Vaccines are considered one of the most important contributions to public health ever. Since the introduction of vaccines many years ago, very dangerous and deadly diseases such as polio and smallpox have been virtually eliminated.

The basic concept of using a vaccine is fairly simple. Vaccines introduce a very small amount of a substance, such as a killed or weakened virus or bacteria, into the body. These aren’t strong enough to actually cause infection in healthy recipients of vaccines, although it’s a popular myth that they can. In response to the vaccine, the body builds up bacteria- or virus-fighting antibodies against that particular bacteria or virus. This is protective, so that an individual who receives a vaccine will be immune to that specific infection. Most vaccines are protective in at least 80% of individuals who receive them.

The occurrence of many vaccine-preventable diseases (infections) is at or near a record low. However, there are still individuals, children included, who are not properly immunized. This leaves them susceptible to vaccine-preventable infections, and also increases the risk for outbreaks in the community. More pharmacists are eligible to administer vaccines, or immunize patients, than ever before. It’s important for pharmacy technicians to understand the ins and outs of immunization, and to have the knowledge and skills to help support pharmacists in providing this important service to patients.

Patricia Cake is a 37-year-old daycare provider. It’s mid-September, and she brings in this Rx for a flu shot. She mentions that she can’t risk getting the flu and passing it on to “her babies.” Patti is a regular patient, and you ask her if she has any updates such as new drug or food allergies or new medical problems. She says, “No changes at all, except I have been taking a fish oil supplement to help my eyes.” You note this new medication on her patient profile.

Can all pharmacists administer vaccines? How can I help?
Pharmacists in all 50 states can legally administer vaccines. In Canada, pharmacists in most provinces will be able to administer vaccines, including Alberta, British Columbia, Manitoba, New Brunswick, Ontario, and Nova Scotia. In the U.S., the requirements for administering vaccines vary from state to state. Some states require special training before a pharmacist can immunize. Some states only allow pharmacists to administer certain vaccines, or have age restrictions for the patients a pharmacist can immunize. Some states require a prescription from a prescriber, and some states allow standing orders or protocols so that a patient doesn’t need to bring in an Rx.

Pharmacy technicians can’t actually administer vaccines. But this doesn’t mean you can’t contribute to the effort. Pharmacy technicians can help pharmacists in a wide variety of ways. These might include scheduling appointments for patients who request immunization, providing patients with necessary paperwork (e.g., screening questionnaires, vaccine information statements [VIS], informed consent forms,
etc), billing for vaccines and their administration, making sure there are adequate supplies of vaccines available in the pharmacy, and making sure there are plenty of other necessary supplies (e.g., gloves, cotton balls, alcohol swabs, etc). These are all very important functions, because administering vaccines along with this accompanying work might be tough for a pharmacist to squeeze into his or her workflow. When everyone pitches in, things are likely to go much more smoothly.

You know that the pharmacist will administer the vaccine when Patti’s turn comes up, and that you should process the Rx as usual. However, you hand Patti a screening questionnaire and a vaccine information sheet (VIS) for influenza vaccine to look over as she waits. You like to keep both of these handy since you know lots of patients will be coming in for the flu shot during this time of year. Handing these out ahead of time will ensure that Patti is ready when the pharmacist is ready.

What is a vaccine schedule?
Vaccine schedules are recommendations that specify which vaccines an individual should receive and when. The schedules are broken down by age groups, so there’s one for infants and children, one for adolescents, and one for adults.

In the U.S., the vaccine schedules are published by a group called ACIP, which is the Advisory Committee on Immunization Practices. The schedules are available on the Centers for Disease Control and Prevention (CDC) website at http://www.cdc.gov/vaccines/schedules/. They’re updated yearly, and they come out at the beginning of each year. In Canada, the schedules come from the National Advisory Committee on Immunization (NACI) and can be found at http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php.

What is a booster shot? Is it the same thing as a vaccine?
A booster shot is a little different from what is referred to as a vaccine for primary immunization. Booster shots are given after the first dose of vaccine, to make sure a patient maintains his or her immunity to a particular disease. The dose of a booster shot is usually lower than the dose of the primary vaccine. Probably one of the most common boosters is for tetanus. It’s well-known that a booster of tetanus is needed at least every ten years for adults. This is because the immunity from the primary vaccine and subsequent booster shots doesn’t last forever.

