Parent Opinions About Universal Influenza Vaccination for Infants and Toddlers

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Background: Parent and caregiver opinions on the feasibility of routine influenza vaccinations for infants and toddlers are unknown.

Objective: To assess among English-speaking caregivers of children aged 6 to 23 months opinions about childhood influenza vaccination and potential knowledge, attitudinal, and demographic factors that might influence such opinions.

Methods: A structured, interviewer-administered survey of knowledge, attitudes, and beliefs about the influenza vaccine among parents and caregivers of children at the ambulatory pediatric clinic or the pediatric emergency department of a large tertiary care teaching hospital. The dependent measure was respondents’ expressed intentions to have their eligible children immunized against influenza in the upcoming season.

Results: We interviewed 153 caregivers. One hundred nineteen (78%) expressed intent to immunize. Safety was reported by 70 respondents (46%) as their most important concern, followed by the belief that the influenza vaccine could itself cause influenza (31 respondents, 20%). Respondents who believed that influenza was serious, that the influenza vaccine does not cause disease, or that all babies should be immunized had greater intent to immunize than those who did not (85%, 87%, and 96% vs 66%, 66%, and 49%, respectively). Those who believed that vomiting was a symptom of influenza, who did not name any vaccine adverse effect, or who had high school or lower educational levels also had greater intent to immunize (87%, 89%, and 83% vs 66%, 69%, and 69%, respectively).

Conclusion: Knowledge, attitudes, beliefs, and educational levels each had an independent influence on parents’ intentions to vaccinate the child, whereas demographic factors other than education did not.


Because of the potential severity of influenza among otherwise healthy infants and toddlers, and the availability of a safe and efficacious vaccine, the American Academy of Pediatrics and the Advisory Committee on Immunization Practices issued a new recommendation broadening the pool of children who should be routinely vaccinated. Under the new guideline, healthy children aged 6 to 23 months should be routinely vaccinated. (The previous recommendation was that these children be vaccinated “when feasible.”)

Although widespread implementation of the new recommendation is anticipated to reduce the burden of disease, significant practical obstacles could hamper adherence to the guideline. With an estimated 5.5 million US children in the target age group, an annual immunization campaign represents a substantial undertaking. Because of annual variations in the predominant strain of the influenza virus, a new vaccine must be developed each year and be manufactured, distributed, and administered within a short window of opportunity during the fall and early winter months. For children younger than 9 years who receive the injectable vaccine for the first time, the Advisory Committee on Immunization Practices recommends that a second dose be given at least 4 weeks after the first. The majority of targeted children must therefore make 1 or 2 closely spaced visits to their primary care providers’ offices in a short time period. Because such visits would not otherwise happen, this requirement adds to the complexity of adhering to the guidelines.

Successful implementation of the new guidelines in the face of such substantial barriers will require a carefully planned cam-

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campaign that incorporates a thorough knowledge not only of the biological science involved, but also of the knowledge
dis abrupt or believe about the influenza vaccine. Parents have
and beliefs, and behaviors of the 2 main stakeholders involved: healthcare providers and families with
children in the target population.

Although evidence indicates that many pediatricians and family practitioners have a positive attitude toward
the new recommendations and believe that implementation is feasible,13 little is known about parents’ and care-
givers’ opinions about the influenza vaccine. Parents have had a generally positive attitude toward other routine vac-
cinations but tend to believe that more vaccines are given
than are needed.14 Such attitudes or beliefs might influ-
cence caregivers’ behaviors regarding the new recommen-
dations and could impede successful implementation of
the guidelines despite providers’ general enthusiasm for
the vaccine. To better understand caregivers’ attitudes,
we designed the current study with the objectives of
assessing the following opinions among English-speaking
caregivers of children aged 6 to 23 months:

• Intention to provide influenza vaccination to their

Children.

• Knowledge, attitudinal, and demographic factors that

influence such opinions.

METHODS

Subjects were the parents or caregivers of children who came
for care at either the ambulatory pediatric clinic or the pedi-
atric emergency department (PED) of a large tertiary care teach-
ing hospital. All subjects were 18 years of age or older. Only
caregivers who were parents or guardians of children aged 6
through 23 months were eligible. Caregivers were excluded from
the study if the English-speaking interviewer felt that they did
not have sufficient receptive and expressive language to com-
municate effectively with her or, in the PED, if the chief com-
plaint indicated the need for exceptional urgency or privacy.
The study interviewer conducted recruitment in the waiting
room of the clinic and in individual examination rooms in the
PED prior to evaluation by the attending physician. The clinic,
but not the PED, was a routine site of influenza vaccine ad-
ministration in this and previous seasons. This study was con-
ducted June through August 2003, in anticipation of the up-
coming influenza season and vaccine campaign.

