Expanded Scope of Pharmacist Administered Immunizations in Indiana

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See the end of the article for CE details.

Goal:
The goal of this article is to address changes in immunization practices as a result of new Indiana law regarding the expanded scope of pharmacist administered immunizations. Pharmacists and interns are now able to administer pneumococcal, meningococcal, human papilloma virus (HPV) and tetanus, diphtheria, acellular pertussis (TDAP) immunizations under a physician approved protocol in the state of Indiana.

Objectives:
Upon completion of this article, the learner should be able to:

1. Describe the recent law changes regarding pharmacist administered immunizations, including the addition of the immunization registry reporting requirement.
2. Explain the necessary immunization training requirements for pharmacists and interns.
3. Review pertinent information related to pharmacist administered vaccines such as available products, appropriate regimen, precautions, and contraindications.
4. Identify appropriate patient populations who may benefit from immunizations based on current immunization schedule recommendations.

Introduction
Immunizations play a vital role in preventing infectious diseases. Vaccine-preventable diseases have been nearly eliminated and most are at record lows as a result of vaccine administration.\(^1\)\(^2\) Pharmacists have played a key role in increasing immunization rates. In the early 1990’s, the United States Department of Health and Human Services approached the American Pharmacists Association (APhA) to examine and define the role of the pharmacist in increasing immunization rates. APhA then developed an immunization training program...
for pharmacists and released it in 2009. Since that time, pharmacists have gained authority to administer immunizations in all 50 states, although specific immunization laws vary between states.

Indiana pharmacists were initially granted the authority to administer influenza vaccines under written protocol in 2008. Subsequent law changes in 2011 expanded pharmacists’ authority to include administration of the herpes zoster vaccine. Pharmacists were allowed to give influenza vaccines to those 14 years and older and herpes zoster vaccines to those 50 and older without a prescription.

New Law Changes

In April 2013, Indiana Governor Mike Pence signed House Bill 1464 allowing for an expanded scope of pharmacist administered immunizations. This new law allows pharmacists to additionally administer tetanus, diphtheria, and acellular pertussis (Tdap); human papillomavirus (HPV); meningococcal; and pneumococcal vaccines without a prescription. These changes went into effect on July 1, 2013. Table 1 refers to the changes in vaccines allowed to be administered via protocol authority as well as the age limitation associated with each vaccine.

Table 1: Permitted Protocol Authority Immunizations

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Protocol Authority Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>≥ 11 (previously ≥14)</td>
</tr>
<tr>
<td>Tdap (previously Rx)</td>
<td>≥ 11</td>
</tr>
<tr>
<td>HPV (previously Rx)</td>
<td>≥ 11</td>
</tr>
<tr>
<td>Meningococcal (previously Rx)</td>
<td>≥ 11</td>
</tr>
<tr>
<td>Herpes zoster (no change)</td>
<td>≥ 50</td>
</tr>
<tr>
<td>Pneumococcal (previously Rx)</td>
<td>≥ 65</td>
</tr>
</tbody>
</table>

Other notable changes regarding pharmacist administered immunizations include changes to protocol requirements, reporting requirements, and the ability of pharmacy interns to immunize patients. The new law clarifies that a physician who signs a protocol must be actively practicing with a medical office in Indiana. Also, the name, license number, and contact information of the physician who wrote the protocol must be posted in the location where the immunization is administered, and a copy of the protocol must be available for the patient to review. A pharmacist-administered immunization for individuals of all ages must be reported to the Children and Hoosiers Immunization Registry Program unless the patient, parent, or legal guardian has completed a data exemption form and presents it to the pharmacy. Finally, pharmacy interns are now able to administer immunizations under direct supervision of a trained pharmacist, physician, physician assistant or advanced practice nurse. Pharmacy interns must first be properly trained in order to administer immunizations. Training is discussed below.

