MEDICATING CHILDREN

PREVENTING MEDICATION ERRORS AND GENERAL CONSIDERATIONS
Medicating Children – Preventing Medication Errors and General Considerations

COURSE INTRODUCTION

Administering medication to children is a unique challenge requiring specialized knowledge and skills. Each child's age, background, and level of physical and psychosocial development must be considered, and the administration process tailored to meet these particular needs. In addition, children are particularly vulnerable to medication errors. The nurse must also pay close attention to the type of medication being administered, the dosage and the route.

To complete this course, you must do the following:

a. Read the Overview and Course Objectives.
b. Study the Terminology.
c. Study the Content Review.
d. Complete the Learning Activity.
e. Complete the Post Test.

To receive 1 hour of Continuing Education credit for the course, turn in your completed Learning Activity, Post Test, and Educational Activity Evaluation to your Instructor. If you are taking the course on a home study basis through Medcom, return the materials to: Continuing Education Coordinator, Medcom, Inc., 6060 Phyllis Drive, Cypress, CA 90630.

OVERVIEW

The material is organized around the following categories:

• Introduction
• The Five "Rights" of Pediatric Drug Administration
• Preventing Medication Errors
• Coaching Children
• Intramuscular and Subcutaneous Injections
• Administering Oral Medications
• Otic, Ophthalmic and Nasal Administration
• Conclusion
PURPOSE/OVERALL GOAL

The purpose of this program is to provide nurses with guidelines for administering medication to children of different ages and development levels with emphasis on appropriate techniques and the elimination of medication errors.

COURSE OBJECTIVES

After completing this course the learner will be able to:
- Define the five "rights" of pediatric drug administration.
- Describe specific guidelines for writing prescriptions.
- Administer medication to children using a firm, yet positive approach.
- Select suitable injection sites for medication.
- Effectively administer oral, otic, ophthalmic and nasal medications to children.
- Understand the nurse's role in the administration of children's medications.
- Use appropriate strategies for administering medication to children of different developmental levels.
Elixir  A form of liquid medication for oral use with the medication usually carried in a sweetened alcohol.

Five Rights Of Pediatric Drug Administration  A mnemonic device for preventing medication errors. The five rights are: Right Patient, Right Drug, Right Dose, Right Route, and Right Time.

Football Hold  A method of holding infants by cradling the child in one arm with the head extended and stabilized between the body and elbow.

Intradermal Injections  An injection within the skin.

Intramuscular Injection  An injection within the muscle.

Subcutaneous Injection  An injection underneath the skin but above the muscle.

Suspension  A form of liquid medication for oral use with particles of a solid medication mix with, but not dissolved in another fluid. Suspension medications require shaking prior to use.
Content Review

Read and study the material below.

INTRODUCTION

Children are particularly vulnerable to medication errors, so the nurse must pay close attention to every detail of the administration process. To successfully administer medication to a child with the least risk of error, the nurse must take into account each child’s age, background, and level of physical and psychosocial development.

This workbook will address general considerations for administering pediatric medications and present important guidelines to help prevent medication errors.

Techniques for administering intramuscular and subcutaneous injections, as well as oral, rectal, otic, ophthalmic, and nasal medications will be presented, with emphasis on using appropriate strategies for children of different development levels.

THE FIVE "RIGHTS" OF PEDIATRIC DRUG ADMINISTRATION

It is essential to remember and act according to the five "rights" of pediatric drug administration:

- right patient
- right drug
- right dose
- right route
- right time

First, identify the right patient. Young toddlers and infants cannot be relied upon to identify themselves. In a hospital setting, a parent may not always be present. Therefore, the only safe way to identify a child is to check the hospital ID band with the medication card.

Second, identify the right drug—always confirm that it is appropriate for the child’s condition.

Third, ensure that the right dose has been prescribed. If the amount of timing of the dose seems abnormal, always confirm it with the ordering physician.

Fourth, confirm the correct route for administration.
Lastly, ensure that the medication is administered at the right time.

