Vaccine Administration Presentation Notes

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Disclosure Statements

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Objectives

- Outline Strategies for Communication
- List Positioning, Pain Control and Comforting Techniques
- Review Infection Control
- Discuss Vaccine Preparation
- List Vaccine Administration Routes, Sites, Needle Sizes, and discuss administration of multiple injections and the CDC guidance on non-standard administration
- Review Documentation Requirements
- Discuss Avoiding Vaccine Administration Errors and Managing Adverse Events

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Staff Training and Education Requirements

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Strategies for Communication

Communication is the KEY to a client's understanding about vaccines and being compliant in returning for recommended vaccines. Prior to administering vaccines, the nurse should first establish communication with the client or the parent/guardian.

After assessing the client's record, discuss which vaccines are recommended for this visit.

The law under the 1986 National Childhood Vaccine Injury Act requires that parents or guardians be provided with the most current Vaccine Information Statements (VIS) published by CDC. This publication date is on the bottom corner of the sheet. You need to document that the parent was given the VIS by recording the publication date of each VIS given.

Identify any possible precautions and contraindications.
After asking if parent reviewed the VIS, ask if they have concerns and address each concern.
Have parent sign consent form.
Discuss what immunizations will be due on next visit and give the date.

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We will briefly discuss each of these key issues that should be considered when administering vaccines.

- Comforting Techniques
- Positioning
- Pain Control

For IM injections:

- The patient's limb should be positioned to allow relaxation of the muscle injected.
- For the deltoid, some flexion of the arm may be required.
- For the anterolateral thigh, some degree of internal rotation may be helpful.

Infants and Young Children:

- Infants and young children may exhibit less pain behavior when held on the lap of a parent or caregiver. The parent should be instructed to hold the child securely.
- When the child is held on the mother's lap for an injection, her leg can be crossed over the leg of the child to hold the leg securely. The mother should hug the child with both arms to secure the child's arms.
- Older children may be more comfortable sitting on the parent's lap or on the edge of the exam table, hugging their parent's chest while the injection is being given.
- Adolescents and adults should be seated for immunizations. "Syncope may occur after immunization, particularly in adolescents and young adults. Personnel should be aware of pre-syncope manifestations and take appropriate measures to prevent injuries if weakness, dizziness, or loss of consciousness occurs. The relatively rapid onset of syncope in most cases suggests that health care

professionals should consider observing adolescents for 15 minutes after they are immunized. Having vaccine recipients sit or lie down for 15 minutes after immunizations could avert many syncope episodes and secondary injuries. If syncope develops, patients should be observed until symptoms resolve. Syncope following receipt of a vaccine is not a contraindication to subsequent doses." (Red Book 2012, p.20-24)

Pain Control

Information referenced from the Red Book 2012, pages 23-24.

Parents should be educated about techniques for reducing injection pain or distress. Truthful and empathetic preparation for injections is beneficial, using words that are explanatory without evoking anxiety---for example, "pressure", "squeezing", and "poking" rather than "pain", "hurt", and "shot". Techniques for minimizing pain can be divided into physical, psychological, and pharmacologic. **Note that routine preemptive administration of acetaminophen is not recommended.**

Physical

Skin-to-skin contact between mothers and their infants, breastfeeding, nonnutritive sucking on a pacifier, sitting on parent's lap or examination table edge and hugging their parent's chest, and stroking or rocking a child after an injection decreases crying and other pain behaviors. "If multiple injections are to be given, having different health care professionals administer them simultaneously at multiple sites (e.g. right and left anterolateral thighs), may lessen anticipation of the next injection. Allowing older children some choice in selecting the injection site may be helpful by allowing a degree of control."

Psychological

- For younger children, parents may soothe, stroke, and calm the child. For older children, parent demeanor affects the child's pain behavior. Humor and distraction techniques tend to decrease distress, whereas excessive parental reassurance, concern or apology tends to increase distress. Breathing and distraction techniques, such as telling stories, reading books, or use of music are effective.

