Tetanus and shingles and flu – Oh my! Immunization update for pharmacists

INTRODUCTION
Almost every community pharmacy has an immunization program in place to provide vaccine education and recommendations, as well as to administer immunizations. While every state and territory now allows pharmacists to immunize patients, the regulations vary regarding what immunizations can be provided and at what age. The pharmacist is an accessible and valued partner on the patient’s healthcare team. The convenience of a pharmacy’s location and its hours of operation make it the best choice for more patients than ever before. According to the National Adult and Influenza Immunization Summit in 2013, the proportion of adults vaccinated in pharmacies rose 13% between 1998 and 2011. Patients appreciate the services and knowledge they can get from their pharmacist. This lesson will help pharmacists be prepared for the start of the upcoming immunization season and prepare them for the challenges associated with getting every patient up-to-date with their immunizations.

CHANGES TO IMMUNIZATION RECOMMENDATIONS
Every immunizer needs to be up-to-date with the most current recommendations from the Centers for Disease Control and Prevention, or CDC; the Advisory Committee on Immunization Practices, or ACIP; and vaccine manufacturers. The CDC releases the updated immunization schedules in January or February for that year. It is helpful to have a schedule on hand at the pharmacy as a quick reference. The schedules for 2014 are available at CDC.gov/vaccines/schedules/. The website provides links to schedules designed for health professionals, as well as for patients. Pharmacists may find that distributing the easy-to-read patient immunization schedule will help patients feel more engaged as an active participant in their healthcare decisions.

Keeping up with vaccine changes and recommendations can be difficult, especially in busy pharmacies. For example, the American Congress of Obstetricians and Gynecologists, or ACOG, and CDC recommend that women receive one dose of tetanus-diphtheria-acellular pertussis, or Tdap, during each pregnancy between 27 and 36 weeks of gestation, regardless of prior vaccination history. All co-parents, family members and child-care persons also should receive Tdap once in their lifetime to provide a protective cocoon of immunity around the newborn since they do not start the DTaP series until 2 months of age. Any person who picks up prenatal vitamins or asks questions about pregnan­cy restrictions for over-the-counter items is a great candidate for Tdap. Be sure that patients and their families know that everyone who is going to be around the new baby should be up-to-date with all of their immunizations.

The ACIP released a revision of its measles-mumps-rubella vaccine, or MMR, recommendations in 2013. Some highlights include requiring either documentation of previous vaccination or laboratory evidence of immunity to measles, mumps and rubella, instead of self-reported receipt of vaccine. Although the MMR vaccine is traditionally given to pediatric patients, susceptible adults exposed to measles in an outbreak should receive one dose as post-exposure prophylaxis. However, this is not the same recommendation for a mumps or rubella outbreak. Recent measles outbreaks in Ohio, California and New York have brought the number of diagnosed measles cases to a 20-year high, with 288 cases so far this year.

Some recommendation changes only affected specific groups. The ACIP has recently made recommendations for administration of the hepatitis B vaccine in patients with diabetes who may be more susceptible to the disease if they share blood-glucose monitors or other diabetes care equipment. The CDC has investigated hepatitis B outbreaks in people with...
Laura is a 60-year-old female who presents to the community pharmacy with a new prescription. She was recently diagnosed with Type 2 diabetes. She has a prescription for metformin, 500 mg, one tablet twice daily. Her medical history includes hypertension for five years and hyperlipidemia for three years. She has no known drug or food allergies. She is currently taking hydrochlorothiazide, 25 mg, daily; lisinopril, 10 mg, daily; simvastatin, 20 mg, every night at bedtime; and aspirin, 81 mg, daily. The pharmacist begins talking to Laura about the importance of healthy lifestyle modifications, in addition to her new medication for her diabetes. She wants to recommend the appropriate vaccines for her disease states and history. She has never received an immunization at this pharmacy and states that she “can’t remember the last time she got a shot.” What immunizations should Laura receive?