Training Requirements

To be authorized to administer immunizations in the state of Indiana, pharmacists and interns must complete immunization training that is provided by an Accreditation Council for Pharmacy Education accredited provider. The training must include instruction and
experiential training on a number of concepts. Training typically involves self-study, didactic course work, and hands-on immunization practice. An appropriate training program provides background information such as basic immunology, vaccine-preventable illnesses, and the mechanisms by which vaccines provide protection. Contraindications, drug interactions, proper storage and proper administration must be discussed for each vaccination along with the assessment of appropriate candidates and proper counseling regarding the vaccination and its administration. How to identify, respond to, document and report adverse events for vaccinations are also required. When being trained on the proper techniques to use for vaccine administration, study materials and hands-on training must be provided. Additionally, concepts such as standards for practice, vaccination management, informed consent, sterile technique, proper biohazard waste disposal, and the management of immunization records must be discussed.

Not only must pharmacists and interns complete an immunization program that meets the above criteria, they must also participate in cardiopulmonary resuscitation (CPR) training and keep their CPR certification current. Records documenting completion of immunization and CPR training must be kept on file for any individual who will be administering vaccinations in the pharmacy.5

Immunizations

Due to the additional vaccines available under protocol authority, it is important for pharmacists to be able to communicate the most current information related to the vaccines, including available products, targeted patient populations, appropriate vaccine regimens, precautions, contraindications, and potential adverse reactions. The newly permitted protocol immunizations are discussed below.

Tetanus, diphtheria, acellular pertussis (Tdap)

Tdap vaccinations provide protection against the bacteria Clostridium tetani (C. tetani, Corynebacterium diphtheria (C. diphtheria), and Bordetella pertussis (B. pertussis). C. tetani causes tetanus by entering the body through open wounds. The anaerobic tetanus spores produce a toxin in the body which acts in the central nervous to prevent muscle relaxation. The resulting muscle spasms, particularly those in the jaw, give the infection the nickname “lockjaw”.

Diphtheria is caused by C. diphtheria, which enters the body through the respiratory tract. The bacteria produce a toxin that attacks mucous membranes, most commonly the pharynx and tonsils. The tissue destruction caused by the toxin results in the formation of a pseudomembrane that may cause respiratory obstruction.

Bordetella pertussis, or pertussis, is commonly referred to as whooping cough. It is extremely contagious and spread through respiratory droplets. The toxins produced by the bacteria affect the respiratory system and causes the hallmark cough that produces a high-pitched “whooping” sound. Pertussis can affect children, adolescents, and adults. Adolescents and adults typically experience a milder case of pertussis, but can serve as reservoirs of the disease and pass it on to children.3 The number of pertussis cases has been on the rise over the past several years. This is thought to be in part due to pertussis immunity waning five to ten years after the childhood vaccination series.8

Due to waning immunity against pertussis, the Advisory Committee on Immunization Practices
(ACIP) has recommended Tdap be given to all adolescents and adults 11 to 64 years old who have completed the childhood vaccine series against diphtheria, tetanus, and acellular pertussis (DTaP). A single dose of Tdap should be administered to this group of individuals followed by a tetanus and diphtheria-toxoids (Td) booster every ten years. Tdap can be administered regardless of interval since the last tetanus or diphtheria-toxoid containing vaccine. ACIP has also recommended that adults 65 years and older not previously vaccinated with Tdap receive a dose if they anticipate having close contact with an infant less than 12 months of age to reduce the likelihood of transmission. They also recommend the use of Tdap in under-vaccinated individuals aged 7-10 years old. Individuals are considered under-vaccinated when they have received at least one, but not all, of the immunizations in the series. Tdap can also be administered in place of a booster Td dose for those who have not received Tdap previously, regardless of the interval since the last Td vaccination.

Furthermore, Tdap should be given during every pregnancy regardless of patient’s prior history of receiving Tdap. The maternal pertussis antibodies pass through the placenta and will provide protection to infants from pertussis until the child can be vaccinated. This also prevents the mother from becoming infected and transmitting pertussis to the infant. It is noted that Tdap can be given at any time during pregnancy but administration during the third trimester provides the most maternal antibodies for transfer to the infant. A summary of the recommendations are found in Table 2.

Two Tdap products are available: Adacel® and Boostrix®. Both vaccines should be administered intramuscularly as a single 0.5 mL dose, preferably into the deltoid muscle. The vaccines differ in the FDA approved ages for administration. Adacel® is approved for ages 11 to 64 years, while Boostrix® is approved for ages ten years and older.