We used a structured, interviewer-administered survey in-
strument. The instrument contained 28 items. Investigators con-
structed survey questions using expert opinion and prior expe-
rience. Individual questions were pretested among office staff
members who had children in the target age group. Most of the
basic demographic and socioeconomic information was elicited
using multiple-choice questions. Respondent gender was sight-
coded by the interviewer, and race and ethnicity were self-
reported by respondents. The dependent measure, the respon-
dents’ intentions to have their eligible children immunized in the
upcoming season, was assessed with a single yes/no question, “If
your child’s doctor recommends it this coming fall, would you
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frequency of their being ranked likely/very likely to influence the respondent to immunize his or her child.

The proportion of all respondents who answered true for the statement "Influenza vaccine can cause influenza" was 49%. It was 56% for "One of the main symptoms of influenza is vomiting" and 63% for "Many babies who catch influenza need to be treated in the hospital."

The majority of respondents (94%) listed the physician office or clinic as the first choice of site for receiving the vaccine. Three percent listed public health clin-

Table 1. Demographic Characteristics

<table>
<thead>
<tr>
<th>Recruitment Site, No. (%)</th>
<th>Total (N = 153)</th>
<th>Clinic (n = 100)</th>
<th>PED (n = 53)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>128 (84)</td>
<td>87 (87)</td>
<td>41 (77)</td>
<td></td>
</tr>
<tr>
<td>Self-reported race</td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>White</td>
<td>53 (35)</td>
<td>23 (23)</td>
<td>30 (57)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>68 (44)</td>
<td>55 (55)</td>
<td>13 (25)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>4 (3)</td>
<td>1 (1)</td>
<td>3 (6)</td>
<td></td>
</tr>
<tr>
<td>American Indian</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>1 (2)</td>
<td></td>
</tr>
<tr>
<td>African American mixed</td>
<td>15 (10)</td>
<td>12 (12)</td>
<td>3 (6)</td>
<td></td>
</tr>
<tr>
<td>Non–African American, mixed</td>
<td>6 (4)</td>
<td>5 (5)</td>
<td>1 (2)</td>
<td></td>
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<tr>
<td>Other</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td>1 (2)</td>
<td></td>
</tr>
<tr>
<td>Chose not to answer</td>
<td>4 (3)</td>
<td>3 (3)</td>
<td>1 (2)</td>
<td></td>
</tr>
<tr>
<td>Self-reported ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td>Hispanic</td>
<td>17 (11)</td>
<td>15 (15)</td>
<td>2 (4)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>135 (88)</td>
<td>84 (84)</td>
<td>51 (96)</td>
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<tr>
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<td>1 (1)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Highest educational level</td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>Less than high school</td>
<td>37 (24)</td>
<td>31 (31)</td>
<td>6 (11)</td>
<td></td>
</tr>
<tr>
<td>High school graduate</td>
<td>58 (38)</td>
<td>44 (44)</td>
<td>14 (26)</td>
<td></td>
</tr>
<tr>
<td>Some college</td>
<td>38 (25)</td>
<td>19 (19)</td>
<td>19 (36)</td>
<td></td>
</tr>
<tr>
<td>College graduate</td>
<td>13 (9)</td>
<td>5 (5)</td>
<td>8 (15)</td>
<td></td>
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<tr>
<td>Postgraduate</td>
<td>7 (5)</td>
<td>1 (1)</td>
<td>6 (11)</td>
<td></td>
</tr>
<tr>
<td>Estimated total household income, $</td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>0 – 14 999</td>
<td>59 (39)</td>
<td>50 (50)</td>
<td>9 (17)</td>
<td></td>
</tr>
<tr>
<td>15 000 – 49 999</td>
<td>67 (44)</td>
<td>44 (44)</td>
<td>23 (43)</td>
<td></td>
</tr>
<tr>
<td>≥50 000</td>
<td>22 (14)</td>
<td>3 (3)</td>
<td>19 (36)</td>
<td></td>
</tr>
<tr>
<td>Chose not to answer</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>1 (2)</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>3 (2)</td>
<td>2 (2)</td>
<td>1 (2)</td>
<td></td>
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<tr>
<td>Index child’s primary insurance</td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
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<tr>
<td>Commercial</td>
<td>52 (34)</td>
<td>16 (16)</td>
<td>36 (68)</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>99 (65)</td>
<td>83 (83)</td>
<td>16 (30)</td>
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</tr>
<tr>
<td>None</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>1 (2)</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: PED, pediatric emergency department.

