

Pharmacists as Partners in Pediatric Immunizations: A White Paper From the Pediatric Pharmacy Association

Jennifer E. Giroto, PharmD; Kristin C. Klein, PharmD; M. Petrea Cober, PharmD; Amanda A. Cavness, PharmD; Tracy M. Hagemann, PharmD, MS; Selena Warminski, PharmD; and Tamara Hernandez, PharmD, MA, MBA; on behalf of the Immunization Committee of the Pediatric Pharmacy Association

ABBREVIATIONS CDC, Centers for Disease Control and Prevention; HPV, human papillomavirus; IIS, Immunization Information System; Men, meningococcal; PCV, pneumococcal conjugate vaccine; PPA, Pediatric Pharmacy Association; PPSV23, pneumococcal polysaccharide 23 valent vaccine; VAERS, Vaccine Adverse Event Reporting System; VFC, Vaccines for Children

KEYWORDS childhood; immunization; pharmacist; pharmaceutical services; pediatric; professional role

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Immunizations are one of the most successful public health interventions of our time. Unfortunately, since the COVID-19 pandemic, the rates of pediatric immunizations have decreased for routine vaccines. Pharmacists are easily accessible and well-educated health care professionals who receive comprehensive training on all facets of immunizations (e.g., mechanism of action, administration, response to reactions, documentation, communication). Pharmacists have demonstrated the ability to improve immunization rates for both adults and children. This paper serves as a White Paper of the Pediatric Pharmacy Association (PPA) to support the expansion of pharmacists' authority to provide immunizations to those 3 years of age and older, in line with the Centers for Disease Control and Prevention's (CDC's) recommended vaccine administration techniques. PPA also recommends that all states allow pharmacists 1) access to the immunization information system; and 2) ability to participate in the Vaccines for Children Program and with consideration of a counseling or office-like fee along with administration. Pharmacists should promptly report required reactions and all errors to the Vaccine Adverse Event Management System. Finally, PPA believes pharmacists who provide immunizations to pediatric patients should obtain and maintain their current knowledge of pediatric immunization recommendations by ensuring participation in pediatric-specific immunization continuing education programs.

Background

Immunizations are often touted as one of the most successful public health impacts of our time. This is because immunizations have prevented approximately 4 million deaths each year.¹ The Centers for Disease Control and Prevention (CDC) also estimate appropriate

immunization can prevent more than 50 million deaths in the 2020s.¹ It should be no surprise then that one of the main objectives of Healthy People 2030 involves pediatric immunization rates as a strong method to prevent infectious diseases.² Specifically, the pediatric goals are to maintain or increase rates of various (e.g., measles, mumps, and rubella; diphtheria, tetanus, and acellular pertussis; influenza; human papillomavirus [HPV]) immunizations.²

Unfortunately, during the COVID-19 pandemic overall pediatric immunization rates declined. This decrease particularly affected specific sociodemographic groups.³ Rates are lowest in Black and Hispanic children, those of lower socioeconomic status, and those living in rural areas.³ Despite the return to in-person activities, pediatric immunization coverage has not yet returned to pre-pandemic rates.⁴ Lower pediatric immunization rates are likely due to many factors including increased immunization hesitance and immunization safety fears and/or mistrust that have been caused, at least in part, from the significant anti-immunization movement.^{5–7}

Pharmacists can be part of the solution for these decreased immunization rates, because we are the most accessible health care providers and are well trained in providing immunizations.⁸ Most state laws and the Public Readiness and Emergency Preparedness Act for Medical Counter measures Against COVID-19 require pharmacists complete a training program specific to immunization (often 20 hours), certification in either basic life support or cardiopulmonary resuscitation, and completion of annual continuing education requirements specific to immunizations.⁹ See Appendix for links to specific state regulations for pharmacists' provisions of vaccinations (including via prescription, collaborative practice, or independent

authority) to pediatric patients and continuing education requirements.

As of 2023, all 50 states allow pharmacists to provide immunizations to some patients. The immunization administration technique recommended by the CDC is the same for patients 3 years of age and older.¹⁰ In all but 3 states, pharmacists can provide immunizations to some pediatric patients, with approximately 80% of states allowing pharmacists to provide some immunizations in addition to COVID-19 or influenza to pediatric patients older than 12 years. In 80% of states pharmacists have some immunization authority for younger patients (Appendix). Of those where younger ages are allowed, many states do not have any minimum age.