Sometimes, a second or third dose of a vaccine is needed to provide good protection. These additional doses aren’t the same as a booster shot. Vaccines that require more than one dose, or a series of doses, for the best effect include measles-mumps-rubella (MMR) and chickenpox vaccines.

You know that since the flu virus changes from flu season to flu season, the yearly flu shot actually protects individuals like Patti from a different strain every year. The yearly flu shot is not considered a booster.

Are there any reasons a person should NOT receive a vaccine?
There aren’t many reasons a person shouldn’t receive a vaccine. However, this is usually dependent on the specific vaccine. For example, FluMist, the nasal flu vaccine, contains live attenuated flu virus. FluMist should not be given to young children with asthma because it can cause wheezing, or to pregnant women because it has not been studied in these individuals. If a person is allergic to eggs, he or she may not be able to get some flu vaccines, depending on how severe the reaction to eggs is. Or, the patient may need to be closely monitored after administration of the vaccine. The shingles vaccine (Zostavax-U.S., Zostavax II-Canada) shouldn’t be given to women who are pregnant or to anyone who has had a severe allergic reaction to gelatin or the antibiotic neomycin. Immunocompromised patients, or those with weakened immune systems such as from cancer chemotherapy or HIV, shouldn’t receive certain vaccines because there’s an increased risk of side effects with live vaccines and inactivated vaccines may not be effective. These are just
a few examples, but they’re also good illustrations of why it’s important to have information such as a patient’s medical conditions, allergies and reactions, etc., on file.

As a good double check, information on contraindications to vaccines is included on vaccine information statements (VIS). Patients must read these prior to being given any vaccine.

**What should I consider when I enter an Rx for a vaccine into the computer?**

As a good double check, information on contraindications to vaccines is included on vaccine information statements (VIS). Patients must read these prior to being given any vaccine.

Vaccines are relatively easy to get mixed up. One example is Tdap (Adacel, etc) and DTaP (Daptacel-U.S., etc). Both of these vaccines are used to protect people against tetanus, diphtheria, and pertussis. However, Tdap is a booster for adolescents and adults, and DTaP is for primary immunization of kids up until their seventh birthday. A good way to avoid mix-ups with these vaccines is to think “caps for kids.” Hundreds of patients have received the wrong product. This isn’t really dangerous, but it may require an individual to get another shot. On the other hand, a mix-up between Adacel and Engerix B, a vaccine for hepatitis B, is a bigger problem. These have similar packaging, and accidentally administering one instead of the other could leave a patient unprotected. Yet another example of a potential mix-up is with the wide array of seasonal flu vaccines. There are trivalent (three virus strains) and quadrivalent (four virus strains) versions, as well as high-dose versions (U.S.), intradermal versions, and egg-free versions. Use our **PL Chart, Influenza Vaccines for 2014-2015** (U.S. subscribers, Canadian subscribers), to familiarize yourself with the different products.

If you have any questions about an Rx for a vaccine, make sure and ask the pharmacist. Guessing is never a good idea.

**You know that you have several different flu vaccines in stock, but only one brand of adult trivalent flu vaccine:** Fluzone. You double-check with the pharmacist to make sure this one is okay to use. She says, “yes,” so you continue with entering the Rx. You double-check Patti’s profile, and she only has allergies to sulfa drugs (rash) and strawberries (trouble breathing). When you enter the Rx for flu vaccine into the computer system, you do not get an allergy alert.

**Are there any special dispensing or labeling requirements for vaccines?**

Often, the pharmacist will be administering vaccines directly, instead of dispensing them. Exceptions to this would be if a patient comes in to buy a vaccine to take back to their prescriber to administer, or in the hospital setting, where vaccines are dispensed for administration by a nurse or prescriber.

Make sure that you **choose the correct product** when a vaccine is dispensed. As mentioned above, mix-ups such as with Tdap/DTaP, can easily occur. Many of these errors are caused when the wrong product is pulled from stock upon dispensing. Make sure that these products are stocked separately and correctly, to avoid problems.

