PURPOSE:
To obtain a laboratory specimen of blood from a child's foot or finger.

CONSIDERATIONS:
1. For an infant less than 6 months old, the appropriate puncture site is the outer aspect of the heel. Identify the appropriate puncture site by drawing an imaginary line from between the fourth and fifth toes that runs parallel to the lateral aspect of the heel. For an infant older than 6 months old use pad of fingertip of middle finger on non-dominant hand. Heels or fingers utilized should be rotated.
2. If appropriate, allow the child to make some decisions and look at some of the equipment (self-adhesive bandages etc.); or try a demonstration on a toy or stuffed animal first.
3. Laboratory should be consulted on guidelines for volume of blood required, type of tube needed for collection, and any special handling requirements.
4. A slight bruise may appear at the puncture site but is not considered a complication.

EQUIPMENT:
Sterile lancet or automatic lancet devise
Pedi “bullet” lab tubes
Alcohol sponge
Gauze
Self-adhesive bandages
Gloves
Trash bags
Puncture-proof container

PROCEDURE:
1. Obtain physician’s order/script.
2. Adhere to Standard Precautions.
3. Label and date the specimen tube in front of caregiver.
4. Identify the patient and explain procedure to caregiver and patient, if age appropriate. Have caregiver hold child to keep him/her still.
5. Choose appropriate site, outer aspect of the heel or finger pad. Dilate the vessel using warm compresses for a three minutes and squeeze to engorge with blood.
6. Cleanse puncture site with alcohol using circular motion.
7. Grasp lancet or automatic lancet devise with thumb and forefinger of dominant hand; stabilize and apply pressure to puncture site with other hand. With a quick, firm motion, penetrate site with lancet at 90 degree angle and withdraw immediately, or use automatic device per manufacturer’s instructions. Puncture deep enough to get free flowing blood, but never deeper than 2.00 mm.
8. Place tip of capillary tube scoop on lab tube to puncture site. Collect blood drops without scraping, which breaks down red blood cells.
9. If bilirubin level is being drawn, protect specimen from light.
10. If bleeding stops before all tubes are filled, try lowering extremity. If needed prepare site to repeat puncture.
12. Send or deliver gauze over site until bleeding stops. Apply self-adhesive bandage.
13. Send or deliver labeled specimen and laboratory requisition to the laboratory.
14. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Patient's response to procedure.
   b. Complications and management.
   c. Time drawn, amount of blood drawn, type of test being ordered by physician, and name of laboratory and location of drop-off of specimen.
2. Instruct caregiver on signs and symptoms reported to nurse or physician.
**PURPOSE:**
To provide care to the patient with a cast, to promote skin integrity and comfort, and facilitate caregivers to provide safe, effective care.

**CONSIDERATIONS:**
1. A cast may be made of plaster of paris or fiberglass.
2. To prevent soiling of the cast when using bedpan, slant downward from coccyx area.
3. Use of back scratchers or sharp objects under the cast may cause skin damage. A small child may be unable to understand these precautions and may put food or toys under the cast.
4. When the child is in a hip spica cast, having the child wear a large T-shirt over the cast helps keep the cast clean and free of foreign bodies.
5. Oils, lotions and powders used under the cast may cake or irritate the skin.
6. The child is especially troubled by immobilization. A homecare approach includes a plan for recreation and movement of the unaffected joints.

**EQUIPMENT:**
- Plastic wrap or water-repellent material
- Tape
- Pillows or towel rolls
- Bedpan or urinal
- Wide belt, long sturdy sheeting, or sturdy sash
- Hair dryer (optional for drying cast and providing itching relief)
- Scissors
- Gloves

**PROCEDURE:**
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver and patient, in age appropriate manner.
3. Inspect exposed skin area. Body pressure areas that need close observation due to child's inactivity are back of head, ears, elbows, iliac crests, hip bones, if exposed, sacrum and heels.
4. Inspect the cast for:
   a. Dampness.
   b. Odor.
   c. Mold.
   d. Breaks, cracks or crumbling.
5. Observe for:
   a. Foreign objects under the edges of the cast, including paper, oils, lotion and powder.
   b. Circulation impairment: edema, absent pulses distal to cast, "blueness" of extremities or digits distal to cast, or differences in temperature.
   c. Increased irritability or complaints of pain.
   d. Respiratory impairment.
   e. Signs of infection: redness, swelling, foul odor, pain, fever or lethargy.
6. If cast edges appear rough, "petal" cast edges with tape.
7. Assess need for pain medication. Obtain orders from physician, if indicated.

**AFTER CARE:**
1. Instruct caregiver:
   a. To observe for signs and symptoms, or complications such as:
      (1) Crack or break in cast.
      (2) Reddened areas not relieved by improved skin care.
      (3) Increased swelling.
      (4) Bluiness of distal extremities or digits.
      (5) Numbness and tingling.
      (6) Difficulty in wiggling toes or fingers.
      (7) Continuous complaints, fussiness in infant or small child.
      (8) Fever.
      (9) Foul odor.
   b. Turn patient a minimum of every 2 hours during the first 48 hours, then every 4 hours during the day.
   Technique:
      (1) When turning, first remove pillows under head.
      (2) Then pull child toward you. Gently pull towards the side of the bed that corresponds to the leg in the cast.
      (3) Move around to opposite side, and have child extend arms above his/her head.
      (4) Proceed by taking hold of farther leg and roll child over.
      [Note: When turning, always pull. Never push! Extra support may be needed at shoulder, elbow, hip, thigh or foot.]
   c. Position for comfort using pillows or towel rolls for support. When prone, toes should not touch bed. When supine, heels should be off bed.
   d. To prevent the child from falling, use sash or sheeting and secure to bedside frame or bedsprings. For infants and toddlers, put crib rails up.
   e. Cover cast for eating. Slant positions facilitate digestion and comfort.
   f. To prevent constipation, increase fluids, fresh fruit, raw vegetables and whole grain cereals in diet.
2. Document in patient's record:
   a. Condition of cast.
   b. Condition of skin including swelling or circulation impairments.
   c. Complaints of pain or irritability of child.
   d. Bowel and bladder function.
   e. Instructions given to caregiver.
PURPOSE:
To obtain blood specimens from a central line for laboratory tests.

CONSIDERATIONS:
1. Confirm physician's order for blood work and to use the central venous catheter for drawing the samples.
2. If aspiration of blood or fluid becomes difficult, have patient change position, take a deep breath or lift one or both arms above head.
4. Drawing blood for clotting studies from a heparinized line may falsely alter the results obtained.
5. Use sterile technique when accessing central venous catheter.