Pharmacists are the most accessible health care providers who can increase immunization rates when issued immunization authority for pediatric patients. One study using claims data demonstrated an increase of pharmacist provision of pediatric influenza immunization from 1.5% in 2010–2011 to 4.2% in 2016–2017. States without age restrictions had the most immunizations provided by pharmacists. However, overall immunization rates decreased when pharmacists were not permitted to immunize patients between the ages of 5 and 12 years, followed by 13 and 17 years.¹¹

Multiple studies have also demonstrated the addition of a pharmacist to a pediatric clinic improved immunization rates. Haas-Gehres and colleagues¹² compared immunization rates between a pediatric ambulatory clinic with and without a pharmacist. The clinic with the pharmacist had fewer missed immunization opportunities (46 versus 132, $p < 0.001$) and lower rates of immunization errors (0.28% versus 2.7%, $p = 0.002$). Another initiative in 2014 at a pediatric renal transplant clinic created an immunization intervention protocol using a dedicated pediatric transplant pharmacist. The investigators reported an improvement in the median percentage of children being up-to-date on immunizations from 80% (2012–2013 pre intervention) to 91% (2014–2015 post intervention).¹³ At Primary Children's Hospital in Salt Lake City, Utah, Zobell and colleagues¹⁴ reported improved immunizations at a cystic fibrosis ambulatory clinic from October 2021 to September 2022. With an immunization-trained pharmacist with access to immunization records of patients 2 years of age or older, improved rates of age-appropriate immunization were observed for pneumococcal polysaccharide immunization (27% to 99%), HPV immunization (43% to 91%), and meningococcal ACWY (MenACWY) immunization (24% to 97%).

During the COVID-19 pandemic, the benefits of pharmacist-administered immunizations became even more notable due to accessibility, convenience, extended hours, and widespread locations. The role is especially significant in rural areas and lower socioeconomic communities. In a 2022 CDC *Morbidity and Mortality Weekly Report*, pharmacies had administered 46.4% of

doses to children aged 5 through 11 years 11 weeks after launch of the pediatric COVID-19 vaccination program.¹⁵

Misinformation regarding immunizations, particularly those in the childhood schedule, is rampant and widespread. It has been demonstrated that pharmacists can increase uptake of immunizations by acting as educators, facilitators, or administrators to reinforce counseling provided by the pediatrician.¹⁶ A consistent message from a visible, trusted health care professional can assist in assuaging a parent's fears and misconceptions. Recent studies have demonstrated increasing support of pharmacists vaccinating pediatric patients. One study included 2 surveys conducted in 2014–2015 (HPV Vaccination Study and Adolescent Vaccination in Pharmacy Study) and determined the support of physicians and parents for pharmacists providing HPV immunization to adolescents.¹⁷ Sixty-four percent of physicians and 75% of parents supported pharmacists' provision of these immunizations either unconditionally or with proper immunization training.¹⁷ By 2020, it was more common to have pediatric patients vaccinated in pharmacies. In November 2020, Varisco and colleagues¹⁸ distributed a survey to parents of children 3 to 10 years of age to evaluate parents' intention to have their child vaccinated in a community setting. Seventy percent of the 416 respondents reported the intent to have their child vaccinated at a community pharmacy.

Recommendations

The PPA recommendations are provided in Box 1.

Immunization Authority. PPA recommends states increase the authority of pharmacists, pharmacy interns (under the supervision of a pharmacist), and pharmacy technicians (under the supervision of a

Box 1. Advocacy Recommendations

- The PPA supports continued expansion of pharmacists' authority to provide immunization to children and adolescents 3 years of age and older.
- PPA recommends all states allow for pharmacists to participate in the Vaccines for Children program (VFC) and supports allowing an office-like fee to be charged by pharmacists participating in the VFC program for immunization administration.
- PPA supports pharmacists having access to immunization information systems to maintain a complete immunization record.
- PPA recommends that pharmacists should document required reactions and errors to the Vaccine Adverse Event Reporting System and supports providing routine error documentation to improve patient safety.
- PPA recommends that pharmacists providing immunizations to pediatric patients should obtain initial education on working with pediatric patients and participate in pediatric-specific immunization continuing education to maintain competence.

