Hello and welcome to this webinar. My name is JoEllen Wolicki and I am part of the Immunization Services Division at the Centers for Disease Control and Prevention.

Vaccines are critical tools that protect populations from serious diseases, and in this webinar, we’re going to discuss how you as a frontline healthcare worker can successfully vaccinate adolescents. There is a printable summary of the content we will be discussing on this webinar’s webpage for future reference.

Vaccines are routinely recommended for adolescents. Protection from some childhood vaccines wears off and additional doses are needed to extend protection. And adolescents need additional vaccines, not given to infants and young children, to protect from other infections or diseases.

Vaccination visits can be a stressful experience. Adolescents may experience fear and anxiety, which if not addressed, can have long-term effects such as fear of needles, nonadherence with vaccination schedules, and avoidance of needed health care throughout their lifetime.

Some healthcare providers may be vaccinating adolescents for the first time. As a frontline healthcare provider, your pain management and vaccine administration practices can positively impact adolescents’ experiences and perceptions of vaccination., as well as protect them from serious diseases.

Health care professionals should be knowledgeable about the vaccines they are administering. This includes how to store, prepare and vaccine administration best practices. You should also be knowledgeable about administration techniques to reduce injection pain or distress. A planned approach to decreasing the adolescent's anxiety before, during and after immunization and for decreasing pain from the injection should be followed.

The objectives for this webinar include:

* Describe vaccine administration best practices for adolescents
* Describe pain management strategies during and after vaccination
* Identify practices to manage syncope that may occur after vaccination

Let’s get started.

Today I’m going to discuss:

• Basics of adolescent vaccination

• Administration best practices

• Distraction strategies to reduce stress and ease pain

• Observation and management of syncope and finally,

• Adolescent and parent education for post-vaccination pain management

Listed on this slide are the vaccines adolescents may need. The patient’s immunization status should be reviewed at every health care visit. Using the patient’s immunization history and the recommended immunization schedule for children, health care providers should assess for all routinely recommended vaccines as well for any missing doses or vaccines that should have been administered at an earlier age.

The Advisory Committee on Immunization Practices voted on May 12, 2021, to recommend COVID-19 vaccines and other vaccines may be administered on the same day, as well as within 14 days of each other. There is no time factor or minimum interval between COVID-19 vaccines and other vaccines. When deciding if to administer COVID-19 vaccines and other vaccines, providers should consider whether the patient is behind or at risk of becoming behind on recommended vaccines, their risk of vaccine-preventable diseases (e.g., during an outbreak), and the reactogenicity profile of the vaccines.

As of the date of this recording, June 3, 2021, COVID-19 vaccination is only recommended for adolescents 12 through 18 years of age Currently, only Pfizer-BioNTech vaccine is authorized for adolescents 12 years of age and older. But this is an evolving situation and other products may have been authorized. Please check the link provided for the most current information.

Contraindications and precautions to vaccination generally dictate circumstances when vaccines should not be administered. Many contraindications and precautions are temporary, and the vaccine can be administered later.

Before administering any vaccine, patients should be screened for contraindications and precautions, even if the patient has previously received that vaccine. The patient’s health condition or recommendations regarding contraindications and precautions for vaccination may change from one visit to the next. To assess patients correctly and consistently, health care providers should use a standardized, comprehensive screening tool.

Parents obtain information about vaccine from multiple sources- friends, family members and the internet are often cited. But studies show health care providers are the most trusted source of vaccine information. Research also shows how you talk about vaccines is also important. When strong recommendation is given by a health care provider, a patient is four to five times more likely to be vaccinated. When providers use presumptive language to initiate vaccine discussions, significantly more parents choose to vaccinate their children. Instead of saying “What do you want to do about shots today,” an approach using presumptive language would be to say, “Your child needs three vaccines today.”

Let us move on to administration best practices.

There are a variety of administration best practices you should engage in to assure the vaccine is given safely and effectively, as well as additional practices you may consider to reduce pain.

You may consider topical anesthetics, which block transmission of pain signals from the skin. They decrease the pain as the needle penetrates the skin and reduce the underlying muscle spasm, particularly when more than one injection is administered. They are effective for vaccines that are administered both intramuscularly and subcutaneously and there is no evidence that topical anesthetics have an adverse effect on the vaccine immune response.

Some considerations:

These products should be used only for the ages recommended and as directed by the manufacturer.

Because using topical anesthetics may require additional time, some planning by the healthcare provider and parent may be needed. For example: Topical anesthetics can be applied during the usual clinic waiting times, or before the patient arrives at the clinic provided parents and patients have been shown how to use them appropriately and where to apply them.

The vaccine must be injected where the anesthetic has been applied. The application area can be outlined using a nontoxic marker.