EQUIPMENT:
Gloves
Alcohol
(1) Heparin solution (10 units/mL or as prescribed) syringe
(2) Normal saline syringes
Needle less adaptor
Sterile syringes for drawing blood samples
Lab tubes
Puncture-proof container
Trash bag

PROCEDURE:
1. Use at least 2 patient identifiers prior to starting procedure.
2. Perform hand hygiene.
3. Explain the procedure and purpose to the patient/caregiver.
4. Assemble the equipment on a clean surface close to the patient.
5. Place patient in comfortable position, making sure that site is accessible.
6. Ensure adequate lighting.
7. Draw up normal saline and heparin flushes, as ordered.
8. Clean needle less adaptor with alcohol, using friction. Allow to air dry.
9. Attach syringe filled with normal saline to needle less adaptor. Unclamp line and flush with 10 mL normal saline. If Total Parenteral Nutrition (TPN) is infusing, stop infusion and flush with 10 mL normal saline.
11. Attach empty collecting syringe, unclamp catheter and withdraw the amount of blood necessary for lab tests and reclamp.
12. Attach syringe of normal saline to line, unclamp and flush line vigorously with at least 10 mL to remove all blood from line. Reclamp line.
13. Attach new saline-filled needle less adaptor.
14. If continuous infusion is ordered, connect infusion line to needle less adaptor and start infusion.
15. If central line is used for intermittent injections, flush catheter via new needle less adaptor with 5 mL of heparin, 10 units/mL, in 10 mL syringe. Before syringe is completely empty, clamp line and apply pressure on plunger while withdrawing syringe.
16. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Label specimen with patient's name, date of birth and time of blood draw.
2. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Blood samples drawn, identity and location of laboratory where specimens taken.
   c. Amount of normal saline and heparin flush, including strength of heparin.
   d. Type and appearance of venous access site.
   e. Patient's response to procedure, side effects and management.
   f. Instructions given to patient/caregiver.
   g. Communication with physician, if needed.

REFERENCES:
Infection Control in Home Care and Hospice (2nd edition) Sudbury, MA. Emily Rhinehart & Mary McGoldrick, Jones and Bartlett Publishers.

PURPOSE:
To maintain patency of a central venous catheter and prevent thrombosis.

CONSIDERATIONS:
1. A central venous catheter (CVC) is a venous access device with the tip located in the superior vena cava. It provides access to the patient's circulation for the administration of any type of intravenous therapy and for drawing blood for laboratory analysis.
2. Heparin flushing is to be done after every use of the catheter and once a day when not in use, with 1-5 mL of 10 units/mL of heparin solution or 2 times the volume of the catheter and any add on devices, i.e., if volume of catheter is 1.5 mL, the minimum amount of solution needed to flush the catheter is 3 mL or as ordered by physician.
3. If the patient has a closed tip (Groshong) catheter or valved catheter, flush with normal saline only. Per manufactures instruction, these catheters do not require routine flushing with an anticoagulant.
4. With a multi-lumen catheter, each lumen must be heparinized at least once a day and after every lumen use.
5. During and after administration of the flush, positive pressure must be maintained to prevent reflux of blood into the catheter lumen.
6. If you meet resistance when attempting to flush, no further attempts should be made to avoid dislodging a clot into the vascular system or catheter rupture.
7. Prior to interruption of the line, the connections should be cleaned with alcohol using friction and allowed to air dry.
8. The needleless adaptor should be accessed only with a sterile device.
9. Connections may be secured with tape to avoid disconnection.
10. All connections must be luer locks.
11. The needle less adaptor should be changed at minimum every 72 hours with a maximum span between changes of 7 days. Needle-less adaptor needs to be changed if leaking, inadvertently disconnected, when drawing blood or if unable to flush all of the blood residue out of the needle less adaptor.

EQUIPMENT:
Gloves
Alcohol (wipe/swab/disk/ampule)
Needle-less adaptor
(1) Normal saline syringe
(1) Heparin solution (10 units/mL or as prescribed) syringe
Tape
Puncture-proof container
Trash bag

PROCEDURE:
1. Use at least 2 patient identifiers prior to starting procedure.
2. Perform hand hygiene.
3. Explain the procedure and purpose to patient/caregiver.
4. Assemble the equipment on a clean surface close to the patient.
5. Place patient in comfortable position, making sure site is accessible.
6. Ensure adequate lighting.
7. Unclamp catheter. Clean needle less adaptor with alcohol using friction. Allow to air dry
8. If heparin flush is being administered following a medication dose, flush line with 10 mL normal saline prior to flushing with heparin.
9. Inject heparin solution using steady pressure.
10. Before syringe is completely empty, clamp tubing and apply pressure on plunger while withdrawing syringe
11. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Amount of normal saline and heparin flush, including strength of heparin.
   c. Patient's response to procedure, side effects and management.
   d. Instructions given to patient/caregiver.
   e. Communicate with physician, if needed.

REFERENCES:
Infection Control in Home Care and Hospice Second edition Emily Rhinehart Mary McGoldrick, Jones and Bartlett Publishers Sudbury, MA
PURPOSE:
To administer intravenous fluids, total parenteral nutrition and/or medication via central venous catheter.

CONSIDERATIONS:
1. The child’s caregiver should receive adequate teaching at the hospital before the child is sent home.
2. A home evaluation before the child is discharged is recommended.
3. The home healthcare nurse should communicate with the physician, homecare pharmacy, social worker, primary nurse and family to establish a plan of care.
4. The caregiver’s capabilities, finances, child's developmental level and amount of support services available must be assessed before establishing a homecare program.
5. The caregiver should perform the procedures under the nurse's supervision until they are comfortable. Detailed written procedures, including possible complications should be given to the caregiver. Allow enough time for caregiver to assimilate the information.
6. Close communication between the physician, laboratory, equipment supplier, social worker and parents should be maintained by the home healthcare nurse.
7. Promote the cooperation of the infant or child. For example, an infant may be given a pacifier and an older child may be part of the decision making. It may help a child to do the procedure first on a toy.
8. Physician's orders should include type, concentration, amount and frequency for all flushes.
9. Use at least 2 patient identifiers prior to administering medications.

EQUIPMENT:
Sterile dressing
Small gauge needle – No. 21-27, or needle-less adapter
Normal Saline- dosage according to physician's orders
Heparin solution - dosage according to physician's orders
Clamp
Gloves
Impervious trash bag
Puncture-proof container
Antimicrobial swabs
Alcohol swabs
Intermittent infusion plugs or screw caps
Tape

PROCEDURE:
(See Infusion Therapy- Intravenous Therapy Administration.)