PPA, Pediatric Pharmacy Association

pharmacist) to vaccinate children and adolescents 3 years and older in coordination with CDC immunization recommendations.¹⁹ Routine childhood immunization rates have dropped in association with the COVID-19 pandemic. According to a CDC report, immunization coverage decreased among kindergarteners for the 2021–2022 school year when compared with the previous school year.⁴ Throughout the pandemic, pharmacists helped to provide over 270 million COVID-19 immunizations within community pharmacies, accounting for more than 50% of COVID-19 immunizations given in the United States.²⁰ A conservative estimate of the impact indicated pharmacists providing testing, advocacy, and immunizations for COVID-19 resulted in an estimated \$450 billion in health care cost savings.²⁰ Despite the availability of immunizations, some children still miss recommended immunizations owing to various factors, including barriers to health care access, inability for pharmacies to carry specific COVID-19 immunizations, and absence of a reminder system in the electronic medical record for missed immunizations.²¹ Pharmacists, pharmacy interns, and pharmacy technicians able to both advocate for and vaccinate children 3 years of age and older can help bridge the immunization gap and ensure a more comprehensive approach to protecting children from preventable diseases.

Vaccines for Children Program. PPA recommends all states allow for pharmacists to participate in the Vaccines for Children (VFC) program and be reimbursed appropriately, including an office-like fee from this program. The VFC program is a federally funded program that provides free immunizations for eligible children (e.g., Medicaid, uninsured, cash pay). Although the VFC program guide suggests pharmacists can participate in the program if the laws of the state provide them with the authority to administer immunizations by prescription, protocol, or prescribing authority, other sources suggest only 34 states allow pharmacist enrollment in the VFC program.^{22,23} Many pharmacies in states where VFC enrollment is allowed do not participate owing to concerns regarding reimbursement policies. Although per the VFC program, no health care provider can deny access to these federally provided immunizations, pharmacist options for reimbursement are limited, while other health care providers can receive some funds through the office visit charges.²² Recommendations to allow pharmacists to charge (e.g., cash pay, Medicaid, private insurance) for an office visit fee similar to that which is charged by other health care providers would allow pharmacists to be compensated for their time and resources needed to provide immunizations.

Documentation. PPA supports access to, and maintenance of a complete immunization record, which is essential to the pharmacist's role in advocating for and providing immunizations. State immunization reg-

istries serve to consolidate patient immunization information and should be promptly updated and easily accessible by pharmacists. Unfortunately, immunization reporting access and laws are not managed at the federal level, but instead by the state, county, or city. One report suggested almost 60% of areas require all providers to report immunizations for at least some populations, often children.²⁴ A 2018 survey of community pharmacies throughout the United States reported 32% of pharmacies had no access to an immunization information system (IIS).²⁵ While it is likely this number has improved since 2018, many of these systems are one-directional and may only document the immunizations provided. This does not allow the pharmacist to review the IIS to provide the most appropriate immunization recommendations.

PPA believes pharmacies should have access to and be required to review and report to available IIS. In states where this is not possible and pharmacists do not have access to an IIS, they should review available records and communicate all immunizations to the patient's primary care provider.

PPA recommends that pharmacists should document required reactions and errors to the Vaccine Adverse Event Reporting System (VAERS) and supports providing routine error documentation to improve patient safety. VAERS was established in 1990 secondary to the National Vaccine Injury Act of 1986, to identify rare vaccine adverse effects or adverse effects that may only affect those with specific risk factors not previously identified despite large-scale initial studies.²⁶ VAERS has been used in more recent years to identify persistent problems and errors that occur despite safe processes to identify ways to further improve safety. This system depends on voluntary reporting of adverse reactions from patients, mandated reporting of specific adverse reactions from health care providers, and all adverse events by manufacturers.²⁶ VAERS has also been used more recently to assist in patient safety efforts. For example, health care providers are required to submit to VAERS errors surrounding COVID-19 and Mpox administration and are highly encouraged to report errors for other immunizations. PPA believes pharmacists who become aware of adverse reactions that may be related to vaccine administration or note any immunization-related administration error should file a report with VAERS promptly.