Identify the injection route and select the correct equipment, including needle size. The route dictates the length and gauge of needle needed. Let’s discuss this in more detail

Here is a list of vaccines adolescents may need. Most should be administered by intramuscular injection including covid-19, human papillomavirus, influenza, meningococcal ACWY, meningococcal B and tetanus, diphtheria and acellular pertussis vaccines. Measles, mumps and rubella and varicella vaccines should be given subcutaneously. And with polio vaccine there is a choice – it may be given intramuscular or subcutaneous injection. Remember, many of the vaccines listed are routinely recommended at younger ages. If given earlier in childhood and the vaccine would not need to be repeated. Therefore, reviewing the immunization history is a critical step when assessing for needed vaccines.

For adolescents:

• Use a 22–25-gauge 5/82–1 inch (16–25mm) needle for intramuscular injection. As noted earlier, most routine vaccines are administered by intramuscular injection. It is critical that you use the correct needle length. For all intramuscular injections, the needle should be long enough to reach the muscle mass and prevent vaccine from seeping into the subcutaneous tissue. Ensuring the vaccine is given in the muscle is important to optimize immunogenicity and minimize adverse reactions at the injection site. If vaccine is given subcutaneously with the incorrect needle length, patients may experience more pain, irritation, and redness at the injection site.

• Use a 23–25-gauge 5/8 inch (16mm) for subcutaneous injection. The measles, mumps, and rubella, and varicella vaccines are administered by subcutaneous injection. These are recommended during earlier in childhood, however some adolescents may have missed doses and need catch-up vaccination

You should also accurately identify the injection site.

The preferred site for an intramuscular injection in this age group is the deltoid muscle in the upper arm. The deltoid muscle is a large, rounded, triangular shape. Use anatomical landmarks to correctly identify the deltoid muscle:; Find the acromion process, which is the bony point at the end of the shoulder. The injection site will be below the bone and above the axillary fold/armpit.

In rare instances, in which the deltoid muscle in the upper arm cannot be used, the vastus lateralis muscle in the anterolateral thigh is an alternative site.

Subcutaneous injections are administered into the fatty tissue found below the dermis and above muscle tissue. For adolescents, subcutaneous injections are given in the fatty tissue above the upper outer triceps of the arm. Pinch up the skin and underlying fatty tissue to avoid reaching the muscle

None of the routinely recommended vaccines for adolescents are given subcutaneously. As noted on the previous slide, some adolescent need to catch up missing vaccines or doses. You can find routine and catch-up schedules at the links listed on this slide.

Sitting upright, rather than laying them down supine, is associated with decreased pain. Although the exact mechanism underlying the reduction in pain associated with this positioning is unknown, it may involve a reduction in anxiety, which in turn reduces the perception of pain. Conversely, excessive restraint may increase the child’s distress, so parents and health care providers are encouraged to hold and support children without using excessive force.

For an intramuscular injection, the muscle should be relaxed. Ask them to:

• Take deep breathes in and out

• Relax their shoulders and arm. Place their hands on their upper thighs

If administering multiple vaccines during the same clinical encounter, administer the vaccine that is most painful when injected vaccine last. For example, the HPV vaccine is known to be painful when injected, so should be administered last.

Administer each vaccine in a different injection site. Recommended vaccination sites have multiple injection locations. Separate injection sites by 1 inch or more, if possible, so any local reactions can be differentiated..

Finally, when administering vaccine, rapidly inject it without aspiration.

Aspiration is not recommended during the injection process. Aspiration and injecting medication slowly are practices that have not been evaluated scientifically. Aspiration was originally recommended to reduce the risk of intravascular injection of the vaccine. However, the sites commonly used for vaccination injections are devoid of large blood vessels, and aspiration is no longer regarded as necessary. There have been no documented harms caused by omitting this step.

Injecting medication slowly was originally thought to decrease pain from sudden distention of muscle tissue. However, it can increase pain because of the combined effects of a longer needle-dwelling time in the tissue and shearing action or wiggling of the needle.

Now let’s move on to distraction strategies to reduce stress and pain.

Distraction is a psychological intervention that involves directing the child’s attention away from the procedure. It is a key tool for reducing stress and managing pain. It is important to ensure that age-appropriate distraction strategies are used and that children are engaged with them. When appropriate, involve the child in planning which distraction strategy will be used. Some strategies you may consider include:

• Interact with adolescent throughout the appointment.

• Use clinician-led distraction techniques. Distraction led by a health care provider is effective for children of all ages. For example, point out interesting things in the room and ask the adolescent to describe what they see, or tell an age-appropriate story.