AFTER CARE:
1. Provide support for the caregiver and child after the procedure. If the child is crying or upset, allow the caregiver to comfort or soothe the child. Encourage the caregiver to ask questions and share their concerns.
2. Instruct caregiver in:
   b. Preparation of solution: additives, tubing, filters, storage and complications.
   c. Use of pump and pole. Safety and disposal of needles.
   d. Careful monitoring of weight, vital signs, input and output, urine testing and laboratory work.
   e. Who to call for emergencies.
   f. How to cope with procedure at home, adjusting to lifestyle.
   g. Financial considerations and obtaining supplies.
3. Document in patient's record:
   a. Medication administered, dose, time, rate and route.
   b. Type and appearance of central venous access site.
   c. Any difficulty flushing the catheter, slowed infusion rate, alarms repeatedly sounding on pump, etc.
   d. Patient's response to procedure, side effects and management.
   e. Instructions given to caregiver.
   f. Return demonstration by caregiver.
   g. Communicate with the physician.
PURPOSE:
To properly empty and dispose of the contents of a colostomy bag.

CONSIDERATIONS:
1. Empty the child’s pouch when it is 1/3 (one-third) - 1/2 (one-half) full to prevent it from becoming too heavy and pulling off or leaking.
2. Release gas (flatus) build up in pouch by opening bottom of pouch or apply filter to pouch. If pouch gets too taut, it may pull away and leak.
3. Deodorizing ostomy drops and powders may be placed inside the pouch. DO NOT spray a non-ostomy deodorizer inside the pouch.
4. Incorporate the child in his or her own care as much as possible, as appropriate for age.

EQUIPMENT:
Container or diaper
Cup of warm water and syringe or rinse bottle
Toilet paper
Gloves

PROCEDURE:
1. Identify the patient and explain the procedure to the patient (as appropriate) and to the parent/caregiver.
2. Adhere to standard precautions. Don any necessary protective equipment.
3. Gather the equipment and supplies and ensure all are present.
4. Open clamp or remove rubber band of ostomy pouch.
5. Fold a cuff on the end of the pouch before emptying to help keep the ends clean and free of odor.
6. Empty contents into toilet if possible. If patient is an infant, empty into a diaper or container.
7. Note the amount, color, consistency, and the presence of any blood or mucous.
8. Rinse inside of pouch using a small amount of water by holding the pouch uptight and pouring in the water. Fold over the end of the pouch, pinch it shut and swish the rinse water around the pouch. Avoid the stoma area. OPTIONAL: May use a small paper cup, squirt bottle or syringe.
9. Hold the pouch shut and direct the end of the pouch into the toilet or receptacle.
10. Wipe the end of pouch with tissue, fold cuff down, and replace clamp or rubber band.
11. Remove gloves and wash hands.

AFTER CARE:
1. Document in patient’s record:
   a. Patient’s response to procedure.
   b. Amount and character of stool.
   c. Appearance of peristomal skin.
   d. Instructions given to parent/patient/caregiver.
PURPOSE:
To provide hydration, nutrition and medication via surgical opening into the stomach.

CONSIDERATIONS:
1. Gastrostomy feeding may be indicated when passage of a tube through the mouth, pharynx, esophagus and cardiac sphincter of the stomach is contraindicated or impossible. Also used to avoid the constant irritation of a gastric tube in children who require tube feeding over an extended period of time.
2. Placement of a gastrostomy tube may be performed under general anesthesia or percutaneously using an endoscope under local anesthesia.
3. Gastrostomy tubes may be a Foley, wing-tip, or mushroom catheter. Gastrostomy "buttons" are also common in pediatrics.
4. The gastrostomy tube should be taped to the abdomen unless a button or skin level device is in place.
5. Verify placement of tube prior to start of feeding. Check the tube for correct placement. Insert a Secure-Lok extension set into the feeding port and:
   a. Listen for air.
   b. Aspirate residual stomach contents.
6. Check for wetness around the stoma. If there is leakage of stomach contents, check the tube position. Then, as needed, add sterile water, distilled water or saline to the balloon in 1-2 mL increments.
7. Never fill the balloon with more than 10 mL of fluid.
8. During continuous feedings, assess the patient frequently for gastric or abdominal distention. The larger tube that is placed surgically allows for better stomach decompression. For feedings lasting more than 1 hour for older children, or for any child who is medically fragile, the use of an external feeding pump will be more accurate than gravity feedings.
9. Medications may be administered through the feeding tube. Liquid preparations are preferred. Enteric coated tablets cannot be used. Flush tubing to ensure full instillation of complete dose of medication.
10. If a gastrostomy tube is pulled out, cover site with gauze. Instruct caregiver to take child to medical facility (physician order should indicate plan) and notify physician.

EQUIPMENT:
- 5-60 mL syringe
- Graduated container
- Glass of water
- Prepared formula
- Protective sheet
- Enteral feeding pump (optional)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver and patient, in age appropriate manner.
3. Prepare measured amount of formula or medication in appropriate container (syringe, graduated container or feeding bag).
4. Elevate the patient's bed to a high- or semi-Fowler's position to prevent aspiration and to facilitate digestion. Infants should be held as during a regular feeding when possible.
5. Place protective sheet under tubing to protect bedding and clothes. Insert pacifier into infant's mouth to allow for non-nutritive sucking if patient is able to suck.
6. Remove clamp or plug from the feeding tube.
7. Connect enteral bag tubing, pump tubing, or syringe to gastrostomy tube/button.
8. If using a bulb or catheter-tip syringe, remove the bulb or plunger and attach the syringe to the feeding tube to prevent excess air from entering. Elevate syringe so that the tip of the syringe is no higher than infant/child's clavicle.
9. If using a feeding bag, purge the tubing of air and attach it to the feeding tube. Adjust flow rate per physician's order.
10. When using syringe, fill syringe with formula and release the feeding tube to allow formula to flow through. When syringe is three-quarters empty, add more solution. Feed slowly over 20 to 45 minutes.
11. Instill 5-10 mL of warm water before last of nutrient/medication runs in to rinse tubing. For infant, volume needs to be limited, instill only amount needed to flush tubing.
12. Pinch tubing and remove enteral bag, controller tubing and syringe or clamp feeding tube.
13. If a pump is utilized for continuous or periodic infusion, number of mL per hour should be ordered by physician.
14. Leave patient in semi-Fowler's position for at least 30 minutes. Place the infant on his/her back or right side with the head of the crib slightly elevated.
15. If infant/child has excessive air in abdomen, burp after feeding or leave gastrostomy tube elevated and vented for 20 to 30 minutes.
16. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Instruct caregiver to hold and provide stimulation to infant as condition permits.
2. Cleanse all reusable equipment, rinse well. Allow equipment to air dry and wrap in clean towel to be used at next feeding.
3. Document in patient's record:
Strength of Evidence Level: 1

a. Amount, color and consistency of aspirated content.
b. Feeding solution and amount.
c. Medications administered.
d. Patient's response to procedure.
e. Instructions given to caregiver.
f. Gastrostomy Tube (GT) site assessment.

