Pediatrician Attitudes Concerning School-located Vaccination Clinics for Seasonal Influenza

abstract

OBJECTIVE: Vaccinating all children aged 6 months to 18 years every year has potentially large ramifications for office-based primary care pediatricians. We determined the degree to which pediatricians support routine annual influenza vaccination outside the medical home, especially in school-located mass influenza vaccination clinics.

METHODS: Internet-based survey sent in May and June 2009 to all 623 currently practicing primary care general pediatricians who were members of the Maryland Chapter of the American Academy of Pediatrics.

RESULTS: Of those surveyed, 193 (31%) responded. Approximately 67% reported they vaccinated more than half the children in their practice with at least one dose in the 2008–2009 influenza season, and about half anticipated that, in their office, they would not attain ≥75% coverage of all patients older than 5 months of age. Approximately 27% of respondents predicted they would likely have difficulty obtaining sufficient vaccine to cover commercially insured patients, and 32% were likely to have difficulty getting sufficient vaccine to cover Medicaid, underinsured, and uninsured patients because of ordering or distribution problems. Approximately 78% of respondents cited borderline or poor reimbursement for influenza vaccinations, and 53% had unused vaccine at the end of the 2008–2009 influenza season. Ninety-six percent of respondents supported school-located influenza vaccination programs in their community for their patients.

CONCLUSIONS: These results indicate awareness by primary care pediatricians in Maryland of the potential difficulties involved in implementing universal influenza vaccinations in their practice and their support of school-located vaccination programs managed by the local health department in their community. Pediatrics 2012;129:S96–S100

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KEY WORDS
immunization programs, influenza vaccination, mass vaccination, school-aged population, school health services

ABBREVIATIONS
LAIV—live attenuated influenza vaccine
TIV—trivalent influenza vaccine
MDAAP—Maryland Chapter of the American Academy of Pediatrics
VFC—Vaccines for Children

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Prevention of influenza infections in children has been an increasing public health focus in this country over the past decade. This is largely due to the vulnerability of children, including their high rate of hospitalization, high rate of medical utilization, and increased school absenteeism.1–4

In addition to their vulnerability, preschool- and school-aged children are important primary vectors in the spread of influenza to their families and communities. Compared with adults, children experience higher rates of influenza infection, are the first to become infected, and tend to shed greater quantities of influenza virus and for longer periods of a time once infected.5–10 Limiting influenza infections in children can limit its spread to families and the community.11–14

Accordingly, in 2008, the Advisory Committee on Immunization Practices recommended universal influenza vaccination for all children aged 6 months to 18 years with implementation beginning in 2008–2009 influenza season if feasible, and no later than during the 2009–2010 influenza season.15 With these new recommendations, ~83% of the US population was recommended to receive an annual influenza vaccination.16

For over half a century, the medical office-based setting has been the primary site of vaccine administration to most children for all antigens. In Maryland, at the onset of the 2008–2009 winter season, several primary-care pediatrician members of Maryland Chapter of the American Academy of Pediatrics (MDAAP) voiced concern about their ability to vaccinate every child aged 6 months or older against influenza because of office space, time, and staffing issues (V.A.K., personal communication, 2009). For the 2009–2010 influenza season, pediatric primary care clinicians faced the additional challenge of administering influenza vaccine against influenza A (H1N1) 2009 as well as against seasonal strains. Well-planned community-based pediatric influenza campaigns have served as a means to potentially achieve higher influenza vaccination rates among children. A natural setting for such a campaign is the child’s school. Schools offer a central location in which a large number of children are gathered and therefore could be vaccinated efficiently and conveniently. Studies have demonstrated that mass school-located influenza vaccinations are feasible and efficient.17

Little is known about the attitudes of pediatric clinicians toward influenza vaccinations if they were to be administered by staff not affiliated with the practice at a site other than their office practice and outside their sphere of influence. Primary care pediatric clinicians could potentially feel threatened by such programs if they were seen as a threat to their practice income, the concept of a medical home, or the business of delivering routine vaccines. Additionally, off-site administration of vaccine does not permit the office-based pediatrician the assurance of the quality of the vaccination process or personal care delivered to the children of their practice, for whom they have a strong sense of medical responsibility.

The purpose of this study was to query primary care pediatricians in Maryland to determine barriers to universal influenza vaccination in their office and their level of support for school-located influenza immunization programs in their community.

METHODS
We developed and pilot-tested a short Internet survey concerning influenza immunization practices and opinions of Maryland pediatricians. By using their e-mail addresses, in May to June 2009 we sent each registered member of MDAAP up to 6 invitations to participate in this survey. The questionnaire was then made available to them by using Survey Monkey (Portland, OR). The survey was set up to be anonymous and to limit repeat responses, so that only 1 response was allowed from any 1 computer. Of the surveys returned, we excluded any completed by pediatric specialists and retirees. The final study sample thus included only MDAAP-registered general pediatricians. This study was reviewed and approved by the University of Maryland, Baltimore Institutional Review Board.