Pharmacologic

- Topical applied agents may reduce the pain of injection. Topical anesthetics (eg, lidocaine/pilocaine). Because topical anesthetics require 30-60 minutes to provide adequate anesthesia, planning is necessary such as applying the cream before an office visit or immediately upon arrival.

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Infection Control

- Hand washing
- Gloving
- Equipment Disposal

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Vaccine Preparation

- Syringe/Needle Selection
- Inspecting Vaccine
- Reconstitution
- Filling Syringes

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Pre-filled Syringes

The person who prepares the medication should be the same person who administers the medication. Prefilled syringes should be properly stored, used on the same day they are filled, and label syringes and keep them cool. **Pre-filling syringes is strongly discouraged to reduce risk of medication errors, vaccine contamination and vaccine wastage.**

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Importance of Administering Vaccines Correctly

- Ensure Optimal vaccine efficacy
- Decrease localized and systemic reactions

- Decrease pain

Preparing and administering medications requires accuracy by the nurse. The nurse must pay full attention to the procedure and try not to do other tasks simultaneously. Accuracy is greatest when the nurse observes the “five rights” of drug administration.
Perry and Potter (1998). Clinical Nursing Skills and Techniques St. Louis, MO: Mosby.

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Vaccines administered by other routes

- Intranasal (IN)
- Oral (PO)

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It is important to use the correct route when administering vaccines. It is important to insert the needle at the appropriate angle to insure delivery to the muscle or subcutaneous tissue.

IM: For (IM) injections, the choice of site is based on the volume of the injected material and size of the muscle. The needle should be directed at a 90 degree angle. Needles used for IM injections should be long enough to reach the muscle mass to prevent the vaccine from seeping into subcutaneous tissue and, therefore, minimize local reactions and not so long as to involve underlying nerves, blood vessels, or bone. Ordinarily, the upper, outer aspect of the buttocks should not be used for active immunizations, because the gluteal region is covered by a significant layer of subcutaneous fat and because of the possibility of damaging the sciatic nerve. However, clinical information on use of this area is limited. Because of diminished immunogenicity, hepatitis B and rabies vaccines should not be given in the buttocks at any age. People, especially adults, who were given hepatitis B vaccine in the buttocks should be tested for immunity and re-immunized if antibody concentrations are inadequate.

SC: SC injections can be administered at a 45 degree angle into the anterolateral aspect of the thigh or upper, outer triceps area by inserting the needle in a pinched-up fold of

skin and tissue. The 2012 Red Book (p.21-23) states the following regarding the need to aspirate.

"Aspiration before injection of vaccines or toxoids (i.e. pulling back on the syringe plunger after needle insertion, before injection) is not recommended, because no large blood vessels are located at the preferred injection sites, and rapid plunge may reduce pain."

Selecting injection routes, site and needle size are based upon:

- Age, volume of material, viscosity of material, size of muscle, and recommended depth

Injection routes of administration are:

- **Intramuscular (IM), Subcutaneous (SubQ) and Intradermal (ID)**

Vaccines Administered Intramuscularly (IM)

- DTap, DT, Tdap, Td, Hepatitis A/B, Hib, Influenza, IPV, Pneumococcal, Meningococcal, HPV

(IM) injections for newborns/infants: birth-28 days/1-12 months

- Site: Anterolateral thigh muscle
- Needle size: 5/8"-1", 22-25gauge

(IM) injections for other ages: toddler, children/adolescents and adults

Site: Deltoid, anterolateral thigh muscle

Needle size:

- 1"-1 ¼" (toddlers anterolateral thigh muscle), 5/8"-1" (deltoid is an alternate site for toddlers if muscle mass is adequate), 22-25 gauge
- 5/8"-1" (children 3-18 yrs Deltoid), 1'-1 ¼" (children 3-18 yrs Alternate site anterolateral thigh muscle), 22-25 gauge
- 1-1 ½" (adults 19 yrs and older Deltoid), 1"- 1 ½" (adults 19 yrs and older alternate site anterolateral thigh muscle); 22-25gauge