REFERENCES:
PURPOSE:
To provide full enteral nutrition via catheter directly into jejunum.

CONSIDERATIONS:
1. Special low osmolality formulas or other prepared formulas are administered at room temperature and discarded if not used within a 24-hour period. The formulas may be given continuously or via intermittent drip.
2. During continuous feedings, assess the patient frequently for abdominal distention.
3. Medications may be administered through the feeding tube. Liquid preparations are preferred. Enteric coated tablets CANNOT be used. Flush tubing to ensure full instillation of complete dose of medication.
4. Jejunostomy tubes are changed ONLY by physician.
5. Jejunostomy feeding is indicated when a minimum of patient effort is needed, e.g., low birth weight or respiratory distress.
6. This feeding route minimizes the chances of regurgitation, stomach distention or aspiration.
7. For feedings lasting more than 1 hour for older children, or for any child who is medically fragile, the use of an enteral feeding pump will be more accurate than gravity feedings.
8. If using the infuser controller, follow manufacturer directions. Purge the tubing of air and attach it to the feeding tube. Fill with no more than 3 hours worth of feeding fluid.
9. Connect enteral bag tubing, pump tubing or syringe to jejunostomy tube.
10. If using a bulb or catheter tip syringe, remove the bulb or plunger and attach the syringe to feeding tube to prevent excess air from entering. Elevate syringe so that the tip of the syringe is no higher than patient’s clavicle.
11. Open the regulator clamp of enteral tube or pump and adjust flow rate. When using syringe, fill syringe with formula and release the feeding tube to allow formula to flow through. When syringe is three-quarters empty, add more solution.
12. Instill 5-10 mL of warm water before last of nutrient/medication runs in to rinse tubing. For infant, volume needs to be limited so instill only amount needed to flush tubing.
13. Pinch tubing and remove enteral bag, controller tubing and syringe and clamp or cap feeding tube.
14. Leave patient in semi-Fowler's position for at least 30 minutes. Burp infant and place on his/her back or right side with the head of the crib slightly elevated.
15. Discard soiled supplies in appropriate containers.

EQUIPMENT:
50-60 mL asepto syringe or catheter tip syringe
Graduated container
Sterile or tap water
Prepared formula, at room temperature
Clamp
Protective bed covering
Enteral feeding pump (optional)
Enteral feeding bag and tubing
Gloves

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver and patient, in age appropriate.
3. Prepare measured amount of formula or medication in appropriate container.
4. Elevate the patient’s bed to a high- or semi-Fowler’s position to prevent aspiration and to facilitate digestion. Infants should be held as during a regular feeding when possible.
5. Place protective bed covering under tubing to protect bedding and clothes. Insert pacifier into infant’s mouth to allow for non-nutritive sucking, if patient is able to suck.
6. Check placement by aspirating stomach contents with syringe. For infant, always obtain an order from the physician regarding amounts for residuals.
7. Remove clamp or plug from the feeding tube.
8. If using the infuser controller, follow manufacturer directions. Purge the tubing of air and attach it to the feeding tube. Fill with no more than 3 hours worth of feeding fluid.
9. Connect enteral bag tubing, pump tubing or syringe to jejunostomy tube.
10. If using a bulb or catheter tip syringe, remove the bulb or plunger and attach the syringe to feeding tube to prevent excess air from entering. Elevate syringe so that the tip of the syringe is no higher than patient’s clavicle.
11. Open the regulator clamp of enteral tube or pump and adjust flow rate. When using syringe, fill syringe with formula and release the feeding tube to allow formula to flow through. When syringe is three-quarters empty, add more solution.
12. Instill 5-10 mL of warm water before last of nutrient/medication runs in to rinse tubing. For infant, volume needs to be limited so instill only amount needed to flush tubing.
13. Pinch tubing and remove enteral bag, controller tubing and syringe and clamp or cap feeding tube.
14. Leave patient in semi-Fowler's position for at least 30 minutes. Burp infant and place on his/her back or right side with the head of the crib slightly elevated.
15. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Instruct caregiver to hold, stroke and stimulate the patient as condition permits.
2. Cleanse all reusable equipment, rinse well. Allow equipment to air dry and wrap in clean towel to be used at next feeding.
3. Document in patient’s record:
   a. Amount, color and consistency of aspirated contents.
   b. Feeding solution and amount.
   c. Medications administered.
   d. Patient's response to procedure.
   e. Instructions given to caregiver.
   f. Jejunostomy Tube site assessment.
PURPOSE:
To maintain a patent vascular access for continuous or intermittent drug, fluid infusion or blood withdrawal via an implantable vascular access device. Prevention, early detection and management of implanted vascular access device-related complications are also discussed.

CONSIDERATIONS:
1. An implantable vascular access device (IVAD) consists of a self-sealing septum, reservoir and radiopaque catheter. The catheter may terminate in the superior vena cava.
2. Use sterile technique when accessing the port. The use of a non-coring needle is required to safely access the self-sealing septum. The non-coring needle designates the type of bevel necessary to avoid tearing or coring of the self-sealing septum. Non-coring needles are either 90-degree angle or straight.
3. Appropriate needle placement is indicated by all of the following:
   a. Feeling the non-coring needle touch the backplate of the septum when inserted.
   b. Evidence of blood return.
   c. IVAD flushes without difficulty.
4. The portal septum varies in size and ease of accessibility. Assess for correct and secure needle placement before IVAD is used. The life of the silicone septum is approximately 2,000 punctures with a 22-gauge, non-coring needle.
5. Flushing protocol for IVADs is as follows:
   a. Intravenous - every 4 weeks when not in use, heparin solution 100 units/mL.
6. DO NOT exceed 40 pounds per square inch (psi) pressure when administering fluid through the system. Pressure in excess of 40 psi can easily be generated with most syringes. The smaller the volume of the syringe, the higher the pressure that can be generated. Therefore, it is necessary to use a 10 mL or larger syringe. Catheter rupture with possible embolization can occur with pressure in excess of 40 psi.
7. When continuous access for therapy is required, a 90-degree (or right) angle, non-coring safety needle with attached extension tubing should be used. Non-coring needles should be changed every 7 days or as needed.
8. Potential complications include infection, occlusion, inability to draw blood and superior vena cava syndrome.
9. Confirm physician’s order to use the IVAD to obtain blood specimen, especially if drawing blood culture or specimen for clotting studies.
10. Blood samples can only be withdrawn from an IVAD that has a large lumen catheter.
11. If aspiration of blood becomes difficult, assist the patient to change position or, if appropriate, ask the patient to change position, take a deep breath or lift the uninvolved arm above his/her head.
12. Drawing blood for clotting studies from a heparinized line may falsely alter the results obtained.
13. Per Joint Commission recommendations, all tubes and catheters should be labeled to prevent the possibility of tubing misconnections. Staff should emphasize to all patients/caregivers the importance of contacting a clinical staff member for assistance when there is an identified need to disconnect or reconnect devices.