Reviewing these critical steps with each patient will help eliminate mistakes and ensure proper medication administration.

**PREVENTING MEDICATION ERRORS**

Preventing medication errors is an especially critical concern in pediatrics. Most facilities have policies requiring that certain drugs, including digoxin, heparin, insulin, epinephrine, opioids, and sedatives be double-checked by another nurse before they are given to a child. Even if this is not mandatory at your facility, it is wise to take such precautions.

Because children require smaller doses, the margin for error is extremely small. For example, if a single error in decimal point placement occurs, the result is a tenfold or greater dosage error. By following some specific guidelines, you can dramatically reduce the chance of a medication error occurring:

- Always verify that the patient’s dose is based on his or her current weight.
- Do not abbreviate medication names.
- Always leave a space between a number and its units (10 mg—NOT 10mg).
- Never put a zero after a whole number (2 mg—NOT 2.0 mg).
- Always put a zero to the left of the decimal point for doses less than one (0.1 mg—NOT .1 mg).
- Prescriptions must be legible.

If any part of a physician’s orders is illegible, take extra steps to clarify the information before administering any medication.

**COACHING CHILDREN**

Because many children resist taking medications, administration requires a firm, yet positive approach. Above all, be honest. Always tell the child you are giving medication. For example, you might say, "Good morning, Jonathan. I’m here today to give you some medicine."

Never tell a child that medicine is candy – even if it tastes like candy. This is not only dishonest, but potentially dangerous as well. Instead you could tell the child what the medicine is for and that it tastes like grapes. If the child still hesitates, try explaining that the medicine is needed to make him or her feel better, so he or she can go home.
Once the child takes the medication, be sure to thank him or her for taking it. Also, give the child some water to wash it down, if it’s available. Not only is it important to let the child know he or she is good, but it may also help the medicine go down a little easier the next time.

Remember to take into account each child’s past experiences with medicine, as well as the form of the dose you’re administering. Talk to the child’s parents and document any special concerns.

In some cases, it is less traumatic for the child if a parent gives the medication. However, it is essential that the nurse prepares the dose and carefully supervises its administration.

**INTRAMUSCULAR AND SUBCUTANEOUS INJECTIONS**

Administering medication to children by injection poses a particular set of challenges. Most children are unpredictable, and few are totally cooperative when receiving a shot. To avoid frightening the child, always prepare injections at the nurse’s station or medication cart.

Each child’s size, weight, age, and condition will determine the injection site and needle size. While older children pose few problems in selecting a suitable site for intramuscular (IM) injections, infants, with their small and underdeveloped muscles, have fewer available sites.

Although there is not universal agreement on the best IM injection site, one preferred site for infants is the vastus lateralis. This muscle is generally well developed as a result of kicking movements, even in small infants.

The dorsogluteal site is a good option for children who have been walking for at least a year, because this muscle develops with locomotion. When developed, the dorsogluteal muscle can tolerate a greater volume of fluid. It is easily accessible, and if lying prone, the child cannot see the needle and syringe.

Another preferred injection site is the ventrogluteal area. This relatively large muscle is free of major nerves and blood vessels, and is easily accessible. Recent studies have shown that it is a safe injection site for children of all ages.

The deltoid muscle may also be used to inject small volumes of fluid in children of almost any age – even as young as 18 months.

In addition to choosing the proper injection site, it is important to select a needle that is the correct size for the medication and the location of the injection. As a general rule, choose the smallest gauge needle for the viscosity of the medication, and the shortest length needle that will reach the muscle. To estimate the proper needle length for IM injections, grasp the lateralis and choose a
needle length approximately half the distance between the thumb and index finger.

It is important to do as much as possible to minimize the pain, and resulting trauma of an injection. Distracting the child is helpful, as is a caring touch such as patting the back. You may also want to use a topical anesthetic on the injection site prior to administering the injection.

Small infants usually offer little resistance to injections. Although they squirm, they can usually be easily held. Stabilize the baby's knee and hip joint on the side of the selected injection site.

As with adults, clean the site with alcohol and stretch the skin taut.