Survey questions concerned the characteristics of the pediatricians and their practice, the estimated proportion of children in their practice who received influenza vaccine during the 2008–2009 season, and the predicted proportion likely to be vaccinated in the 2009–2010 season. Additional questions also concerned logistical aspects of the 2008–2009 vaccination season, including difficulty obtaining adequate doses of vaccine, compensation for administering influenza vaccine, and having unused residual vaccine at the end of the influenza season. We then asked questions about physician attitudes toward mass influenza vaccinations of their patients in daycare or school settings if managed by their local health department. Additional details included their preferred choice of influenza vaccine formulation (ie, intranasal versus intramuscular injection) and vaccinating only healthy versus healthy and chronically ill or immunosuppressed patients in a school setting. These questions included caveats that the vaccine would be administered in accordance with FDA regulations, parental consent would be obtained, and the primary care physician would receive notification that the vaccine was given.

RESULTS
Of the 623 primary care general pediatricians registered as MDAAP members, 193 responded, yielding a 31% response rate. The respondents practiced in 17
(71%) of the 24 Maryland counties. Of these physicians, ~19% were aged ≤40 years, 60% were aged 41 to 61 years, and 22% were aged >60 years. Seventy-eight percent were white, 10% were black, and 10% were Asian, and 2% were other. Fifty-eight percent were female. Their practice sites were urban for 28%, suburban for 64%, and rural for 8%, roughly reflecting the demographics of the state. The number of practitioners in each of the practices varied from 1 (solo) for 7%, 2 to 5 for 47%, 6 to 10 for 31%, and >10 for 15% of the respondents.

Table 1 indicates each practitioner’s estimated proportion of patients who received at least 1 dose of influenza vaccine in their practice during the 2008–2009 influenza season and the proportion of patients they projected to receive influenza vaccine during the upcoming 2009–2010 season. Although only 25% (95% CI: 20%–30%) of the practitioners estimated they vaccinated 75% or more of their patients aged ≥6 months during the 2008–2009 season, 49% (95% CI: 43%–55%) anticipated vaccinating this many during the 2009–2010 season.

Concerning vaccine availability and provider compensation, 27% (95% CI: 22%–32%) of providers reported difficulty obtaining adequate supplies of vaccine in the 2008–2009 season for their privately insured patients, and 32% (95% CI: 26%–38%) reported such difficulty for their Medicaid and underinsured patients, including those in the Vaccines for Children (VFC) program. Only 22% (95% CI: 17%–27%) of the primary care providers reported profitable reimbursement for vaccination; 54% (95% CI: 48%–60%) reported recovery of their costs, and 24% (95% CI: 19%–29%) were compensated at levels below their cost. Finally, 53% (95% CI: 47%–59%) reported having some unused influenza vaccine after the 2008–2009 season, either from their privately purchased or VFC stock, with 17% (95% CI: 13%–21%) reporting that >5% of their vaccine remained unused. Respondents generally supported the concept of vaccine administration in sites other than their office, if such programs in such sites were associated with their local public health department. Ninety-six percent indicated the idea of school-located influenza vaccination programs when managed by their local health department. Only 4% of the respondents indicated they would not support any school-located vaccination programs. Among school-located vaccination scenarios, the most popular program among respondents (53%) was the broadest proposal, in which healthy children would receive either LAIV or TIV, and children at high risk would receive TIV.

**DISCUSSION**

Nearly all the pediatricians surveyed here accepted the value of having a child in their practice vaccinated at a school-located facility managed by the local health department. This can have a positive impact on seasonal influenza vaccination rates among children. Universal influenza vaccination before or during the influenza season presents a significant challenge to office-based pediatricians. How do they provide 1 or 2 such vaccinations in their office during the busy fall-winter season each year for nearly all their patients, while continuing to offer quality care for their regular flow of patients? This self-reported survey reveals some practices and barriers in attempting to do so. As expected, the reported anticipated pediatric practice vaccination rates increased from 2008–2009 to 2009–2010, but are not yet near the eventual goal of universal vaccination. Logistic issues for practitioners include problems obtaining vaccine, inadequate reimbursement, and concern about having nonreturnable, nonrefundable, unused influenza vaccine remaining at the end of the season.

