

# Pharmacists and Childhood Vaccines

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Vaccination rates of children in the United States remain below the target coverage levels identified in the Healthy People 2020 objectives. Given the success of pharmacists in providing adult vaccinations and the accessibility of pharmacists to the public, expanding pharmacists' authority to vaccinate children may improve vaccination rates of children, particularly in key disease states. This article serves as a Position Statement of the Pediatric Pharmacy Advocacy Group (PPAG), who supports the expansion of pharmacists' authority to vaccinate children. PPAG also believes that increased use of state vaccination registries by pharmacists will help improve communication and documentation of vaccines between providers. PPAG also recommends that continued education and maintaining current knowledge of vaccines and vaccine schedules are vital for pharmacist immunizers. Finally, PPAG believes that pharmacists should be advocates for childhood vaccinations.

**ABBREVIATIONS** CDC, Centers for Disease Control and Prevention; HPV, human papillomavirus; MMR, measles, mumps, and rubella; PPAG, Pediatric Pharmacy Advocacy Group; Tdap, tetanus, diphtheria, and acellular pertussis; VAERS, Vaccine Adverse Event Reporting System

**KEYWORDS** advocacy; childhood; immunizations; pediatric; pharmacist; vaccinations

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## Background

Pharmacists' authority to vaccinate varies widely based on individual state laws. Each state has specific requirements, with many states imposing age limitations, specifying specific vaccines, and requiring protocols or prescriptions.<sup>1</sup> The statistics presented here are current as of January 2018. Pharmacists are permitted to administer influenza, pneumococcal, and zoster vaccines in all states and territories.<sup>1–4</sup> In 48 out of 52 states (including Puerto Rico and Washington, DC), pharmacists are able to administer any vaccine, with the 4 other states allowing limited vaccine administration.<sup>1</sup> Eighteen states have moved toward allowing pharmacists to provide influenza vaccines to patients without a protocol or receipt of a prescription.<sup>1</sup>

The variability widens further with regard to pharmacists' authority to provide vaccinations to pediatric patients. As of July 2016, 27 states did not have any age-specific limitations. Most states fall in the middle, allowing pharmacists to vaccinate some pediatric patients but providing a minimum age allowance, ranging from 3 years (Arizona) to 14 years (North Carolina).<sup>1</sup> Puerto Rico and 4 states (Connecticut, Florida, New York, and Vermont) still do not allow pharmacists to vaccinate children,<sup>1</sup> though exceptions have been made during outbreaks and through collaborative practice agreements.

The benefit of utilizing pharmacists as vaccinators has been documented in multiple studies. In a 2013 survey<sup>5</sup> of community pharmacies, it was reported

that 86% of community pharmacy practice settings have pharmacists providing vaccinations. Patients in medically underserved areas are at high risk of being undervaccinated; during the 2009–2010 influenza season, it was found that more than one-third of influenza vaccinations in these areas were administered in pharmacies.<sup>6</sup> Benefits of pharmacist-administered vaccines include accessibility, convenience, extended hours, and widespread locations. It has been noted<sup>7,8</sup> that adults who have not been for a routine checkup in over a year are more likely to get an influenza vaccine in a non-medical clinic setting. The opportunity to receive vaccines outside of the medical clinic setting may help to increase vaccination rates in those patients who are less likely to be seen for routine medical care. Pharmacists are able to utilize patient information such as medication profiles and age to convey vaccine information and to provide recommendations to the general public. Pharmacists have been proven to play a critical role in immunization through education and administration. One study<sup>9</sup> found that patients seen by a pharmacist immunizer using an immunization needs assessment were 18 times more likely to become current on adult immunizations than were those who were just given an immunization needs assessment by other health care professionals. A recent systematic review and meta-analysis<sup>10</sup> evaluating the impact pharmacists have on patients obtaining immunizations demonstrated that in the 36 studies evaluated, all reported that pharmacists consistently improved vaccination coverage. The evaluation was slightly limited, as the vast majority of stud-

ies included primarily influenza and/or pneumococcal vaccines rather than all vaccinations.<sup>10</sup> The opportunity to improve childhood vaccination rates, particularly in the medically underserved, is clear.

The impact of pharmacists on vaccination is not limited to adult patients. Pharmacists have also demonstrated their impact in pediatric immunizations through ambulatory clinics. One study<sup>11</sup> compared vaccination rates between a pediatric ambulatory clinic with and without a pharmacist. The clinic with the pharmacist had fewer missed vaccine opportunities (46 versus 132,  $p = <0.001$ ) and lower rates of vaccination errors (0.28% versus 2.7%,  $p = 0.002$ ). A second study<sup>12</sup> evaluated a pediatric ambulatory care pharmacist's impact on vaccination rates. This study, however, focused on evaluating if using clinical decision support was enough compared to the addition of a clinical pharmacist. The clinic with the pharmacist had fewer missed vaccine opportunities (6% versus 10%,  $p = 0.015$ ).<sup>12</sup> There were only 2 vaccine errors reported, both of which occurred in the group without the pharmacist, but the incidence of this event was not statistically significant. Based on these data, pharmacists can play a significant role in improving vaccination rates in both pediatric and adult populations.