A. INSERTION OF NON-CORING NEEDLE

EQUIPMENT:
Gloves, sterile and non-sterile
Alcohol applicators (wipe/swab/disk/ampule)
Antimicrobial applicators (wipe/swab/disk/ampule)
Non-coring safety needle with attached extension tubing
Needle less adaptor
10 mL syringes (2)
Normal saline
Heparin solution (100 units/mL or as prescribed)
2x2 gauze sponge, sterile
Transparent semi-permeable adhesive dressing
Sel-adhesive bandage
Puncture-proof container
Trash bag

PROCEDURE:
1. Use at least 2 patient identifiers prior to starting procedure.
2. Perform hand hygiene and don non-sterile gloves.
3. Explain the procedure and purpose to the patient/caregiver.
4. Assemble the equipment on a clean surface close to the patient.
5. Place patient in comfortable position, ensuring that site is accessible.
6. Ensure adequate lighting.
7. Palpate the venous access device borders and locate the septum and the center of the septum.
8. Assess site for signs and symptoms of infection.
10. Open all supplies onto sterile field (including normal saline and Heparin syringes).
11. Don sterile gloves.
13. Clean area over portal septum with Chlorhexidine 2% solution (ChloroPrep). Use repeated back and forth and side to side motion, cleansing the skin
Strength of Evidence Level: 1

over the port for 30 seconds. Allow to dry for 30 seconds. DO NOT blot.

14. Stabilize IVAD with nondominant hand. Using a perpendicular angle, insert non-coring safety needle into septum until the needle stop is felt. Digital pressure on the top of the needle at the bend point will facilitate septum entry. Once port is accessed, DO NOT tilt or rock the needle as this may cause damage to the septum.

15. Attach 10 mL normal saline-filled syringe to the needle less extension tubing and after unclamping, aspirate for blood return. After blood return is established, flush with normal saline solution.

16. Clamp the extension tubing and remove the normal saline syringe. Insert the heparin-filled syringe into needle less adaptor. Inject 5 mL heparin solution, using steady pressure. Before syringe is empty, clamp extension tubing and slowly remove syringe from needle less adaptor while applying steady pressure on plunger. Apply dressing according to your agency’s protocol.

17. Clean site after needle removal and maintain pressure with sterile gauze until bleeding stops. Apply Self-adhesive bandage, if indicated.

18. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Needle size, gauge and length.
   c. Amount of normal saline and heparin flush, including strength of heparin.
   d. Patient's response to procedure, side effects and management.
   e. Instructions given to patient/caregiver.

B. MEDICATION ADMINISTRATION

Non-coring needle in place

Supplies appropriate for infusing medication
Tape
Puncture-proof container
Trash bag

PROCEDURE:

1. Perform hand hygiene.
2. Explain the procedure and purpose to the patient/caregiver.
3. Assemble the equipment on a clean surface close to the patient.
4. Place patient in comfortable position, ensuring that site is accessible.
5. Ensure adequate lighting.
6. Prepare medication.
7. Prepare two syringes with 5 mL of normal saline in each syringe. Prepare a heparin syringe with 3-5 mL of 100 units/mL heparin solution per physician order.
8. For one-time infusion dose:
   a. Clean needle less adaptor of extension tubing with alcohol applicator using friction. Allow to air dry.
   b. Insert normal saline syringe into needle less adaptor and aspirate for a blood return. After blood return is established, flush with all of the normal saline. Remove syringe and clean needle less adaptor with alcohol applicator using friction. Clamp extension tubing before removing final syringe.
   c. Insert infusion tubing into needle less adaptor and start infusion by regulating (intravenous) IV flow using roller clamp, dial-a-flow or infusion pump. Tape connections.
   d. When infusion is complete, close roller clamp. Remove tubing from needle less adaptor. Clean with alcohol applicator using friction. Allow to air dry.
   e. Insert normal saline syringe into needle less adaptor. Clean with alcohol applicator using friction. Allow to air dry.
   f. Insert infusion tubing into needle less adaptor and start infusion by regulating (intravenous) IV flow using roller clamp, dial-a-flow or infusion pump. Tape connections.
   g. Securely anchor IVAD by placing thumb and forefinger of non-dominant hand on edges of the IVAD while pulling the non-coring needle straight up and out of the IVAD septum.
   h. Clean site after needle removed and maintain pressure with 2x2 gauze until bleeding stops. Apply self-adhesive bandage.
9. For continuous intermittent doses:
   a. Follow Steps 8a through 8g of one-time infusion dose.

10. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient's record:
   a. Medication administered, dosage, time, route and rate.
   b. Amount of normal saline and heparin flush, including strength of heparin.
   c. Appearance of vascular access site.
   d. Patient's response to procedure, side effects and management.
   e. Instructions given to patient/caregiver.

C. DRAWING BLOOD
   Non-coring needle in place

EQUIPMENT:

Gloves
Alcohol applicator (wipe/swab/disk/ampule)
(3) Normal saline
(1) Heparin solution (100 units/mL, or as prescribed) syringe
10 mL syringe (2)
Syringes appropriate for lab specimens
Lab tubes
Needle less adaptor
2x2 gauze sponge, sterile
Self-adhesive bandage
Tape
Disposable apron (optional)
Protective eye wear (optional)
Puncture-proof container
Trash bag

PROCEDURE:

1. Use at least 2 patient identifiers prior to starting procedure.
2. Perform hand hygiene.
3. Explain the procedure and purpose to the patient/caregiver.
4. Assemble the equipment on a clean surface close to the patient.
5. Place patient in comfortable position, ensuring that site is accessible.
6. Ensure adequate lighting.
7. Prepare heparin and normal saline syringes.
8. Label the lab tubes with patient's name and date.
9. Clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
10. Insert normal saline syringe into needle less adaptor and aspirate for blood. After blood return is established, flush the port with 10 mL normal saline.
11. Attach a new sterile 10 mL syringe; gently withdraw 5 mL of blood for discard. Remove syringe and discard in appropriate receptacle.
12. Clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
13. Attach appropriately sized sterile, empty syringe and withdraw blood for specimens. Remove syringe and fill lab tubes per agency or lab protocol.
15. Flush port with 10 mL of normal saline.
   b. If IVAD is to be deaccessed:
      (1) Securely anchor IVAD by placing thumb and forefinger of non-dominant hand on edges of the IVAD while pulling the non-coring needle straight up and out of the IVAD septum.
      (2) Clean site after needle removed and maintain pressure with sterile gauze until bleeding stops. Apply self-adhesive bandage.
   c. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Blood samples drawn and identity and location of laboratory where specimens taken.
   c. Amount of normal saline and heparin flush, including strength of heparin.
   d. Appearance of vascular access site.
   e. Patient's response to procedure, side effects and management.
   f. Instructions given to patient/caregiver.