To minimize tissue displacement, shear, and resulting discomfort, insert the needle at a 90-degree angle. Inject the medication slowly, resting the palm firmly on the leg while holding the needle. This will prevent the needle from being withdrawn if the child should move his leg.

Remove the needle and place a cotton pad over the injection site. Apply light pressure to the area and cover with a small bandage.

Infants and toddlers should always be comforted after an injection. Hold and rock the child, or allow the parent to do so.

For school-age children, it is also advisable to have someone available to help hold him or her, if needed. Even older children who appear relaxed can lose control under the stress of an injection when a needle is used. And since children often pull away unexpectedly, carrying an extra capped needle to replace a contaminated one will minimize delay.

The injection should be administered in the deltoid muscle. Carry the procedure out as quickly and skillfully as possible, employing accurate technique and effective pain reduction measures.

School-age children need comforting too, but your conversation can be a little more advanced. Tell the child you are going to be putting the medicine under his or her skin, and explain the importance of remaining still throughout this procedure, which will only take a few seconds.
After the medication has been injected, decorate the bandage with a smiling face or other positive symbol, and offer praise. Also, allow the child to express his or her feelings about what has just occurred.

You could say something like, "Sarah, you did a great job. I know it hurt for a minute, but you held still, and that was very important." Listen to the child's comments and reassure the child that it will be easier next time, because he or she will know what to expect.

In addition to intramuscular injections, nurses frequently administer subcutaneous and intradermal injections to children when giving insulin, allergy desensitization shots, and certain vaccines. The techniques involved are similar to those for intramuscular injections. However, the injection sites vary - the most common are the lateral upper arm, the abdomen, and the center third of the anterior thigh.

Because children have less subcutaneous tissue, the needle should be inserted at a 45-degree angle, rather than at 90 degrees for these procedures.

**ADMINISTERING ORAL MEDICATIONS**

Whenever possible, the oral route is preferred when administering medications to children. Many oral medications come in flavored liquids, and most children will swallow these with little or no resistance. Even infants will suck liquid medication in small doses from a syringe without a needle.

Liquids must be measured very carefully, especially when the dose is a teaspoon or less. To ensure accuracy, use a calibrated syringe with measurements clearly marked on it. Any drug ordered in teaspoons should be measured in cubic centimeters or milliliters. The standard is 5 cc, or 5 ml per teaspoon.

Always identify the type of liquid medication being used, and follow any extra preparation steps that may be required. For example, suspensions require mixing or shaking, while elixirs do not.

Many medications come with a dropper for administration. These droppers are accurate for the medications they come with and can be used to administer them. However, they should not be used to measure or administer other liquids or medications, as they can be inaccurate in these cases. Don't use teaspoons or paper cups either, as they are subject to error from a number of variables.
Most infants will readily take medication by sucking on a syringe. For those who will not, insert the syringe into the side of the baby's mouth and slowly squeeze the medication into the back and to the side, allowing time for the baby to swallow. Squirting to the side helps prevent aspiration, and squirting to the back helps prevent the medicine from being spit out.

Allowing the infant to suck medication placed in an empty nipple, or inserting a syringe into the mouth parallel to the nipple while the infant nurses, are also good ways to administer liquid medications. A young child who refuses to cooperate despite explanation and encouragement may require mild physical coercion.

Firmly cradling the child will give you more control. Gently explain your actions, and carry them out quickly and carefully. Because there is risk when using even mild forceful techniques, use extra caution, and remember that a crying child can easily aspirate on medication.

Some oral medications only come in pill form and may pose a challenge for children to swallow. Some pills can be crushed and given in a spoonful of honey, applesauce, or ice cream. However, always make sure that the pill is not a time-released medication, as crushing this and giving it to a child poses the risk of overdose.

Oral preparations may be unsuitable when the child is vomiting or the oral route is otherwise contraindicated, thus rectal administration may be necessary. The challenge in pediatric administration is that due to smaller dosing, the suppository may need to be divided. This can be difficult and is often inaccurate. When a suppository must be halved, do so as carefully as possible, and always cut it lengthwise.