These vaccines should be stored between 2°C and 8°C (35°F and 46°F) and should not be frozen. To prepare for administration, shake well until a uniform, white, cloudy suspension results. Do not use if resuspension does not occur with vigorous shaking. Please refer to the individual package inserts on a routine basis as storage and stability recommendations may change.

Contraindications to administering Tdap vaccines include severe allergic reactions to any previous dose of tetanus toxoid, diphtheria toxoid, or pertussis antigen-containing vaccine or any component of the vaccine. Encephalopathy within seven days of administration of a previous dose of pertussis antigen-containing vaccine that is not attributable to another identifiable cause is also a contraindication.

Precautions to consider before Tdap administration include previous development of Guillain-Barre syndrome within six weeks of prior vaccine containing tetanus toxoid, progressive or unstable neurologic disorders, acute illness, or history of an Arthus reaction following vaccination with a tetanus or diphtheria toxoid-containing vaccine. Both Adacel® and Boostrix® may be supplied as a prefilled syringe which may contain latex. Common adverse events reported for Tdap include injection site reactions (22%), headache (43%), fatigue (37%) and gastrointestinal symptoms (26%).
Table 2: Summary of the Recommendations for Tdap

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All adults and adolescents 11 to 64 who completed childhood DTaP series should receive one booster dose of Tdap in place of Td</td>
</tr>
<tr>
<td>• Adults 65 and older who will be in close contact with a child under 1 year old</td>
</tr>
<tr>
<td>• Pregnant women during each pregnancy, ideally during the 3rd trimester</td>
</tr>
<tr>
<td>• Children ages 7 to 10 who are under-vaccinated</td>
</tr>
</tbody>
</table>

Human papillomavirus (HPV)

Human papillomavirus (HPV) is one of the most common sexually transmitted diseases in the United States with an estimated 14 million new cases each year. HPV has nearly 100 variations that infect epithelial cells, 40 of which can infect genital mucosa as genital warts, and 16 types that are high-risk carcinogens detected in 99% of cervical cancer. Additionally, HPV can cause other types of cancer including vulvar, vaginal, penile, anal, oral, and pharyngeal. The majority of HPV infections occur during late teens and early 20’s. The infection may not present with any symptoms and resolve spontaneously with no treatment needed. However, asymptomatic patients can still transmit the virus through sexual contact. HPV can also be passed on to an infant by an infected mother during labor and delivery.

Because HPV is sexually transmitted, the CDC recommends that males and females should be immunized at age 11 to 12 years old, before becoming sexually active. There are two HPV vaccines available: Cervarix® (HPV2) and Gardasil® (HPV4). HPV2 is a bivalent vaccine against HPV types 16 and 18, while HPV4 is a quadrivalent vaccine against HPV types 6, 11, 16, and 18. Both vaccines protect against HPV types 16 and 18, which are the cause of approximately 70% of cervical cancer. Gardasil® (HPV4) also protects against HPV types 6 and 11 which are the cause of approximately 90% of genital warts and may also cause other types of genital cancers.

Another important difference is that Gardasil® (HPV4) is FDA approved to be administered in males ages 9 to 26 in addition to females, while Cervarix® (HPV2) only carries approval for females ages 10-25. Regardless of the vaccine used, it is important for the patient to receive the full course of three injections for full protection against HPV.

The dosing schedule for the two vaccines is slightly different although both are given as a series of three injections over the course of six months. Both are administered to the deltoid region of the upper arm or in the high anterolateral area of the thigh. Once the patient is within the approved age range, HPV4 is given at the following time intervals: 0, 2 and 6 months and HPV2 is given at the following time intervals: 0, 1, and 6 months.

These vaccines should be stored between 2°C and 8°C (35°F and 46°F) and administered as soon as possible after being removed from refrigeration. To prepare for administration, shake well until a uniform, white, cloudy suspension results.

As stated previously, it is recommended to refer to the individual package inserts on a routine basis as storage and stability recommendations may change.

Contraindications to HPV4 include hypersensitivity to previous HPV4 injection or to yeast. Contraindications to HPV2 include hypersensitivity to previous HPV2 injection or
any component of the vaccine including latex, which may be contained in the prefilled syringe.\textsuperscript{15}

Neither HPV4 nor HPV2 have been found to have any interactions with other vaccines. However, neither vaccine should be mixed in a syringe or vial with any other vaccine. Both vaccines have been studied extensively with hormonal contraceptives and it has been determined that the use or absence of hormonal contraceptives does not impair the body’s response to either vaccine. However, immunosuppressive therapies can lower the effectiveness of the vaccines including use of radiation, antimetabolite therapies, alkylating agents, cytotoxic drugs and long-term corticosteroid use, defined corticosteroid therapy for more than two weeks.