REFERENCES:

Infection Control in Home Care and Hospice (2nd edition) Sudbury, MA. Emily Rhinehart & Mary McGoldrick, Jones and Bartlett Publishers.

PURPOSE:
To administer intravenous (IV) fluids or IV medications to a child.

CONSIDERATIONS:
1. Whenever possible, use a route other than IV because of the risk involved with children.
2. The site must be chosen carefully and special care taken to preserve the vein because a child’s veins are so small.
3. The hands and forearms are the best sites for IV therapy. Scalp, umbilical, foot and leg veins are not recommended because of high risk of phlebitis and/or limitation of activity. No cut-down should be done at home.
4. The caregiver(s) of the child must be carefully screened and educated in the care of the child with IV therapy.
5. A child is less tolerant of fluid and medication overdoses because of his/her small size.
6. Since a child’s metabolism is three times faster than an adult’s, accurate records are necessary because complications develop quickly. Monitor intake and output. Assess weight, general condition and laboratory studies frequently.
7. For older children, showing the equipment and practicing on a stuffed animal is helpful.
8. Restraining an infant at home for IV therapy is not recommended. If absolutely needed, a physician’s order is required. Infants, toddlers, preschoolers and very active children may need a protective device to prevent dislodging the IV catheter. The type and size of the device should be appropriate to the type and placement of the IV catheter, the patient’s developmental level and overall condition.
9. Pediatric infusion sets, mini-drips and pumps should be used. Infusion control devices are recommended for children under the age of 10 years. Fluid to be infused should be ordered in milliliters per hour by the physician.
10. Only an experienced IV nurse should attempt to start an IV on a child.
11. If possible, the nurse should prepare the caregiver(s) and the patient for IV therapy: teaching with handouts, hands-on practice sessions and use of distraction and play therapy are advisable as appropriate. The nurse should take the patient’s developmental level into consideration when preparing and giving IV therapy. Caregiver involvement is strongly recommended as parental anxiety has an impact on the child.
12. Infants and toddlers will usually require two people to insert an IV catheter.
13. A typical analgesic cream may be utilized to decrease pain and anxiety (physician order is required).
14. The amount and type of flushes must be included in the physician’s order.
15. Use at least two patient identifiers prior to administering medications.

EQUIPMENT:
Small (21-27) gauge needle
Intravenous solution, as ordered by the physician
Volume control set
Infusion pump
IV pole
IV start kit
Tape
Armboard
Gloves
Impervious trash bag
Puncture-proof container
Disposable apron (optional)
Protective eye wear (optional)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain the procedure to the caregiver(s) and patient, if age appropriate.
3. Explain the importance of protecting the IV site and of not playing with the site, tubing, solution, pump and pole. When appropriate, have the patient assist you by handing you the tape, etc.
4. Perform venipuncture. (See Infusion Therapy-Intravenous Therapy Administration.)
5. Tape VERY securely but not occluding vein so that you can easily check site for signs and symptoms of complications. A sterile, transparent dressing may be used to cover the insertion site directly.
6. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient’s record:
   a. Medication administered, dose, time, rate and route.
   b. Insertion site description, including location and any problems, such as redness, swelling, leaking.
   c. Ease of flushing catheter.
   d. Type of IV pump, if used, and all settings used for infusion.
   e. Teaching done and patient’s/caregiver’s(s’) response to teaching.
   f. Patient’s/caregiver’s(s’) response to procedure, side effects and management.
   g. Instructions given to patient/caregiver(s).
   h. Patient/caregiver(s) return demonstration of administration of IV medication.
2. Continue to monitor and document:
   a. Intake and output.
   b. Weight, if appropriate.
   c. Site description.
   d. Medication administration (dose, time, rate, amount), if appropriate.
   e. Safety in home.
   f. Patient's response to care.
   g. Communication between physician, laboratory and supplier.
PURPOSE:
To administer a nebulizer treatment to increase the efficacy of medication on the child’s airway and lungs.

CONSIDERATIONS:
1. It is appropriate to use a face mask for an infant or small child that is fatigued and/or not able to participate.
2. Usually a child under 18 months of age experiences a better effect from the inhaled treatment when a mask is used.
3. An adaptor or tracheostomy mask is appropriate for a child with a tracheostomy.

EQUIPMENT:
Medication
Diluent, such as normal saline, if needed
Nebulizer medication chamber and tubing assembly
Small volume nebulizer machine or oxygen, as directed by physician
Pediatric-sized aerosol mask, face tent or tracheostomy mask

PROCEDURE:
1. Adhere to Standard Precautions.
2. Gather all equipment.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
4. Auscultate lung sounds.
5. Assemble the nebulizer medication chamber and tubing according to manufacturer instructions.
6. Attach aerosol tubing to nebulizer outlet port.
7. Following the prescribed amount of medication, fill nebulizer medication chamber with dose.
8. Attach patient’s appliance (mouthpiece or mask).
9. Verify that all connections are secure.
10. Instruct the patient to hold the mouthpiece between his/her lips with gentle pressure.
11. Power on the nebulizer. A fine mist should appear in the mouthpiece/mask. This is a sign that the machine is working properly.
12. Instruct the patient to sit in an upright position. It is helpful if the caregiver can hold the child if he/she is unable to sit upright or will not sit still. Most nebulizers work best when the chamber is kept upright. This ensures that the humidified air does not bypass the medication chamber.
13. Gently tap the nebulizer cup frequently to allow for even distribution of medication.
14. Instruct the patient to breath normally. Deep breathing is not necessary.
15. Once the liquid medication is gone and mist no longer forms, power off the machine.
16. Instruct the patient to gargle with warm water after the treatment.
17. Auscultate lung sounds.