**Discussion**

Laura is indicated to receive an annual influenza vaccine and PPSV23, as well as herpes zoster. If Laura has not completed the hepatitis B vaccine series or cannot remember having completed it, she should start it now. She will need three doses: today, again in one month and in six months. If Laura has not received a tetanus booster in the past 10 years or has not received Tdap in the past, she should receive it today. All five immunizations can be administered on the same day by injecting two or three of the vaccines in each arm at different injection locations. Laura may get all of the recommended vaccines while she is at the pharmacy today to ensure coverage against these diseases as soon as possible. Some pharmacists will prefer to recommend that Laura wait to receive PPSV23 four weeks after herpes zoster, per the herpes zoster prescribing information.

### Table 1

**Non-egg-based influenza vaccines**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>FLUCELVAX&lt;sup&gt;5,11&lt;/sup&gt;</th>
<th>FLUBLOK&lt;sup&gt;9,12&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>How it’s made</td>
<td>Propagated in Madin-Darby canine kidney cells using an antigen produced in eggs</td>
<td>Ten days of treatment is recommended in household, while up to six weeks is recommended for community outbreaks.</td>
</tr>
<tr>
<td>Indication</td>
<td>Prevention of seasonal influenza in people 18 years of age and older</td>
<td>Prevention of seasonal influenza in people 18 years to 49 years of age</td>
</tr>
<tr>
<td>Side effects</td>
<td>Similar to other influenza vaccines: pain or redness at injection site, headache, fatigue and muscles aches</td>
<td>Similar to other influenza vaccines: pain or redness at injection site, headache, fatigue, and muscle aches</td>
</tr>
<tr>
<td>Notes</td>
<td>Does not contain any preservatives (i.e., single-use vials); antibody responses were lower in adults 65 years and older than in younger subjects</td>
<td>Does not contain any preservatives (i.e., single-use vials); shelf-life of 16 weeks from production date</td>
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</table>

Diabetes who live in assisted living, long-term care facilities and nursing homes. The CDC now recommends the hepatitis B vaccine series for unvaccinated adults with Type 1 or Type 2 diabetes.<sup>6</sup>

It can be confusing when there are multiple vaccines for a disease with varying recommendations for whom to use what product. The pneumococcal vaccine is available in two forms: pneumococcal conjugate (PCV13, or Pevnar 13<sup>®</sup>) and pneumococcal polysaccharide (PPSV23, or Pneumovax 23<sup>®</sup>).<sup>7</sup> A four-dose PCV13 series is recommended for infants, and one dose is recommended for people 19 years of age and older at high risk of developing serious pneumococcal infection.<sup>7,5</sup> PPSV23 is indicated for patients 65 years of age and older and for patients younger than 65 years of age with chronic illness and other risk factors.<sup>7</sup> If a patient receives PPSV23 prior to age 65, they should receive a second dose at age 65 as long as it has been five years since their previous dose. If the patient is older than 19 years and is indicated to receive PCV13, they need to wait twelve months following receipt of PPSV23. If they have not previously been vaccinated with PPSV23, then they should receive PCV13 first, followed by PPSV23 eight weeks later.<sup>5</sup>

At times, the recommendations may vary, so pharmacists must make the best decision for their patients based on the patient’s disease history and medications. For example, the package insert for Zostavax® recommends waiting four weeks between receiving the herpes zoster vaccine and Pneumovax 23<sup>®</sup> because of a reduced immune response to herpes zoster.<sup>8</sup> The Food and Drug Administration supports this, but the ACIP has not changed their recommendation that no wait time between receipt of the two immunizations is necessary.<sup>5,7,8</sup> Some pharmacies may have a policy regarding which recommendation to follow, but using clinical judgment is important.

The FDA has recently approved the first non-egg-based influenza vaccines in the United States: Flucelvax® and Flublok<sup>®</sup> 9,10 Both vaccines work like any other influenza vaccine when administered, but the difference lies in their production. The development of alternatively produced influenza vaccines is important because the cost, supply and production time for egg-based manufacturing limits the amount of vaccine available. This is especially critical during times of pandemic or vaccine supply shortage.<sup>10</sup>

### WITH GREAT POWER COMES GREAT RESPONSIBILITY

Pharmacists have the ability — and legal authority — to recommend and provide immunizations to their patients. It also is the pharmacist’s responsibility to make sure patients are educated about and receive the appropriate vaccines. Although recommendations are made based on medication and disease history, physician referral and appropriate life changes (i.e., going to college, having a new baby, etc.), many patients are resistant to what is being recommended. They may believe that the pharmacist is only trying to “sell them something” or that if they truly needed a vaccine, their doctor would have given it to them.