Both vaccines carry a warning to observe patients following immunization for at least 15 minutes due to the risk of syncope, which may result in a fall and subsequent injury. Syncope can also lead to tonic-clonic, and other seizure like movements, which typically come and go quickly. Putting the patient into a supine or Trendelenburg position is helpful in relieving these movements by increasing cerebral perfusion. Syncope is a possible reaction to many vaccines and has been reported among adolescents who received HPV and other vaccines recommended for this age group. Syncope was not seen in clinical trials.\textsuperscript{22}

The most common side effects include injection site reactions such as pain, redness, itching, bruising, and swelling (20-90%). Systemic reactions such as gastric symptoms, fatigue, headache, dizziness, myalgias, and arthralgias occurred in 20% or more of the trial subjects.\textsuperscript{12, 14}

**Meningococcal**

Meningococcal disease is a bacterial infection caused by *Neisseria meningitidis*. Several serogroups of the bacteria exist, however serogroups A, B, C, W, and Y are the most invasive. The bacteria are transmitted through respiratory droplets, often through asymptomatic carriers. Meningococcal disease usually presents as meningitis, bacteremia, or pneumonia. Invasive meningococcal disease may result in death or significant sequelae such as neurological damage. Meningococcal disease may occur in any group, but most frequently affects infants, young adults, and those over the age of 65 years. Serotype B is most often the cause of meningococcal disease in infants.\textsuperscript{6, 16}

Three vaccines are available for routine prevention of meningococcal disease. These vaccines are effective against serotypes A, C, W, and Y. Vaccines that protect against serotype B are not currently available.\textsuperscript{17, 18, 19} Information on the specific vaccines available can be found in Table 3.

**Table 3: Available Meningococcal Vaccines**\textsuperscript{17, 18, 19}

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Type</th>
<th>Serotypes</th>
<th>Dose</th>
<th>Route</th>
<th>Approved Ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menomune \textsuperscript{®} (MPSV4)</td>
<td>Polysaccharide</td>
<td>A, C, W, Y</td>
<td>0.5 mL</td>
<td>Subcutaneous</td>
<td>≥2 years (single dose)</td>
</tr>
<tr>
<td>Menactra \textsuperscript{®} (MenACWY-D)</td>
<td>Conjugate</td>
<td>A, C, W, Y</td>
<td>0.5 mL</td>
<td>Intramuscular</td>
<td>9 to 23 mos. (2-dose series)</td>
</tr>
<tr>
<td>Menveo \textsuperscript{®} (MenACWY-CRM)</td>
<td>Conjugate</td>
<td>A, C, W, Y</td>
<td>0.5 mL</td>
<td>Intramuscular</td>
<td>2 to 55 years (single dose)</td>
</tr>
</tbody>
</table>
Adolescents and young adults are usually the carriers of the bacteria. As a result, ACIP recommends that adolescents 11 to 18 years of age routinely receive the immunization with a conjugate vaccine. A single dose should be administered at 11 to 12 years, and a booster should be given at age 16 to 18. However, if the first dose is administered after an individual turns 16 years old, no booster is needed. The vaccine is not routinely recommended for persons aged 19 to 21 years old. However, conjugate vaccines may be administered up to age 21 years as catch-up vaccination for those who have not received a dose after their sixteenth birthday. Adolescents and individuals aged 9 months to 55 years at increased risk of disease (such as those with functional or anatomic asplenia, persistent complement component deficiencies, or HIV infection), require a two-dose primary series of a conjugate vaccine administered 8–12 weeks apart. A booster dose should then be administered every five years. Microbiologists routinely exposed to isolates of *N. meningitidis* are recommended to receive a single dose of conjugate vaccine. A booster dose should be administered every five years if exposure is ongoing. Lastly, adults 56 years and older who will be traveling abroad or who are at risk as a result of a community outbreak, should receive a single dose of the meningococcal vaccine. For these individuals, the polysaccharide vaccine is the preferred formulation. Adults 56 years and older who have previously received a conjugate vaccine and are recommended for revaccination or multiple doses are anticipated, such as those with asplenia or microbiologists, the conjugate vaccine is preferred. A summary of these recommendations is listed in Table 4.