**OTIC, OPHTHALMIC AND NASAL ADMINISTRATION**

There are very few differences in administering ear, eye, and nose medication to children versus adults. The major difficulty is in gaining the child's cooperation. Although the administration of otic, ophthalmic, and nasal medication is not painful, these drugs can cause unpleasant sensations. Fortunately, they can be eliminated with various techniques.

To prevent unpleasant sensations when administering ear drops, warm medication that has been stored in a refrigerator to room temperature before instillation using tap water or by holding the bottle in your hand. To place drops deep into the ear canal without contaminating the tip of the dropper, administer drops through a disposable ear speculum.

Eardrops are instilled with the child in the supine position and the head turned to the appropriate side. For children under three, the
external auditory canal is straightened by gently pulling the pinna down and straight back. For children older than three, the pinna is pulled upward and back.

After instillation, the child should remain lying down for a few minutes. Gentle massage of the area immediately anterior to the ear helps the drops enter the ear canal. If placed loosely in the ear, cotton pledgets prevent medication from flowing back out of the canal, while still allowing discharge to exit the ear.

When instilling optic medications, it is essential to observe sterile techniques, especially if only one eye is receiving medication. Using a moistened cotton ball, gently wash the eye from the inner canthus to the outer canthus in one stroke.

To instill eye medication, place the child supine or sitting with the head extended, and ask him to look up. The natural response of a child who sees a dropper coming toward his eye is to shut it tightly, so gaining the child's cooperation is essential. For an older child, talking through the procedure will help him or her not to panic.

Use one hand to pull the lower eyelid down and rest the other on the child's head so that if the child moves, your hand will move with him. As the lower lid is pulled down, a small conjunctival sac forms. Apply the solution here rather than directly to the eyeball.

Ointment can be applied using the same technique. Before administering ointment, squeeze a small amount onto a sterile gauze pad to remove any pathogens that may have contaminated the tip. Ointment is more time consuming—and therefore more difficult to administer, so it is important that the child hold very still.

Once eye drops or ointment have been instilled, have the child keep his eye closed for a few minutes to ensure the best distribution of medication in the eye.

Like eardrops, optic medications should be warmed to room temperature. Another technique to reduce discomfort is to apply finger pressure to the lacrimal punctum at the inner aspect of the lid for one minute. This prevents drainage into the nasopharynx and unpleasant "tasting" of the drug.

Administering eye drops to infants can be difficult, because they often close their eyes very tightly. One way to instill medication to an infant effectively is to place the drops in the nasal corner where the lids meet. Allow the medication to pool in this area. When the child opens his or her eyes, the medication will flow into the conjunctiva.

Nasal drops are administered to children in much the same way as adults. Positioning the child with the head hyperextended well over the edge of a bed or pillow can minimize unpleasant sensations.
To help elicit the child’s cooperation, talk through the procedure, offering encouragement and praise. You could say, "I’m going to put two drops of medicine in your nose. It won’t hurt, but it will feel strange. If you can hold very still, it will help that strange feeling to go away faster. Now, let’s count together to ten."

Place the drops in the child’s nose gently holding his or her head still with the other hand. Count to ten and praise the child when your mission is accomplished.

Infants can be positioned in the football hold, demonstrated in the picture on the left. Cradle the child in one arm with the head extended and stabilized between the body and elbow. Use the other hand to administer the drops, being careful to avoid contamination or trauma by touching the nose.

After drops are instilled, the child should remain with the head hyperextended for one minute.

This will allow the drops to come in contact with the nasal surface and also prevent strangling sensations caused by medication trickling into the throat.

**CONCLUSION**

Improving and ensuring the health of pediatric patients can be one of the most rewarding aspects of a nurse’s practice. Sick and injured children are among the most vulnerable and dependent patient populations. Therefore, nurses must do everything possible to administer medications safely and promptly and protect the children they care for from medication errors. Remember, as a nurse, you can make a hurt kid smile again.