Disease prevention, not treatment, is the key to public health. When a pharmacist recommends that a 65-year-old patient with hypertension and hyperlipidemia get their pneumococcal, herpes zoster and yearly influenza vaccines, the goal is not only to prevent this patient from getting these diseases, but also to decrease their chance of ending up in the hospital or transmitting the active infection to other individuals. Pharmacists work with physicians and nurses with the goal of achieving 100% coverage. Pharmacists are in the unique position of catching patients who may have fallen through the cracks — those who did not get immunized at the physician’s office or upon discharge at the hospital. Many patients who present to the pharmacy have recently been in the care of a physician or nurse, but for whatever reason, may not have been fully immunized. That’s where the pharmacist comes in.

Patients may think that the views of particular celebrities or certain websites offer the best information for them and their families. It is the responsibility of health professionals to listen to patient concerns and respond to them with evidence-based clinical data and peer-reviewed guidelines. Many times the patient comments provide an opportunity to educate. Listening and providing empathetic responses help to encourage trust and lasting relationships with patients. Start out with, “I hear what you are saying, and I understand your concerns.” Then address their issues and answer their questions. Figure 1, “The Vaccine Conversation” gives some examples of patient statements and questions that pharmacists often hear when offering immunizations.

WWW.CEDRUGSTORENEWS.COM/0401000014007H04P  
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**The Vaccine Conversation**

**I don’t think vaccines work.**

Our best bet to prevent disease is to get an immunization for that disease or virus strain. Vaccines reduce the risk of infection by working with the body's natural defenses to help it safely develop immunity to the disease. If we are exposed to someone with that particular disease, our bodies will already have the antibodies to fight off the infection.

**I don’t think vaccines are safe.**

Vaccines undergo extensive testing prior to approval by the FDA to ensure that they are as safe and effective as possible. After a vaccine is licensed for public use, manufacturers continue to monitor safety since rare side effects and delayed reactions may not be shown in initial studies. In the last decade, numerous changes in vaccine production and administration have reduced the number of side effects and resulted in safer vaccines.

**I was told that I’m allergic to eggs, so I can’t get any shots, right?**

Some vaccines, including MMR, yellow fever, and most influenza vaccines, are made in chicken eggs through a process called “cell culture adaptation.” A virus is removed from an infected person and then “grown” in cells taken from chick embryos. As it grows, it becomes less and less able to grow in human cells. Once it is injected as an immunization, it is unable to replicate and cause illness. Even though the majority of the egg protein is removed through the process of creating the vaccine, some patients who are allergic to eggs may still have an allergic reaction if they get certain shots. Two influenza vaccines have hit the market recently that are for patients with egg allergies: Flublok® and Flucelvax®.

**I don’t believe in vaccines.**

Vaccines are the best defense we have against infectious diseases. When you get a vaccine, you’re not only protecting yourself, but also those around you who may be more vulnerable to serious infections. Active infections can make an individual more susceptible to other diseases, and treatments are not 100% effective, and long-term effects of active infection may linger for years to come.
The diseases vaccines prevent are gone — do I still need to get a shot?

It is reasonable to ask whether it’s worthwhile to keep vaccinating since some diseases we vaccinate against are almost gone from the United States. However, unless we completely eliminate a disease, it is important to keep immunizing. Even if only a few cases of disease exist today, by taking away the protection given by vaccination, more and more people will become infected and will spread disease to others.

Why do I need to get a shot that they charge every year anyway?

The influenza virus mutates as it moves around the world, so the virus that causes most flu infections this year won’t likely be the same as next year. This is called “antigenic drift.” The formulation of the flu vaccine is reviewed and updated each year to make sure that it is appropriate for any virus mutations. The body’s immune response from vaccination declines over time, so a yearly flu shot is necessary for optimal protection. Even if the viruses in the vaccine aren’t closely matched to the viruses causing natural disease, the vaccine can provide protection and help prevent flu-related complications.