AFTER CARE:
1. Document in the patient’s record:
   a. Patient’s response to treatment, e.g., breathing, wheezing, color, activity.
   b. Instructions given to caregiver.
   c. Vital signs.
   d. Lung sounds as noted before and after treatment.
2. Clean the medication chamber, mouthpiece and T-piece with soap and water after each use. Allow equipment to air dry on a clean surface. DO NOT wash the tubing.
3. Replace filter and tubing per manufacturer instructions.
PURPOSE:
To identify the need for medication calculations in the pediatric population.

CONSIDERATIONS:
1. Pediatric doses are based on mg/kg (milligram per kilogram) body weight and body surface area (BSA) in meters squared.
2. In converting pounds to kilograms, you need to carry out to the hundredths, DO NOT round.
3. Calculate daily dose ordered and the high and low parameters of safe range.
4. For infusion therapy, the time during which the medication is to be administered is critical information.

EQUIPMENT:
Calculator

PROCEDURE:
1. Convert pounds to kilograms.
   a. Pounds divided by 2.2 = kg
2. The maintenance dose for administration of IV fluids is based on the following formula:
   a. 100 mL of fluid for the first 10 kg of weight.
   b. 50 mL of fluid for the second 10 kg of weight.
   c. 20 mL of fluid for any additional kg.

AFTER CARE:
1. Verify your calculations with a second professional, i.e. nurse or pharmacist before medication administration.
2. Document medication given and how patient tolerated the medication.
PURPOSE:
To instill drops into the eye for cleansing/antiseptic purposes; to dilate or contract pupil; to relieve pain or pressure, treat diseases and infections, anesthetize, stain and lubricate.

CONSIDERATIONS:
1. Medicated eye drops require a physician’s order.
2. Only approved abbreviations can be used on the physician order.
3. Eye drops must be labeled for ophthalmic use.
4. Care should be taken so that medication is not instilled into the tear duct to prevent systemic absorption.
5. Use at least 2 patient identifiers prior to administering medications.
6. Use age appropriate positioning.
7. Allow choices by the child whenever possible.
8. Use age appropriate games to promote cooperation.
9. Provide rewards and praise after the administration.
10. If eye drops and ointments are ordered, administer the eye drops first, wait 3 minutes and then administer the ointment.
11. Although eye drop administration is usually not painful, infants and young children find it intrusive and associated with unpleasant sensations.
12. Warm drops to room temperature.

EQUIPMENT:
Eye drop medication
Ophthalmic medications
Gloves and other personal protective equipment (PPE), as indicated
Tissue/Gauze/Cotton balls

PROCEDURE:
1. Adhere to Standard Precautions.
2. Check the physician order for the patient name, medication, dosage, frequency and site to be instilled.
   a. o.s. = left eye
   b. o.d. = right eye
   c. o.u. = both eyes
3. Explain the procedure to the parent/child.
4. Wash hands, gather supplies.
5. Wash hands and don gloves.
6. Position infants and young children in a supine position with both arms extended over the head, on each side of the head to prevent movement. Secure assistance as needed.
7. Older children that are cooperative may lie in a supine position or sitting position with the head extended back.
8. Ask the patient to look up if they will cooperate.
9. Wipe away any exudates or drainage with a gauze sponge soaked in tepid water, cleaning the eye from the inner canthus to the outer. Use a clean gauze for each stroke and eye.
10. Fill the dropper with slightly more than the desired amount of solution.
11. The wrist of the hand being used to give the medication should be placed on the child’s forehead to steady the hand.
12. Gently pull down the lower eyelid with the other hand by placing gentle pressure downward below the eyelashes exposing the conjunctival sac.
13. Position the dropper so that the drug will fall into the lower eyelid, never directly on the eye.
14. Instill the prescribed number of drops. DO NOT touch the eye with the dropper.
15. Keep the eye closed for 1-3 minutes.
16. For infants that clench the lids tightly closed the drops can be placed in the nasal corner where the lids meet. The medication pools in this area, and when the child opens the eye the medication flows into the conjunctiva sac.
17. Apply pressure to the inner canthus to prevent drainage into the nasopharynx and back of the throat. This also prevents systemic absorption of the medication.
18. To apply eye ointment follow the above and squeeze a ribbon of medication along the lower conjunctival sac.
19. Praise the child for cooperation.
20. Discard soiled supplies in appropriate container.
21. Remove gloves and wash hands.
22. Provide parent/caregiver with teaching tools including:
   a. Medication, dose, frequency of administration.
   b. Actions and side effects of the medication.
   c. Age appropriate techniques of administration.
   d. Reasons for notification of nurse or physician.
23. Parent/caregiver does return demonstration as needed.

AFTER CARE:
1. Document in the patient’s record:
   a. Medication, dosage and site.
   b. Appearance of the eye.
   c. Date and time medication was administered.
   d. Parent/caregiver understanding of teachings.

REFERENCES:


PURPOSE:
To administer a prescribed dose of medication into a large muscle.

CONSIDERATIONS:
Medications are given by injection to secure a fairly rapid response and/or to administer medications which cannot be given by another route:

1. The recommended site for administration in infants up to 12 months is the vastus lateralis, as it is the largest muscle mass in an infant. The vastus lateralis can tolerate up to 0.5 mL of fluid. For children older than 12 months, the ventrogluteal and the deltoid may be used as they can tolerate up to 2 mL of fluid.

2. Provide for sufficient help in restraining the child as children are often uncooperative and their behavior can be unpredictable.

3. During the procedure, talk to the infant or child, give the child a toy for distraction or a phrase to say. Give the older child a choice of vaccination site, if possible.

4. Select a method to anesthetize the puncture site as per physician order:
   a. Apply EMLA on site 2 1/2 hours before intramuscular (IM) injection, or apply LMX on site for at least 30 minutes before injection.
   b. Use a vapocoolant spray (e.g., Fluori-Methane or ethyl chloride) just before injection or apply ice to numb.

5. Inject the medication slowly to allow the muscle to distend to accommodate the medication into the surrounding tissues.

6. A filter needle must be used to draw up medication from an ampule and then replaced with appropriate size needle for injection.

7. The needle length must be adequate to permeate the subcutaneous tissue and deposit the medication into the body of the selected muscle.