Vaccines Administered Subcutaneously (SubQ)

- **MMR, MMRV, IPV, Pneumococcal Polysaccharide, Varicella, Meningococcal Polysaccharide, Herpes zoster**

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SubQ Injections

- Infants: (birth-12months) fatty tissue over the anterolateral thigh muscle, 5/8" needle/ 22-25 gauge
- 12 months-older: fatty tissue over anterolateral thigh or fatty tissue over triceps, 5/8" needle/22-25 gauge

Intradermal (ID) Route

- Fluzone licensed for use in persons 18yrs through 64 years, Deltoid region of upper arm used, patient seated with arm bent at elbow and hand on hip to ensure proper administration; **NOT** administered into the volar aspect of the forearm or by the Intradermal technique used to administer a tuberculin skin test

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Multiple Injections: When multiple vaccines are administered, separate sites should ordinarily be used if possible, two vaccines may be given in the same limb at a single visit, the thigh is the preferred site for infants and smaller children, distance for separating two injections is arbitrary but should be sufficient (1-2 inches apart) so that local reactions are unlikely to develop and multiple vaccines should not be mixed in a single syringe unless specifically licensed and labeled for administering in one syringe

Non-standard administration: CDC discourages deviating from the recommended route, site, dosage, or number of doses for any vaccine. Deviation can result in reduced protection and increase the risk of an exaggerated local reaction.

Special Circumstances are to be considered when a client has had a mastectomy, is a hemophilia patient and if immunization records have been lost

Mastectomy

- Do not use arm on the side of the mastectomy
- If double mastectomy, use another site other than the arm. (Leg)

Hemophilia

- When hepatitis B or any other IM vaccine is indicated for a patient with a bleeding disorder, it should be administered IM if in the opinion of the

MD familiar with the patient's bleeding risk, he/she can be vaccinated intramuscularly.

- Try to give the vaccines immediately after the receipt of the replacement factor.
- Use a 23 or smaller gauge needle.
- Immediate application of firm pressure to site for at least 2 minutes.
- Instruct family of risk of hematoma.

Unknown or Uncertain Immunization Status

- Only written, dated records should be accepted as evidence of immunization. When in doubt, a person with unknown or uncertain immunization status should be considered disease susceptible and recommended immunization should be initiated without delay on a schedule commensurate with the person's current age.

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Case Studies (This is an opportunity to review and test participant's knowledge)

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Documentation: National Childhood Vaccine Injury Act requires documentation of: date of administration, manufacturer, lot number, name and address, and title of person administration vaccine, adverse effects (if any), and publication date of VIS (Vaccine Information Statement). It is also required that client's personal immunization record be documented in GRITS.

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Avoiding Vaccine Errors

- When possible, involve staff in selection of vaccine products
- Keep current reference materials on each vaccine

- Rotate vaccines
- Consider the potential for product mix-up
- Triple check your work

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Management of Adverse Events: Maintain an accessible emergency kit, staff certified in CPR, conduct mock emergency drills and report any adverse events on the Vaccine Adverse Events Reporting System (VAERS). VAERS is a national vaccine safety surveillance program co-sponsored by the Centers for Disease Control and Prevention and the Food and Drug Administration. Also, the National Vaccine Injury Compensation Program (NVICP) provides compensation to individuals found to be injured by or have died from certain childhood vaccines.

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Recommended vaccines for healthcare workers/personnel; Considerations for HCW Immunization plan/policy for maintaining HCW immunization records, catch-up programs for current employees and policies for newly hired workers, work restriction policies for susceptible workers after exposure, management and control of outbreaks and options for refusal of vaccination by employees.

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Georgia Office of Immunizations Web Page and other Immunization related Resources