I’ve never gotten a shot before, and I’ve been perfectly fine — why would I need to get one now?

The flu shot, like all vaccines, is recommended for healthy people to decrease their chance of getting the disease and to decrease the spread of the viruses to other people who are not healthy enough to receive it. When more people get vaccinated, the less disease can spread through that community.

Why should I get a shot if I could still get the disease?

Vaccines are either made from killed (or inactivated) or live, attenuated (i.e., weakened) versions of a virus. It’s impossible for a person to get sick from an inactivated vaccine since it can’t transmit the virus. It’s only theoretically possible to get sick from a live vaccine, since the virus may still replicate in the body although it is a much weakened form. It takes about two weeks for a patient’s immune system to develop protection from the disease, so anyone who gets sick before that time was going to get sick anyway — just not from the vaccine.

My neighbor/friend/relative got an immunization vaccine and got sick from the shot, so I certainly don’t want to get it!

Vaccines help develop immunity by imitating an infection, but this “imitation” infection does not cause illness. The “imitation” infection can sometimes cause minor symptoms, such as fever, headache or irritability, but these rarely occur more than a day or so. Even the nasal spray — the only live flu vaccine — cannot cause the flu because it’s cold-adapted, meaning that it can only replicate in cooler temperatures found in the nose, not warmer places like the lungs.
Vaccines are often the first practitioner who patients turn to when they have questions about their health and medications. As immunization providers and advocates, pharmacists must be aware of the potential inquiries surrounding vaccine safety and communicate information about side effects, which are relatively common, and adverse reactions, which are rare, but more serious. For example, anaphylactic reactions after vaccination are extremely rare. The most common side effects are local reactions that may include pain, swelling and redness at the injection site after receiving a vaccine by injection. Some patients may experience a mild fever or irritability within 24 hours of receiving the vaccine, but these symptoms can be alleviated with acetaminophen.19

Although questions regarding the safety of childhood vaccines have been thoroughly studied, many anti-vaccine blogs and websites still exist, which bring more concerned parents to pediatricians and pharmacists. Healthcare professionals should use these interactions to reiterate that vaccines are not related to autism.20 The Institute of Medicine issued a report in 2004 that concluded there is no evidence supporting an association between the MMR vaccine or thimerosal-containing vaccines and the development of autism.21 While children are receiving more immunizations by the age of 2 years than ever before, they are actually receiving fewer antigens that would challenge the immune system.22 The purpose of the recommended immunization schedule is to protect infants and children by providing immunity as early as possible before they are exposed to potentially life-threatening diseases. The immunization schedule is based on infants’ ability to generate immune responses, as well as when they are at risk for certain illnesses.23

TIPS FOR SUCCESS

This is a template for the vaccine conversation. But what about some extra tools in the lab coat pocket to support the pharmacist’s case? To start, pharmacists should invoke an attitude of confidence and knowledge about the recommendations and make sure the staff supports them, as well. A study at a pediatric clinic showed that parents overwhelmingly complied with physicians’ recommendations for immunizations, adding that the attitude that the physician transmits to his or her staff about the importance of immunizations is crucial.36 If the pharmacist makes a recommendation for immunizations based on the patient’s medication history and the technician continues to raise vaccine awareness, the patient will observe the continuity and be more likely to accept the recommendation.

Giving patients information about outbreaks of disease that could have been prevented with vaccines may help them understand the severity of refusing an immunization. For example, measles cases are at their highest so far in 2014 than they have been in the past 20 years.5 The majority of cases have been seen in California, Ohio and New York, and the majority of infected persons have been unvaccinated.23 Many of the areas with outbreaks have large unvaccinated populations, specifically Amish country in Ohio.5 The cause of the outbreaks has been attributed to American travelers, bringing the infection back from the Philippines, emphasizing that even though there was documentation of measles eliminated in the United States in 2000, any disease can make its way back to the country if it still exists in other parts of the world.21

Other examples include the pertussis epidemic in Japan in 1974 and pertussis outbreaks in the United States, with 4,838 cases reported from 48 states and Washington, D.C., so far in 2014.6,24 This represents a 24% increase compared with the same period in 2013.25 Even polio, which was last seen in the United States in 1979, has been on the rise in parts of Asia and Africa — both regions that are only a plane ride away from infected unimmunized Americans.26