This study points out the pediatrician’s paradox of having too little vaccine in the fall, but too much unused vaccine the following spring, after which it expires. In 1 common scenario, the pediatrician receives only several hundred influenza vaccine doses in the early fall that are designated for patients covered under the VFC program. These doses are quickly used, and more vaccine is reordered by November. However, the second aliquot of vaccine does not arrive until early the next year, when

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**TABLE 1** Maryland Primary Care Pediatricians’ Perceptions (N = 193) on Influenza Vaccine Use in Their Practice

<table>
<thead>
<tr>
<th>Percent of clinicians estimating they <strong>will</strong> vaccinate the VFC program of age who were or will be vaccinated against influenza</th>
<th>&lt;25%</th>
<th>25%–49%</th>
<th>50%–74%</th>
<th>75%–95%</th>
<th>&gt;95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of clinicians estimating they <strong>did</strong> vaccinate the proportion of patients &gt;6 mo noted above for 2008–2009 influenza season</td>
<td>5% (2%–8%)</td>
<td>29% (24%–34%)</td>
<td>41% (35%–47%)</td>
<td>23% (18%–28%)</td>
<td>3% (1%–5%)</td>
</tr>
<tr>
<td>Percent of clinicians estimating they <strong>will</strong> vaccinate the proportion of patients &gt;6 mo noted above for the 2009–2010 influenza season</td>
<td>0%</td>
<td>10% (6%–14%)</td>
<td>42% (36%–48%)</td>
<td>38% (32%–44%)</td>
<td>10% (4%–16%)</td>
</tr>
</tbody>
</table>

Brackets indicate 95% confidence limits.
TABLE 2 Maryland Primary Care Pediatricians’ Perceptions (n = 193) on Their Support for Mass Influenza Vaccination Efforts Outside the Practice

<table>
<thead>
<tr>
<th>Scenario: Mass vaccination of their patients in daycare or school run by a local health department</th>
<th>Percentage supporting such a practice for each age group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage supporting such a practice for each patient status category</td>
<td>Aged 6–23 mo (55% [49%–51%])</td>
</tr>
</tbody>
</table>

### Table Notes
- **Scenario:** Mass vaccination of patients in daycare or school run by a local health department.
- **Percentage:** Support for mass vaccination as a practice for each age group.
- **Patient Status Category:** No, not for any patient; Yes, using either LAIVa and TIVb for healthy patients and TIV for high riskc patients; Yes, using only LAIV for healthy patients and only TIV for high risk patients.

### Table Explanation
- **Aged 6–23 mo:** 55% [49%–51%] for healthy patients and TIV for high risk patients.
- **Aged 24–59 mo:** 73% [68%–78%] for healthy patients.
- **Aged 5–11 y:** 96% [94%–98%] for healthy patients.
- **Aged 12–18 y:** 96% [94%–98%] for healthy patients.

### Notes
- **a** Live attenuated influenza vaccine, intranasal.
- **b** Trivalent inactive influenza vaccine, parenteral.
- **c** High risk indicates children with chronic disease or immunosuppression.

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A large proportion of respondents supported off-site vaccination for schoolaged and younger children, but even 55% of respondents supported off-site vaccination for children younger than age 2.

A survey of 193 Maryland pediatricians found that, when asked about their support for mass vaccination efforts outside the practice, there was a wide range of responses. The majority of respondents were willing to support mass vaccination for children younger than age 2, but only 55% of respondents supported off-site vaccination for schoolaged children.

Several study limitations exist. Most respondents comprised only 31% of the primary care members in Maryland, and not all pediatricians were excluded due to small numbers. Additionally, the respondents represented a broad range of demographics that were similar to the demographics of the medical practice staff in Maryland.

Even though the survey respondents were physicians who have or will receive influenza vaccine during any 1 season, nearly all respondents approved vaccination of both healthy and high-risk children in the school setting. The most significant finding was the high support for off-site vaccination of healthy children, but even 55% of respondents supported off-site vaccination for high-risk children.

The survey results were consistent with previous research, which found that vaccination of healthy children is strongly supported by pediatricians. However, barriers to universal vaccination, such as poor reimbursement for vaccination visits, have been identified as a substantial burden. Implementing special vaccination sites in school settings may help overcome these barriers.

In conclusion, the survey results suggest that pediatricians are willing to support mass vaccination efforts outside the practice, particularly for healthy children. However, further research is needed to identify and address barriers to universal vaccination, such as poor reimbursement, to increase vaccination rates.

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Only 4% of respondents indicated that they were willing to support vaccination of high-risk patients in a school-based program. This finding is consistent with previous research, which found that pediatricians are more likely to support vaccination of healthy children than high-risk children.

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REFERENCES


CONCLUSIONS

This study indicates that several key logistical problems exist in achieving universal influenza vaccination of children in the office setting. This survey revealed substantial support by primary care pediatricians for school-located influenza immunization of their pediatric patients. These findings support the use of school-located programs to help achieve the goal of annual universal vaccination of children aged ≥6 months against influenza. When planning such an influenza vaccination campaign, it is essential that local health departments communicate early and frequently with primary care pediatricians to help them titrate the level of vaccine purchases and possible extra “vaccine clinics” planned for their office practices. Support by pediatricians in office practices for school-located programs managed by the local public health system could greatly facilitate the common goal of achieving higher influenza vaccination rates among children.

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