Who are Parents of Children Missing One or More Doses of Two or More of the Following Vaccines: DTaP/DTP, Hepatitis B, and Measles Containing Vaccine?

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Background

- Immunization coverage is high in the U.S.
- Recent concerns about vaccine safety may adversely affect parent’s decisions to immunize their children
- In recent years media attention has focused on DTP/DTaP, hepatitis B and MMR vaccines
Rationale

• Several studies have addressed the question of what factors influence whether a child is up to date for immunizations.

• None have looked at a comprehensive list including attitudes, beliefs, use of alternative medicine, and chronic disease or vaccine side effects in family members.
Objectives

- To examine differences in parents of children who are missing two or more of these high profile vaccines (DTaP/DTP, hepatitis B, MCV) and those who are up to date for recommended vaccines

- To assess factors associated with persons very concerned about vaccine safety

- To assess factors associated with persons who asked the doctor not to give their child a vaccine for reasons other than illness
Study Groups

- Not up to date (NUTD): Parents whose child was missing doses of two or more of the following vaccines: DTaP/DTP, hepatitis B, and/or MCV

- Up to date (UTD): Parents whose child was up-to-date for 4:3:1:3:3:1 (4 DTaP/DTP/DT, 3 polio, 1 MCV, 3 Hib, 3 hepatitis B and 1 varicella)
Analyses

• Chi squared tests
• Logistic regression
• Attributable risk
Results

- Weighted data showed that 3,185,682 were UTD and 289,463 NUTD, missing two or more of the three vaccines
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## Socio-economic Predictors

<table>
<thead>
<tr>
<th>Demographics</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income $</strong></td>
<td></td>
</tr>
<tr>
<td>0-30,000</td>
<td>2.7 (1.4-5.5)*</td>
</tr>
<tr>
<td>30,001-50,000</td>
<td>1.6 (0.7-3.4)</td>
</tr>
<tr>
<td>50,001-75,000</td>
<td>0.8 (0.3-1.9)</td>
</tr>
<tr>
<td>75,000+</td>
<td>referent</td>
</tr>
<tr>
<td><strong>Number of Providers</strong></td>
<td></td>
</tr>
<tr>
<td>1 provider</td>
<td>referent</td>
</tr>
<tr>
<td>2+ providers</td>
<td>2.7 (1.6-4.6)*</td>
</tr>
<tr>
<td><strong>Number of children in the household</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>referent</td>
</tr>
<tr>
<td>2-3</td>
<td>2.1 (1.1-3.8)*</td>
</tr>
<tr>
<td>4+</td>
<td>4.5 (1.9-11.0)*</td>
</tr>
</tbody>
</table>
## Risk Factor Predictors

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you had another baby today, would you want him or her to get all the recommended immunizations?</td>
<td>referent</td>
</tr>
<tr>
<td>Yes</td>
<td>referent</td>
</tr>
<tr>
<td>No</td>
<td>5.6 (2.0-16.0)</td>
</tr>
<tr>
<td>Have you asked the doctor or nurse not to give your child an immunization for a reason other than illness?</td>
<td>referent</td>
</tr>
<tr>
<td>No</td>
<td>referent</td>
</tr>
<tr>
<td>Yes</td>
<td>2.4 (1.0-5.72)</td>
</tr>
<tr>
<td>How safe do you think immunizations are for children?</td>
<td>referent</td>
</tr>
<tr>
<td>Very safe (8-10)</td>
<td>referent</td>
</tr>
<tr>
<td>Somewhat safe/unsafe (0-7)</td>
<td>2.3 (1.3-4.0)</td>
</tr>
</tbody>
</table>
• **14.8% (42,937)** of the 289,463 in the NUTD group were excess cases due to the seven combinations of the 3 risk factors.

• Each of the risk factors contributed a percentage to the total excess cases (42,937).
  - 38.3% not wanting a new baby to receive all recommended immunizations.
  - 48.1% asking their doctor not to give their child a vaccine for reasons other than illness.
  - 69.0% not thinking immunizations are very safe.
Objectives

- To examine differences in parents of children who are missing two or more of these high profile vaccines (DTaP/DTP, hepatitis B, MCV) and those who are up to date for recommended vaccines.

- To assess factors associated with persons very concerned about vaccine safety.

- To assess factors associated with persons who asked the doctor not to give their child a vaccine for reasons other than illness.
Very Concerned About Immunization Safety

• 11 point scale of vaccine safety concern- very concerned (10) 32.1% and all others (0-9) 67.9%

• No difference in NUTD (37.0%) and UTD (31.7%) in the percent of parents who reported being very concerned ($X^2=1.28; p=0.258$)

• African Americans were more likely to report being very concerned (10) than whites (OR=4.93, CI=2.60-9.35) and college graduates were less likely to be very concerned (OR=0.40, CI=0.21-0.76) than those with a high school education
Objectives

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• To assess factors associated with persons very concerned about vaccine safety

• To assess factors associated with persons who asked the doctor not to give their child a vaccine for reasons other than illness
Asked doctor not to give their child a vaccine for reasons other than illness

- More parents in the NUTD (11.3%) than those in the UTD group (4.2%) asked the doctor not to give their child a vaccine for reasons other than illness ($X^2 = 8.24, p = 0.0041$)

- Parents with a college degree were more likely to ask the doctor or nurse not to give their child a vaccine for reasons other than illness (OR = 2.8, CI = 1.2, 6.5) compared to parents with a high school diploma
Conclusions

• Parents of children missing two or more vaccines have a strong association with low income, multiple providers, and multiple children in the household

• Three attitudes/beliefs/behaviors related to vaccine safety also contribute to vaccination behaviors
Conclusions

- Parental attitudes and behaviors related to vaccine safety accounted for 14.8% of the cases.

- Of the 42,937 excess cases due to the three risk factors:
  - 69.0% was due to not thinking immunizations are very safe;
  - 48.1% was due to asking their doctor not to give their child a vaccine for reasons other than illness;
  - 38.3% was due to not wanting a new baby to receive all recommended immunizations.
Conclusions

- Having a strong concern about vaccine safety did not translate directly into asking the doctor or nurse not to give their child a vaccine. This may be due to factors associated with demographic characteristics such as trust of medical professionals, control, and availability of options.

- Many parents who are fully immunizing their child are doing so either reluctantly or with reservations.
Conclusions

- The mission is not to vaccinate children at all costs but to educate, inform and carry out the process in a way that fosters trust and understanding

- Efforts to maintain and improve immunization coverage must focus both on logistical issues AND attitudes and beliefs
Limitations/Strengths

• The response rate for the survey was low

• There is the possibility of recall bias

• The primary strength of this study is the large number of independent demographic and risk variables used to predict parents of children missing two or more vaccines
Summary

1. Income, number of providers, and number of children in the household predicted parents of children missing 2 or more vaccines

2. Parental attitudes/beliefs/behaviors related to vaccine safety also predicted parents of children missing 2 or more vaccines

3. These accounted for 14.8% (42,937) of those in this NUTD group
Summary

4. African Americans – almost 5 times as likely to report being very concerned (10) compared to whites; college graduates were less likely to be very concerned compared to those with a high school education.

5. Parents with a college degree were almost three times more likely than persons with a high school diploma to ask the doctor or nurse not to give their child a vaccine for reasons other than illness.
Ultimate Goal
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