td>
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<tr>
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<td>Greater than college degree</td>
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<td>Insurance coverage</td>
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<tr>
<td>Private/military only</td>
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<tr>
<td>No insurance</td>
<td>53</td>
<td>1.2</td>
</tr>
</tbody>
</table>

* Women vaccinated before or after pregnancy counted as unvaccinated. Those with unknown timing of vaccination were excluded.
† Women pregnant any time during August 2013 – March 2014

### Discussion

- All pregnant women are currently recommended to be vaccinated with Tdap during every pregnancy to protect their infants from pertussis.

- Tdap vaccination coverage during pregnancy has increased since the most recent ACIP recommendation, but remains low.
  - Approximately 10-25% vaccinated, depending on source.

- An offer of vaccination by a health care provider is strongly associated with vaccination.
  - 48% of women who were offered Tdap during pregnancy were vaccinated compared to only 1% who were neither offered nor recommended to be vaccinated.
Acknowledgements

- Helen Ding
- Walter Williams
- Jennifer Liang
- Erin Kennedy
- Sarah Ball
- Sara Donahue

Thank you

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.