Also, make sure you **dispense the correct diluent** with a vaccine. A number of vaccines require dilution prior to administration, such as the Haemophilus b vaccine (ActHIB-U.S.) and the meningococcal vaccine, Menveo. It’s important to avoid giving just the plain diluent instead of the reconstituted vaccine. Giving just the diluent could leave the patient unprotected.

Regardless of the scenario, a **vaccine information statement**, or VIS, must be dispensed with most vaccines in the U.S. This is mandated by federal law. A VIS contains information on the benefits and risks of specific vaccines. These can be found online, at http://www.cdc.gov/vaccines/hcp/vis/index.html. It’s a
good idea to keep a supply of these handy. If there is no VIS for a combination vaccine, you can distribute the VIS for the components of the combination vaccine.

**Manufacturer name and lot number** must be recorded for vaccines that are administered. One of the reasons for this is for tracking of adverse events. This information must be kept on file if you are working with an immunizing pharmacist. And, it must be provided in the hospital setting when a vaccine is dispensed for administration by another health care professional. You will usually accomplish this by neatly writing the information on the label of the vaccine, if it is drawn up in a syringe and dispensed. If the vaccine is dispensed in its original container, there’s no need to write it down because the person who administers the vaccine can copy it from the box or vial. Be sure to know the specific policy for this at your workplace.

Since most vaccines **require refrigeration**, you will want to place a “refrigerate” auxiliary label on those that are dispensed and not administered immediately. Also, make sure that any multidose vial of a vaccine has an **appropriate beyond-use date** noted on the vial label once it has been entered. This date can be the expiration date on the vial, unless the manufacturer has different information in the product labeling such as 28 days after the vial is first entered. If contamination is suspected, the vial should be discarded.

You pull Patti’s dose of flu vaccine from the pharmacy refrigerator, and place it with the Rx and the label for the pharmacist to administer when she is ready. This vaccine is already in liquid form, so there’s no diluent required for mixing.

**How is billing for vaccines different from other Rx drugs?**
Billing for vaccines is a little different than billing for other Rx drugs if the vaccine is administered in the pharmacy. In most cases, you must bill for both the vaccine product itself and also for administration. These separate charges should be made clear when billing is submitted. In the U.S., patients will most often pay cash for immunization, or it will be covered by Medicare Part B or Part D. Some vaccines (e.g., influenza, hepatitis B, pneumococcal, etc) are covered under Part B, but shingles vaccine (Zostavax) and others that are not covered under Part B must be covered under Part D.

**What about storage requirements for vaccines?**
Most vaccines require refrigeration, and some must be kept frozen (e.g., MMWR plus varicella [ProQuad-U.S.], varicella or chickenpox [Varivax-U.S.], zoster or shingles [Zostavax-U.S.]). Watch out for vaccines that come with a diluent that has different storage requirements, such as with Zostavax, where the vaccine is stored in the freezer and the diluent should be kept in the refrigerator or at room temperature. Likewise, Zostavax II vaccine (in Canada) must be stored in the refrigerator while the diluent can be stored either in the fridge or at room temp. Following are some tips for the proper storage of medications that require cold temperatures:

- Frozen medications or vaccines should be stored at -15°C (5°F) or colder.
- Refrigerated medications should be stored at temperatures between 2°C and 8°C (36°F to 46°F). Refrigerator settings should be mid-range at 5°C (41°F) to allow the highest safety margin.
- Never store medications or vaccines in the refrigerator or freezer unless they are meant to be stored this way.
- Store refrigerated medications and vaccines in their original packaging. This helps protect them from light and keeps them visually distinct to avoid mix-ups. For medications or vaccines with similar names or packaging (e.g., insulins, adult and pediatric vaccines), use shelf tags or store in different locations within the refrigerator.
- Don’t crowd medications in the refrigerator. For consistent temperatures, allow air circulation between items.
• Store products in the middle of the refrigerator, not in bins or door compartments, away from the floor, coils, walls, and vents. This helps ensure stable temperatures.
• Do not store food and beverages in the same refrigerator as medications and vaccines. There may even be regulations against this practice in your area.
• Examine arriving orders for refrigerated or frozen packaging, and unpack them immediately.
• Finally, be sure to follow your pharmacy’s policy for checking and logging refrigerator and freezer temperatures.

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