This vaccine should be stored between 2°C and 8°C (35°F and 46°F). For formulations that require reconstitution, single dose vials should be used immediately after reconstitution. Vaccine supplied in multi-dose vials may be used for up to 35 days after reconstitution if stored at 2°C to 8°C (35°F to 46°F). Please refer to the individual package inserts on a routine basis as storage and stability recommendations may change.

Contraindications include previous reaction to any component of the vaccine, including diphtheria or tetanus toxoid. Patients allergic to latex should not receive MPSV4 as the vial stoppers contain latex.

Precautions should be taken in the event that a vaccinated individual experiences syncope. Syncope was not seen in trials, but has been voluntarily reported after a meningococcal vaccine was administered. To prevent a falling injury, individuals should be monitored for 15 minutes after the vaccine is administered. Adverse reactions in those most commonly receiving the vaccine (11-18 year olds) include injection site reactions (11%), headache (36%), fatigue (30%), malaise (22%), arthralgia (17%), anorexia (11%) and diarrhea (12%).
Table 4: Summary of Meningitis Vaccine Recommendations

<table>
<thead>
<tr>
<th>Recommendations for Use</th>
<th>Type of Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine Vaccination:</td>
<td>Conjugate</td>
</tr>
<tr>
<td>• 11 to 12 years old</td>
<td></td>
</tr>
<tr>
<td>• Booster at 16 years old</td>
<td></td>
</tr>
<tr>
<td>Unvaccinated individuals ages 16 to 21</td>
<td>Single conjugate dose</td>
</tr>
<tr>
<td>Individuals 9 months to 55 years of age at increased risk (immunocompromised)</td>
<td>Two-dose series of conjugate administered 8 to 12 weeks apart</td>
</tr>
<tr>
<td>At risk individuals in close living quarters or exposed to <em>N. meningitidis</em> in laboratories</td>
<td>Single dose of conjugate</td>
</tr>
<tr>
<td></td>
<td>Booster of conjugate every 5 years if ongoing exposure</td>
</tr>
<tr>
<td>Travelers to epidemic or hyperendemic areas of the world ages 9 months to 55 years</td>
<td>Single conjugate dose</td>
</tr>
<tr>
<td>Single dose needed at age 56 or older</td>
<td>Single dose polysaccharide</td>
</tr>
</tbody>
</table>

*Pneumococcal*

Pneumococcal disease, including pneumonia, bacteremia, and meningitis, is caused by the bacteria *Streptococcus pneumoniae*. The bacteria are spread by respiratory droplets or direct contact with respiratory secretions. Carriers of *S. pneumoniae* may be asymptomatic, but are still able to transmit the disease. Nearly 100 serotypes of *S. pneumoniae* cause pneumococcal disease, but only ten serotypes cause over half of the world’s pneumococcal infection. Prevention of pneumococcal disease through immunization is very important due to increasing incidence of drug-resistant *S. pneumoniae*. Pneumococcal disease affects children and adults of all ages. The vaccine is routinely administered as a childhood series and also to adults 65 years and older. For those individuals that are at increased risk of pneumococcal disease, additional pneumococcal vaccinations may be indicated.16,20

Two pneumococcal vaccines are available: PCV13 (Prevnar 13®) and PPSV23 (Pneumovax®). PCV13 is a conjugate vaccine that targets 13 serotypes of pneumonia. PPSV23 is a polysaccharide vaccine that protects against 12 of the 13 serotypes found in PCV13 as well as an additional 11 serotypes.21,22

As of August 13, 2014, both PCV13 and PPSV23 are recommended for all adults 65 years and older. The CDC recommends administering PCV13 first to adults older than 65 years who are pneumococcal vaccine-naïve or whose pneumococcal vaccination history is uncertain.
PPSV23 should then be administered to these individuals 6-12 months following the PCV13 dose. In individuals older than 65 who have received PPSV23 but not PCV13, the dose of PCV13 should be administered at least 12 months following the administration of PPSV23.