Figure 1. The proportions of respondents who said that they would be likely or very likely to have their children immunized in the upcoming influenza season if each factor shown were true.
ics, 2% listed school, and 1% listed grocery stores as their first choice.

Figure 2 shows concerns about the vaccine as the proportion of respondents ranking each proposed concern as most important. Safety was overwhelmingly the most common primary concern, reported by 46% of respondents, followed by the belief that the influenza vaccine could itself cause influenza (20%).

When asked to name possible adverse effects of the influenza vaccine, 43% of respondents indicated none or “don’t know.” The most commonly listed adverse effects were fever (20%), the belief that the vaccine could cause influenza itself (11%), allergy (5%), and “getting sick” (4%). Nineteen other possible adverse effects were each listed by less than 3% of respondents.

Table 2 shows odds ratios for each dichotomous variable that had a statistically significant relationship with the dependent variable on univariate analysis. Only 1 demographic variable (educational level) was significantly associated (negatively) with the intent to immunize. Adjusted odds ratios are shown, controlling for educational level; there was little change. There was no difference in the intention to immunize based on survey site (clinic or PED).

Little is known about parents’ and other caregivers’ knowledge, attitudes, and beliefs about influenza disease, the influenza vaccination, and their relationships to the new recommendations. The results of the present study suggest that parents’ and caregivers’ knowledge about influenza and the vaccine, attitudes about adverse effects, and beliefs that infants in general should be immunized against influenza independently and significantly influenced their expressed intentions to immunize an at-risk child. We also found that the caregivers’ educational level had an independent effect on the intention to immunize: those with less than a college degree were more likely to intend to immunize their children. Educational level did not, however, affect responses to the other independent variables. Demographic variables other than educational level were found to have no impact on caregivers’ expressed intentions to immunize. Safety and the erroneous idea that the vaccine can cause influenza headed the respondents’ lists of concerns about influenza immunization. The most commonly ranked factors that respondents said would influence them to seek immunization were the prevention of ear infections, a no-cost vaccine, and having fewer safety concerns. Respondents ranked a moderate cost and other practical factors relatively low, in contrast with a recent survey of provider opinions13 in which costs, vaccine safety issues, and the inability to identify eligible children were most frequently cited as important potential barriers for practices to immunize children.

It is perhaps not surprising to find that the intention to immunize appears to be related to parents’ understanding of the seriousness of influenza and the safety and adverse effects of the vaccine. This finding would also partly explain the relatively low importance placed by respondents on practical aspects of obtaining the vaccine; a concerned and motivated caregiver would be less troubled by the number of vaccines, frequent trips to the doctor, or a moderate cost. In contrast with what is known about the strong influence of race on adult influenza immunization rates,15 our finding that significant demographic associations (other than educational level) did not influence the intentions might also be attributable to the degree to which parents’ concerns and motivations help them overcome barriers imposed by their social locations.18 It is of course equally possible that expressed intent to immunize and actual immunization rates will differ along demographic lines.

This study’s findings can be incorporated into specific approaches to increasing vaccination rates. Physicians and health educators should focus on amplifying caregivers’ existing knowledge of the seriousness of influenza among young children and on enhancing their understanding of the safety and the low rate of adverse effects from the vaccine. Physicians and educators should pay particular attention to combating the myth that the vaccine itself can cause influenza, a particularly troubling finding. Although health care providers surveyed previously13 emphasized practicality and convenience, our findings suggest that improving those factors for caregivers is not likely to substantially enhance immunization rates. Provider time and resources might be better directed at educational and safety concerns. This study was conducted before the widely publicized deaths during the 2003-2004 season17 and the vaccine shortage being experienced in the current season. Our data suggest that these 2 events will reinforce in the public mind the seriousness of influenza and the importance of obtaining prompt immunization for vulnerable populations.

LIMITATIONS

This study’s results must be interpreted in the context of several methodological limitations, most of which might affect whether our findings can be generalized. The survey tool was pilot-tested for usability but was not rigorously tested for reliability or external validity. The survey was conducted in only 1 geographic location in the United States, so that
Among the respondents in this limited sample, confidence in the safety of the influenza vaccine and knowledge of its potential adverse effects were positively associated with intent to immunize children in the population targeted by the Advisory Committee on Immunization Practices’s new recommendations. In contrast with concerns expressed by health care providers, the cost and practicality of the increased number of vaccines were not identified as major potential barriers to immunizing young children. Demographic factors were not associated with the intent to immunize, with the exception of a negative association with educational level. Influenza vaccine campaigns aimed at consumers should focus on vaccine safety and on expanding the knowledge base about influenza disease among caregivers with children in the target age groups.

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REFERENCES