Some patients will require multiple immunizations to complete the series for a variety of vaccines. For example, patients coming to the pharmacy for their hepatitis B vaccine series will need three or four vaccines — depending on the product used — over six months.25 The same challenges can occur with the human papilloma virus, pneumococcal polysaccharide, hepatitis A, Haemophilus influenzae, and even varicella or MMR vaccines if a patient does not have evidence of immunity.25 It may be helpful to set reminders to call patients or to make special notations in a company calendar. Researchers have found that when healthcare providers routinely assessed a patient’s immunization status and notified patients about when vaccinations were due, immunization rates improved.29

Finally, making sure that patients have credible resources is very important. Pharmacists should recommend Internet sources that present more balanced and useful information on the risks and benefits of vaccination.30 Some helpful websites include:

- American Academy of Pediatrics (AAP): AAP.org;
- U.S. Centers for Disease Control and Prevention (CDC): CDC.gov/vaccines;
- Society of Teachers of Family Medicine’s Group on Immunization Education (GIE): ImmunizationEd.org;
- Vaccine Information Center at the Children’s Hospital of Philadelphia: Chop.edu; and
- Immunization Action Coalition (IAC): VaccineInformation.org.

COORDINATION OF CARE AMONG HEALTHCARE PROFESSIONALS

With so many different facilities providing health care to each patient, it is a challenge to maintain a flow of information and the most up-to-date records. Many pharmacies currently fax proof of immunization to the patient’s physician and provide the patient with an immunization record. However, the records may not end up being faxed to all of the patient’s healthcare providers, or patients may misplace their records so the coordination of care goals are often not met.

Pharmacists may encounter obstacles when trying to contact a patient’s physician to verify prescriptions or recommend changes to therapy. This may also be an obstacle when attempting to communicate information about services a patient received at the pharmacy. In the past decade, states, territories and city health departments have begun using Immunization Information Systems, or IIS, to record all immunization doses administered by participating providers to persons residing within a given geographic area.26 These computerized databases are confidential and voluntary for patients, parents and practitioners. The IIS consolidate vaccination records from multiple providers, assist with vaccine supply management, provide accurate and updated vaccination schedules, generate patient reminders, assess communitywide immunization rates and improve vaccination rates.19,27 Pharmacists can sign up for their state’s IIS or registry to assist them with their immunization recommend-
PRACTICE POINTS

• Know the current immunization schedules and how the recommendations affect patients at the community pharmacy.
• Answer patient questions regarding purpose and safety of immunizations.
• Collaborate with other healthcare providers to work toward achieving complete immunization rates for all patients.

THE IMMUNIZATION NEIGHBORHOOD

The National Vaccine Advisory Committee, or NVAC, revised the Standards for Adult Immunization Practice in 2013. They state that all health professionals should encourage adult patients to receive vaccines. NVAC recommends that all health professionals assess the vaccine needs of their patients with each interaction, including hospitals, clinics and pharmacies. Once the need for vaccination is identified, the healthcare professional should administer the necessary vaccines that day or refer the patient to a practitioner who can immunize or has the product in stock. NVAC notes that more patients receive vaccines when they are given the recommendations and the vaccine at the same visit.

Documentation of the immunizations given should be updated in the patient’s electronic medical record, or EMR, and the state’s IIS. These standards emphasize the importance of collaboration between all immunizing and non-immunizing healthcare professionals to support the “immunization neighborhood.” Collaboration, coordination and communication among the patient’s healthcare team are essential for keeping patients up-to-date with their immunizations and protecting the community from vaccine-preventable disease.

FUTURE OF IMMUNIZING IN THE COMMUNITY PHARMACY

Immunizations may be expensive whether a patient has insurance or not. Most insurance companies cover vaccines as preventive health, but some pay only for the product and service as part of medical coverage, not pharmacy. The Affordable Care Act, or ACA, requires that all Health Insurance Marketplace plans and most other private insurance plans cover preventive vaccines without charging a co-payment or co-insurance when it is administered by an in-network provider. The vaccines covered include hepatitis A, hepatitis B, herpes zoster, human papillomavirus, influenza, MMR, meningococcal, pneumococcal, Tdap and varicella. The ACA also updated provisions of the Medicare Modernization Act of 2003, or MMA, to expand medication therapy management services, or MTM, as a part of Medicare Part D plans. Because of this, identifying patients in need of immunizations, as well as administering the vaccine, can both be billed as MTM services.