ACIP also recommends that PPSV23 be administered to adults 19 to 64 years old with high risk conditions including chronic heart disease, chronic lung disease such as asthma, diabetes mellitus, cerebrospinal fluid leak, cochlear implant, alcoholism, chronic liver disease, cirrhosis, and cigarette smoking. Those with high risk conditions should be vaccinated at the time of diagnosis, with a dose repeated at age 65 or older with at least five years between doses.

Immunocompromised individuals aged 19 and older, including those with asplenia, congenital or acquired immunodeficiency, human immunodeficiency virus infection, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin’s disease, generalized malignancy, iatrogenic immunosuppression, solid organ transplant, and multiple myeloma, require additional doses of pneumococcal vaccine. These individuals should receive PCV13 at the time of diagnosis, followed by a dose of PPSV23 eight or more weeks later, and a repeat dose of PPSV23 in five years. If both doses of PPSV23 are administered before the age of 65, a third dose should be administered at the age of 65 or older with at least five years between doses. If a dose of PPSV23 has been administered to the individual before the time of diagnosis, wait one year from the administration of PPSV23 before administering PCV13. A summary of these recommendations can be found in Table 5.

PCV13 is a 0.5 mL single dose that is administered intramuscularly. PPSV23 is also a 0.5 mL single dose that may be administered either intramuscularly or subcutaneously. Both vaccines should be stored between 2°C and 8°C (35°F and 46°F). Please refer to the individual package inserts on a routine basis as storage and stability recommendations may change.

Contraindications for vaccination administration include severe allergic reaction to any component of the vaccine. Severe allergic reaction to any diphtheria toxoid-containing vaccine is a contraindication for the PCV13 vaccine only.

Use caution in vaccinating against pneumococcus in patients with a current moderate to severe acute illness and in pregnant women. Safety during pregnancy has not been studied, and although case reports suggest there are no adverse consequences of administration during pregnancy, it is best to vaccinate these individuals beforehand.

Local reactions such as pain, swelling or redness are common following pneumococcal vaccines and occur in 30-50% of those receiving PPSV23 and 5-49% in those receiving PCV13. Fever and myalgia are common in those receiving PCV13 (24-35%).
Table 5: Summary of Recommendations for Pneumococcal Vaccination in Adults

<table>
<thead>
<tr>
<th>All Adults</th>
<th>High Risk Conditions</th>
<th>CSF Leak and Cochlear Implant</th>
<th>Immunocompromised</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV13 at age 65+</td>
<td>PPSV23 at diagnosis</td>
<td>One dose of PCV13 at diagnosis</td>
<td>One dose of PCV13 at diagnosis</td>
</tr>
<tr>
<td>PPSV23 at age 65+ 6-12 months after PCV13</td>
<td>PCV13 at age 65+</td>
<td>PPSV23 8 weeks after PCV13</td>
<td>PPSV23 8 weeks after PCV13</td>
</tr>
<tr>
<td>PPSV23 at age 65+ 6-12 months after PCV13</td>
<td>PPSV23 at age 65+</td>
<td>PPSV23 5 years after initial PPSV23 dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCV13 at age 65+ if not previously received PCV13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PPSV23 at age 65+ 6-12 months after PCV13</td>
<td></td>
</tr>
</tbody>
</table>

¶ Both PCV13 and PPSV23 should be routinely administered in series to all adults aged ≥65 years

§ PPSV23 doses should be administered at least five years apart

△ If PPSV23 given before PCV13, wait one year after PPSV23 before administering PCV13

* High Risk Conditions: Chronic heart disease, chronic lung disease, diabetes mellitus, alcoholism, chronic liver disease, cirrhosis, cigarette smoking

** Immunocompromised: Congenital or acquired immunodeficiency, human immunodeficiency virus infection, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin’s disease, generalized malignancy, iatrogenic immunosuppression, solid organ transplant, multiple myeloma, functional or anatomic asplenia