Continuing Education. PPA recommends that all pharmacists providing immunizations to pediatric patients should obtain initial education on working with pediatric patients and participate in pediatric-specific immunization continuing education programs to maintain competence. Pediatric pharmacists are in a unique role with significant broad knowledge of both the pharmacology of the immunizations and knowledge specific to pediatric patients. They can provide education to other pharmacists and health care

providers on newer immunizations or recent findings regarding immunizations in the pediatric population, as well as tips and tricks on providing immunizations to pediatric patients. It is important to communicate with children and adolescents in an appropriate manner.^{10,27} Additionally, techniques such as breastfeeding during immunization and use of topical analgesics or sucrose to minimize pain should also be learned and appropriately used.^{27–31} Most states require pharmacists to have immunization-specific continuing education annually, so pharmacists providing immunization to children should dedicate some of this time to updates specific to pediatric immunizations.

New immunizations and updated immunization recommendations have become extremely frequent in recent years. Pharmacists, especially pediatric pharmacists, should remain up-to-date on the Advisory Committee for Immunization Practices proceedings, recommendations, and approvals. This allows for prompt review of studies and information to be able to provide recommendations, as well as appropriate education on immunization use, safety, and considerations. For example, with the recommended changes for pneumococcal immunization, pharmacists can educate patients and providers on which immunization to obtain (e.g., 15-valent pneumococcal conjugate vaccine (PCV) PCV15 versus PCV20) and which patients may be able to receive PCV20 or should still receive pneumococcal polysaccharide 23-valent vaccine (PPSV23) if they had only received PCV13 or PCV15 prior.³² It is important to also provide education on the similarities and differences of various immunizations. For example, the pentavalent MenABCWY immunization is essentially MenB-FHbp plus MenACWY, so it should only be administered when both of these are indicated.¹⁹ As new recommendations and addendums can be added to the schedule throughout the year, PPA recommends pharmacists always use the online version of the CDC immunization schedule for the most current information when making immunization recommendations.

Conclusion

Pharmacists should work to continue to expand their authority to vaccinate pediatric patients, especially those 3 years and older. In all states, pharmacists should be able to participate in the VFC program. Actively using the IIS to review and document immunization administrations is essential to ensure all health care providers have access to the most current information on an individual child's immunizations. Dispelling anti-immunization fears and myths is an important role of the pharmacist so families receive an accurate and consistent message about effectiveness, safety, and appropriate timing of immunizations. Finally, maintaining competence with continuing education regarding

immunizations for children is essential and should be a continual process.

Article Information

Affiliations. Department of Pharmacy Practice and Pediatrics (JEG), University of Connecticut, Storrs, CT; Division of Infectious Diseases and Immunology (JEG), Connecticut Children's, Hartford CT; Department of Pharmacy Practice (KCK), University of Michigan College of Pharmacy, Ann Arbor, MI; Department of Pharmacy (KCK), Michigan Medicine, Ann Arbor, MI; Department of Pharmacy Practice (MPC), Northeast Ohio Medical University, College of Pharmacy, Rootstown, OH; Department of Pharmacy (AAC), Children's Hospital of The King's Daughters, Norfolk, VA; Department of Clinical Pharmacy and Translational Science (TMH), University of Tennessee Health Science Center, Nashville, TN; Department of Pharmacy (SW), UC Davis Children's Hospital, Sacramento, CA; Department of Pharmacy Practice (TH), Touro College of Pharmacy, New York, NY.