The benefits of vaccines for infectious disease prevention are clear. New vaccines are in development for not only infectious diseases, but also for cancer and neurological disorders. There are currently about 300 vaccines either being tested in clinical trials or under review by the Food and Drug Administration. As all medications, vaccines must undergo many years of thorough testing before they are approved for use in the general public. Some vaccines of interest include HPV9, which is essentially an “updated Gardasil”; EV71, which can prevent hand, foot and mouth disease and aseptic meningitis; and a recombinant vaccine against malaria.

CONCLUSION

Pharmacists have many responsibilities while working in community pharmacy. Dispensing prescriptions, counseling patients and providing clinical services are just a few of the tasks that can make any day fly by. It is helpful to get the entire pharmacy team involved with immunizing. Everyone should be aware of the immunizations the pharmacy provides and the ages that are eligible for immunization in the pharmacy in the particular state. Identify vaccine eligibility based on medication history and to have an open dialogue with patients about the pharmacy’s immunization services. Finally, provide the pharmacy staff with payer information, including insurance codes, discount card programs or special rates that may be pertinent to certain vaccines.

The interactions with patients about their health and the best ways to keep them healthy are just as important as the services billable to insurance. By providing accurate and thorough evidence to patients regarding their immunization needs, pharmacists can be an active part of preventing disease and improving public health.


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Successful completion of “Tetanus and shingles and flu – Oh my! Immunization update for pharmacists” (0401-0000-14-007-H04-P) is worth two contact hours of credit. To submit answers, visit our website at www.CEdrugstorenews.com.

1. Which agency releases the updated immunization schedules each year?
   a. APhA  
   b. ACOG  
   c. CDC  
   d. NVAC  

2. Women who are pregnant should receive a Tdap vaccine with each pregnancy during which time period?
   a. 0-12 weeks gestation  
   b. 13-19 weeks gestation  
   c. 20-26 weeks gestation  
   d. 27-36 weeks gestation  

3. The ACIP recommends that patients with the following condition receive the hepatitis B vaccine?
   a. Asthma  
   b. Diabetes  
   c. Pregnancy  
   d. Dyslipidemia  

4. If a patient was given Pneumovax 23® at his doctor’s office last week, he must wait at least eight weeks before he can receive the Zostavax® vaccine.
   a. True  
   b. False  

5. Which of the following is a new, non-egg-based influenza vaccine that is made from the kidney cells of a dog?
   a. Flucelvax®  
   b. Fluvirin®  
   c. Flonase®  
   d. Flublok®  

6. Which of the following is an empathetic response to patients’ vaccine concerns?
   a. “I don’t think you know what you’re talking about. Just listen to me.”  
   b. “I understand your concern, and I know there is a lot of information out there.”  
   c. “I disagree with what you’re saying, and here’s why.”  
   d. “I think you should find another pharmacy if you don’t like what I’m recommending.”  

7. Which of the following are ways to ensure that patients receive all of the doses in a vaccine series?
   a. Educate patients about the importance of being up-to-date with all of their immunizations  
   b. Put reminder notes in the patient’s medication profile  
   c. Set calendar alerts at the pharmacy to remind the staff to call the patient when their next immunization is due  
   d. All of the above  

8. How do Immunization Information Systems, or IIS, help to improve immunization rates?
   a. By generating patient reminders  
   b. By ordering vaccines for pharmacies  
   c. By consolidating nationwide vaccination records  
   d. IIS does not help improve immunization rates  

9. The Affordable Care Act provides coverage for which of the following vaccines?
   a. Yellow Fever  
   b. Polio  
   c. Influenza  
   d. Hepatitis C  

10. Which of the following is not essential among the patient’s healthcare team for supporting an “Immunization Neighborhood?”
    a. Communication  
    b. Coordination  
    c. Consideration  
    d. Collaboration