Opportunities for Pharmacists

With the changes to Indiana law effective July 1, 2013, pharmacists have been granted greater authority through expansion of immunization protocols. The profession is uniquely positioned to advocate for appropriate vaccination and impact immunization rates. Pharmacists have consistently been recognized as one of the most trusted professionals and the most accessible health care professional. Pharmacists should take advantage of the opportunity to provide comprehensive care to patients by screening for vaccination eligibility and making appropriate recommendations. Additionally, pharmacists can act as vaccine advocates by educating patients and parents regarding the importance of vaccinations, dispelling popular myths surrounding vaccine administration, and making the public aware of the pharmacist’s ability to vaccinate. Pharmacists have an important role to play in protecting individuals from vaccine-preventable diseases, with the ultimate goal of a 100% immunization rate.
References


The Pharmacists Education Foundation (PEF) is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education. To receive continuing pharmacy education (CPE) pharmacists MUST COMPLETE THE ONLINE QUIZ AND EVALUATION FORM. A score of 70% or above is required to receive CPE credit. The link to the quiz can be accessed from the home study section in the CE Portal of the IPA website, www.indianapharmacists.org. This is a free service of IPA members in 2015. Initial release date: 2/19/2015. Expiration Date: 2/19/2018. Questions: Call IPA office at 317-634-4968.
Assessment Questions

1. A 45 year old male newly diagnosed with diabetes comes to your pharmacy inquiring about vaccinations as he has not received any since he was a child. For which of the following immunizations does he qualify and can be administered without contacting his physician for a prescription?
   a. Pneumococcal
   b. Tdap
   c. Herpes zoster
   d. Hepatitis B

2. Which of the following is true regarding the Children and Hoosier Immunization Registry Program?
   a. Only non-influenza vaccinations must be recorded
   b. Only vaccinations administered to children under the age of 18 must be recorded
   c. Vaccinations do not have to be recorded if the patient does not have a primary care physician
   d. Vaccinations are not recorded if an individual presents a completed data exemption form

3. In order to provide protection to infants against pertussis until the child can be vaccinated, which of the following statements is correct?
   a. Tdap administered during pregnancy only if the mother has not previously received a dose of Tdap.
   b. Td administered to the mother during the 3rd trimester of the pregnancy
   c. Tdap administered to the mother, regardless of the patient’s prior history of receiving Tdap, and preferably during the 3rd trimester.
   d. Tdap is not recommended during pregnancy because it is a live vaccine.
4. Encephalopathy within seven days of administration of a previous dose of what vaccination is considered a contraindication to receipt of a subsequent dose of the vaccine?
   a. Pneumococcal
   b. Tdap
   c. Herpes zoster
   d. HPV

5. Which vaccination carries a warning regarding the risk of syncope and resulting injuries?
   a. Pneumococcal
   b. Tdap
   c. Herpes zoster
   d. HPV

6. HPV4 covers two HPV strains that HPV2 does not. These strains are:
   a. 16 and 18 which cause 70% of cervical cancer cases
   b. 16 and 18 which cause 90% of genital warts cases
   c. 6 and 11 which cause 70% of cervical cancer cases
   d. 6 and 11 which cause 90% of genital warts cases

7. A high school senior, age 17, comes to your pharmacy with a parent to receive his first meningitis vaccination. Which of the following do you recommend?
   a. Meningococcal polysaccharide (Menomune®)
   b. Meningococcal conjugate (Menactra® or Menveo®) now and again at age 18
   c. Meningococcal conjugate (Menactra® or Menveo®)
d. Meningococcal polysaccharide (Menomune®) now and meningococcal conjugate (Menactra® or Menveo®) at age 18

8. A 66 year old female comes to your pharmacy for a “pneumonia” vaccine. She is uncertain if she has ever had one in the past but said her friends told her it is a good idea to get one. You recommend which of the following:

   a. PCV13 now followed by PPSV23 in 6-12 months
   b. PPSV23 now followed by PCV13 in one year
   c. PPSV23 only
   d. PCV13 only

9. A patient with diabetes received PPSV23 at age 61 when she was diagnosed. The patient is currently 66 years old. Which of the following do you recommend?

   a. PCV 13 today
   b. PPSV23 today
   c. PPSV23 in one year, at age 61
   d. PCV13 today followed by PPSV23 in 6-12 months

10. Which of the following is a required element of immunization training for pharmacists and interns in the state of Indiana?

    a. How to identify, respond to, document and report adverse events related to vaccines
    b. Proper technique for vaccine administration
    c. Contraindications, drug interactions, and proper storage for each vaccine
    d. All of the above