Correspondence. Jennifer E. Giroto, PharmD; jennifer.giroto@uconn.edu

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Appendix. Pharmacist Pediatric Immunization Authority and Regulation Resources

State	Pharmacist Authorized to Provide at Least Some Immunizations* to Persons <18 yr	Pharmacist Authorized to Provide Immunizations Other Than COVID-19, Influenza, and/or Declared Emergency to Persons as Young as 7 yr	Pharmacists Authorized to Provide Immunizations Other Than COVID-19 and/or Influenza to Persons as Young as 12 yr	Pharmacist Immunization CE Requirements
Alabama	Yes	Yes	Yes	2 hr CE each cycle
Alaska	Yes	Yes	Yes	1 hr CE annually
Arizona	Yes	Yes	Yes	2 hr CE each cycle
Arkansas	Yes	Yes	Yes	2 hr CE each cycle
California	Yes	Yes	Yes	1 hr CE each cycle
Colorado	Yes	Yes	Yes	—
Connecticut	Yes	No	Yes	2 hr CE each cycle
Delaware	No	No	No	2 hr CE each cycle
District of Columbia	Yes	Yes	Yes	2 hr CE each cycle
Florida	Yes	No	No	3 hr CE each cycle (in addition to vaccines, must also include education on epinephrine)
Georgia	Yes	No	No	—
Hawaii	Yes	No, but may change	Yes	Training program approved by the board each cycle if providing pediatric vaccines
Idaho	Yes	Yes	Yes	1 hr CE annually
Illinois	Yes	Yes	Yes	2 hr CE each cycle
Indiana	Yes	No	Yes	—
Iowa	Yes	No	Yes, only final dose(s) HPV	1 hr CE each cycle
Kansas	Yes	No	Yes	—
Kentucky	Yes	No, but likely to change	Yes	—
Louisiana	Yes	No	Yes, but only at age 17+ yr	1 hr CE each year
Maine	Yes	Yes	Yes	2 hr CE each year on drug administration
Maryland	Yes	No	Yes	2 hr CE per cycle
Massachusetts	Yes	Yes	Yes	1 hr CE each year
Michigan	Yes	Yes	Yes	—
Minnesota	Yes	No	Yes, but only 13 years +	—

(Table cont. on page 7)

Appendix. Pharmacist Pediatric Immunization Authority and Regulation Resources (cont.)

State	Pharmacist Authorized to Provide at Least Some Immunizations* to Persons <18 yr	Pharmacist Authorized to Provide Immunizations Other Than COVID-19, Influenza, and/or Declared Emergency to Persons as Young as 7 yr	Pharmacists Authorized to Provide Immunizations Other Than COVID-19 and/or Influenza to Persons as Young as 12 yr	Pharmacist Immunization CE Requirements
Mississippi	Yes	Yes	Yes	—
Missouri	Yes	Yes	Yes	2 hr per cycle
Montana	Yes	Yes	Yes	—
Nebraska	Yes	Yes	Yes	—
Nevada	Yes	Yes	Yes	2 hr CE each year or a course provided by the CDC
New Hampshire	No	No	No	—
New Jersey	Yes	No	No	2 hr CE each cycle
New Mexico	Yes	Yes	Yes	2 hr CE every cycle
New York	Yes	No	No	—
North Carolina	Yes	Yes	Yes	3 hr CE every cycle
North Dakota	Yes	Yes	Yes	—
Ohio	Yes	Yes	Yes	—
Oklahoma	Yes	Yes	Yes	2 hr CE per cycle
Oregon	Yes	Yes	Yes	—
Pennsylvania	Yes	No	No	2 hr CE per cycle
Rhode Island	Yes	No	No	1 hr CE each year
South Carolina	Yes	Yes	Yes	1 hr CE each year
South Dakota	Yes	Yes	Yes	—
Tennessee	Yes	Yes	Yes	—
Texas	Yes	Yes	Yes	3 hr CE per cycle
Utah	Yes	Yes	Yes	2 hr CE per cycle
Vermont	No	No	No	2 hr CE per cycle
Virginia	Yes	Yes	Yes	—
Washington	Yes	Yes	Yes	—
West Virginia	Yes	No	Yes	2 hr CE each year
Wisconsin	Yes	Yes	Yes	—
Wyoming	Yes	Yes	Yes	1 hr CE each year

CDC, Centers for Disease Control and Prevention; CE, Continuing education; HPV, human papillomavirus

Links last updated March 22, 2024.

*Includes states that only authorize pharmacists to provide 1 or 2 immunizations to this age group, such as COVID-19, influenza.