• Use patient-led distraction techniques. Self-led distraction is also effective. For example, suggest the adolescent bring a handheld game, video, music, or book to distract them during the appointment.

• Remind adolescents to focus on distraction. Adolescents’ attention may wander to the injection. In these cases, remind them to stay focused on the distraction strategy.

• Suggest adolescents engage in slow, deep breathing or blowing during vaccination.

• Avoid communicating “it won’t hurt.”

Now let’s talk about potential syncope after vaccination.

• Fainting, also called syncope, is a temporary loss of consciousness caused by a decreased blood flow to the brain. Although fainting has a variety of possible causes, it is usually triggered by pain or anxiety. Sometimes people faint after vaccination. Reports from the Vaccine Adverse Event Reporting System (VAERS) shows that fainting after vaccinations is common in adolescents. One study of VAERS reports found that 62% of syncope reports were among adolescents 11 to 18 years old.

• Fainting after getting a vaccine is most commonly reported after three vaccines given to adolescents: HPV, MCV4, and Tdap. Because the ingredients of these three vaccines are different, yet fainting is seen with all of them, scientists think that fainting is due to the vaccination process and not to the vaccines themselves. However, there is not yet a definite answer about whether an ingredient of the vaccines is responsible for the fainting or if adolescents are simply more likely than children or adults to experience fainting.

• People who faint might fall and injure themselves if they are not sitting or lying down at the time that they lose consciousness. The main concern is head injury, so it is important to engage in practices to prevent syncope.

There are simple strategies you can put in place to prevent injuries:

Keep adolescents seated for at least 15 minutes after vaccination to help prevent injuries that could occur from a fall while fainting.

Note that some patients should be observed for adverse reactions for 30 minutes following administration of COVID-19 vaccine. Refer to the website for more information on COVID-19 vaccine observation periods.

Be aware of symptoms that precede fainting, for example: weakness, dizziness, and pallor. Provide supportive care and take appropriate measures to prevent injuries if such symptoms occur.

Finally, if an adolescent does faint, observe them until they regain consciousness so further treatment can be determined.

Now let’s talk about what parents and adolescents need know after receiving vaccines.

Educate adolescents and their parents about pain management after a vaccination. Adolescents might experience side effects that should go away within a few days including:

• Pain, redness, and/or swelling at the injection site.

• They may experience tiredness, headache, muscle pain, chills, fever, or nausea

Remember that prior to vaccination, you are required by law to provide specific information to vaccine recipients or their caregivers to help make an informed decision about vaccination.

• For licensed, routine adolescent vaccinations, provide a Vaccine Information Statement for the vaccine(s) to be administered.

• If a vaccine is being used under an Emergency Use Authorization, provide the Fact Sheet for Recipients and Caregivers.

Among other key information, these documents a list risks of a vaccine reaction or reported side effects.

Educate adolescents and their parents about pain management after a vaccination.

• Side effects can be minimized:

• Apply a clean, cool, damp washcloth to reduce redness, soreness, and/or swelling.

• Use or exercise the arm.

• Drink plenty of fluids and dress lightly.

Provide parents guidance regarding non-aspirin-containing pain relievers. It is important to mention - administering over-the-counter pain relivers such as acetaminophen or Ibuprofen BEFORE vaccination is not recommended due to concerns of a negative effect on the immune response to the vaccine. BUT non-aspirin pain relievers can be used afterwards to treat injection site pain and reduce the discomfort of a fever, should either occur. Aspirin is NOT recommended for children and adolescents.

Vaccine administration errors can have many consequences, including inadequate immunological protection, possible injury to the patient, cost, inconvenience, and reduced confidence in the health care delivery system. A vaccine administration error is any preventable event that may cause or lead to inappropriate medication use or patient harm.

When a vaccine administration error occurs, health care providers should determine how it happened and put strategies in place to prevent it in the future. Whenever a vaccine administration error occurs, HCP are encouraged to report it to the Vaccine Adverse Event Reporting System. HCP are required to report administration errors involving COVID-19 vaccine. Shown here is a chart of strategies that can be used to prevent errors. It is available on CDC's Vaccine Administration Resource Library page.

Administering vaccines safely is key to protecting adolescents from serious diseases.

For a summary of information presented on this webinar, follow the link listed on this slide.

This webinar provided information on some vaccine administration practices specific to adolescents but does not include all administration best practices. Before administering vaccines, health providers should be knowledgeable and skilled in vaccine administration. For resources on vaccine administration, follow the link for the Vaccine Administration Resource Library listed on this slide.

For additional vaccination resources, please see the links available on this slide.

That concludes our webinar on COVID-19 Considerations for Hosting Off-site Vaccination Clinics in the COVID-19 Vaccine Webinar Series. Thank you so much for your time.