Vaccination rates among children in the United States are below those targeted in the Healthy People 2020 goals.<sup>13</sup> In 2015 the percentage of children aged 19 to 35 months in the United States receiving the 7-vaccine series of appropriate vaccinations was 72.2%.<sup>14</sup> The following indicate specific percentages of children who received the full series of each vaccine in the same patient population that year: diphtheria/tetanus or tetanus/diphtheria/acellular pertussis (Tdap) (84.6%); polio (93.7%); measles, mumps, and rubella (MMR) (91.9%); Haemophilus influenzae type b (82.7%); hepatitis B (92.6%); varicella (91.8%); and pneumococcal conjugate vaccine (84.1%).<sup>14</sup> The Healthy People 2020 goal for each of these vaccines among children aged 19 to 35 months is 90%<sup>13</sup>; therefore, as of 2015, only the MMR vaccination rate is at goal. Adolescents aged 13 to 17 years in 2015 received the following vaccines with associated frequencies: MMR (90.7%), hepatitis B (91.1%), varicella or history of varicella (86.1%), Tdap (87.6%), meningococcal (81.3%), and human papillomavirus vaccine (HPV) (41.9% for females, 28.1% for males).<sup>15</sup> Of note in the adolescent group, the Healthy People 2020 goal for HPV vaccination in both males and females is 80%.<sup>13</sup> There is a clear public health need for improved vaccination rates among children of all age groups.

## Recommendations

**Permission to Vaccinate.** The PPAG recommends that states increase the authority of pharmacists and pharmacy students (under the supervision of a pharmacist) to vaccinate children, focusing on the authority to administer the influenza, pneumococcal, meningo-

coccal, HPV, and Tdap vaccines. One age group that stands to benefit from increased pharmacist authority to vaccinate is adolescents. One study<sup>16</sup> found that one-third of adolescents from age 13 through 17 years had no preventative care visits during the 4-year study period, and another 40% had only one such visit, with non-preventative care visits being the most frequent. Accessibility to routine vaccinations for adolescents by pharmacists may improve vaccination rates in this age group.

**Documentation.** The PPAG believes that the maintenance of a complete and accurate lifetime vaccination record is vital to the pharmacist's expanding role in providing vaccinations. State immunization registries serve to consolidate patient immunization information and should be used whenever possible. Some pharmacists are required by their state to report immunizations to the state registry, some have access but are not required to report, and some do not have access at all.<sup>17,18</sup> PPAG believes that pharmacies should have access to and be required to report to all such state registries. In states where this is not possible and where pharmacists do not have access to a state registry, they should communicate all immunizations to the patient's primary physician.

The Vaccine Adverse Event Reporting System (VAERS) was developed in 1990 secondary to the National Vaccine Injury Act of 1986.<sup>19</sup> VAERS is co-administrated by the Food and Drug Administration and the Centers for Disease Control and Prevention (CDC) and depends on voluntary reporting of adverse reactions from health care professionals, patients, and manufacturers.

The PPAG believes that pharmacists who become aware of adverse reactions that may be related to vaccine administration should file a report with VAERS, even if they are unsure if the event is vaccine-related. Some adverse reactions are so rare that they cannot be recognized in clinical trials. This method of postmarketing surveillance can assist in recognition of these rare adverse events.

**Advocacy.** The PPAG believes that regardless of the pharmacist's legal authority to administer immunizations, all pharmacists should actively work to engage the public and educate about the importance of routine immunizations. It has been demonstrated<sup>10</sup> that pharmacists can increase uptake of immunizations when acting as educators, facilitators, or administrators. Misinformation regarding immunizations, particularly those in the childhood schedule, is rampant and widespread. A consistent message from a visible, trusted health care professional can assist in assuaging a parent's fears and misconceptions. Pharmacist counseling regarding immunizations has been shown<sup>20</sup> in the adult population to increase vaccination rates. Education provided by pharmacists to encourage compliance with the childhood vaccine schedule can help to reinforce counseling

**Table.** Recommendations of the Pediatric Pharmacy Advocacy Group Regarding Pharmacist Provision of Vaccines for Pediatric Patients

- States should increase the authority of pharmacists and pharmacy students (under the supervision of a pharmacist) to vaccinate children, initially focusing on influenza, pneumococcal, meningococcal, HPV, and Tdap vaccines.
- A national database should be developed that provides secure patient-specific lifetime vaccination records that are accessible to healthcare workers who administer vaccines.
- All pharmacists should actively work to engage the public and educate about the importance of routine immunizations.
- Pharmacists who have legal authority to administer immunizations should acquire a minimum of at least 1 hour of annual continuing education related to immunizations.

HPV, human papillomavirus; Tdap, tetanus, diphtheria, and acellular pertussis

provided by the pediatrician. This team-based approach ensures that parents receive a consistent, appropriate message.

**Continuing Education.** The PPAG recommends that pharmacists pursue ongoing immunization education and keep abreast of the latest vaccine schedules and updates in order to provide the most up-to-date information. In addition, the PPAG recommends that at least 1 hour per year of immunization continuing education credit for those actively involved in immunizing patients and providing immunization education. Continuing education should include relevant updates in pediatric immunizations. The pharmacists should have access to the most recent CDC vaccine schedule and familiarize themselves with any changes each year. In addition, pharmacists should monitor for updates from the Advisory Committee on Immunization Practices, which may include changes to the vaccine schedule, intervals between vaccines, and other important scheduling considerations. When considering any vaccines procured through the Vaccines for Children program, pharmacists should follow Vaccines for Children—Advisory Committee on Immunization Practices “Vaccine Resolutions.”

These recommendations are summarized in the Table.

## Conclusion

Pharmacists should advocate to expand their authority to vaccinate pediatric patients. The documentation of these vaccinations is an important function for pharmacists when providing vaccines and can help to improve communication with primary pediatricians. Educating the public is one of the most important roles of a phar-

macist and is especially important with vaccines so that patients receive an accurate, consistent message about safety and appropriate timing. Finally, maintaining competence with continuing education regarding vaccines is essential and should be a continual process.

## ARTICLE INFORMATION

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