8. Use at least 2 patient identifiers prior to administering medications.

EQUIPMENT:
Disposable, sterile syringe with 22-25 gauge, 5/8 to 1 inch needle
Medication
Alcohol wipes
Gauze or cotton balls
Self-adhesive bandage
Gloves
Topical anesthetic
Impervious trash bag
Puncture-proof container
Extra 22-25 gauge, 5/8 to 1 inch needle
19-gauge filter needle (optional)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver.
3. Have the medication at room temperature.
4. Check doctor’s order for dosage, frequency and route of administration.
5. Locate the site:
   a. Vastus lateralis: Palpate to find greater trochanter and knee joints, divide vertical distance between these two landmarks into thirds, inject into middle one third.
   b. Ventrogluteal: Palpate to locate greater trochanter, anterior superior iliac tubercle (found by flexing thigh at hip and measuring up to 1-2 cm above crease formed in groin), and posterior iliac crest; place palm of hand over greater trochanter, index finger over anterior superior iliac tubercle, and middle finger along crest of ilium posteriorly as far as possible; inject into center of V formed by fingers.
   c. Deltoid: Locate acromion process; inject only into upper third of muscle that begins about two finger-breadths below acromion but is above axilla.
6. Administer medication:
   a. Check that the needle is securely attached to syringe.
   b. Cleanse top of vial with alcohol wipe or break ampule with gauze.
   c. Draw up correct dosage of medication; expel any air in syringe.
   d. Place infant or child in comfortable position. You may need caregiver to hold infant.
   e. Prepare selected site with alcohol wipe; allow to air dry.
7. Insert needle quickly with dartlike motion. Use the Z track and/or air-bubble technique, as indicated.
8. Avoid any depression of the plunger during insertion of the needle.
   [Note: Aspiration of IM is not indicated for immunizations and vaccinations. Aspiration may be indicated for injections that include large molecule injections i.e. Penicillin. If there is no blood aspirated, medication may be injected. If there is blood aspirated, withdraw needle, discard medication and syringe properly and repeat procedure, choosing another injection site.]
9. Inject medication slowly at rate of 1 mL/10 seconds.
10. Withdraw the needle quickly, keeping slight pressure over the area to avoid the tissue from pulling upward as the needle is withdrawn.
12. Discard soiled supplies in appropriate containers.
AFTER CARE:

1. Encourage caregiver to comfort infant and praise child.

2. Document in the patient's record:
   a. Medication administered, date, dose, time, route and site.
   b. Patient's response to procedure, side effects and management.
   c. Instructions given to caregiver.
   d. Communication with the physician.
PEDiatrics – Medication: Intramuscular Injection: Toddlers/School Age Children

SECTION: 20.16

Strength of Evidence Level: 3

PURPOSE:
To administer a prescribed dose of medication into a large muscle.

CONSIDERATIONS:
Medications are given by injection to secure a fairly rapid response and/or to administer medications which cannot be given in another route:
1. The vastus lateralis remains the only recommended site until the age of 3 years when the ventrogluteal site can be used.
2. The deltoid muscle is rarely used in children under 6 years of age and then only for small amounts of medication.
3. The dorsogluteal site is not utilized for any child that has not walked for at least 1 year, and it is strongly recommended that children under the age of 6 years do not receive injections in this site. The objection is that the muscle is small and is located close to the sciatic nerve, which is comparatively large and takes up more space in young children than it does in older children.
4. Guideline for amounts of medication:

<table>
<thead>
<tr>
<th>Location</th>
<th>Age</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deltoid muscle</td>
<td>6 to 15 yrs.</td>
<td>0.5 mL</td>
</tr>
<tr>
<td>Ventrogluteal</td>
<td>3 to 6 yrs.</td>
<td>1.5 mL</td>
</tr>
<tr>
<td></td>
<td>6 to 15 yrs.</td>
<td>1.5 to 2.0 mL</td>
</tr>
<tr>
<td>Dorsogluteal</td>
<td>6 to 15 yrs.</td>
<td>1.5 to 2.0 mL</td>
</tr>
<tr>
<td>Vastus lateralis</td>
<td>Birth to 1.5 yrs</td>
<td>0.5 mL</td>
</tr>
<tr>
<td></td>
<td>1.5 to 3 yrs.</td>
<td>1.0 mL</td>
</tr>
<tr>
<td></td>
<td>3 to 6 yrs.</td>
<td>1.5 mL</td>
</tr>
<tr>
<td></td>
<td>6 to 15 yrs.</td>
<td>1.5 to 2.0 mL</td>
</tr>
</tbody>
</table>

5. For volumes of less than 1.0 mL a tuberculin syringe should be utilized.
6. The needle length must be sufficient to penetrate the subcutaneous tissue and deposit the medication in the body of the muscle.
7. Smaller needles (25-30 gauge) cause the least discomfort, but larger diameters are needed for viscous medication.
8. Since children often move unexpectedly, have an extra needle available to exchange for a contaminated one. It is advisable to have an additional person assist in immobilizing the child during the procedure.
9. Injections should not be administered to a sleeping child. It can cause the child to fear going to sleep.
10. Inject the medication slowly to allow the muscle to distend to accommodate the medication into the surrounding tissues.
11. Factors to be considered when selecting a site:
   a. Amount and character of medication to be injected.
   b. Amount and general condition of the muscle mass.
   c. Frequency or number of injections to be given.
   d. Type of medication.
   e. Factors that may impede access to or cause contamination of the site.
   f. Ability of the child to assume required position safely.
12. A filter needle must be used to draw up medication from an ampule and then replaced with appropriate size needle for injection.
13. Use at least 2 patient identifiers prior to administering medications.

EQUIPMENT:
Disposable, sterile syringe with 20-25-gauge needle, 1/2 to 1 1/2 inch in length
Medication
Alcohol wipes
Gauze or cotton balls
Self-adhesive bandage
Gloves
Impervious trash bag
Puncture-proof container
Extra 20-25 gauge, 1/2 to 1 1/2 inch needle
Filter needle (optional)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify patient and explain procedure to caregiver and patient, if age appropriate.
3. Check doctor’s order for dosage, frequency and route of administration.
4. Select site.
   a. Dorsogluteal:
      (1) The site is found by locating the greater trochanter and posterior iliac spine. An imaginary line is drawn between these two points.
      (2) The injection is made above the line into the gluteus medius. The needle is directed perpendicular to the surface on which the child is lying, when prone.
   b. Ventrogluteal:
      (1) The site is found by placing the palm on the greater trochanter and the index finger on the anterior iliac spine. The middle finger is extended along the iliac crest as far as possible forming a triangle between the middle and second fingers.
      (2) The injection is given in the center of the triangle or V formed by the hand, with the needle directed slightly upward toward the iliac crest.
   c. Deltoid:
      (1) The deltoit site is located in the lower part of the upper third of the deltoit and the axilla on the lateral surface of the arm.
Strength of Evidence Level: 3

(2) The needle is directed into the muscle at a 90-degree angle (at a depth of 1/2-1 inch, depending on the muscle and nutritional status) but pointed slightly toward the acromion process.

d. Vastus lateralis:
   (1) The site is found by drawing an imaginary line between the trochanter to just above the knee on the outer aspect of the thigh. The middle third of the thigh should be located by visually marking off the area from the knee to the groin into thirds.
   (2) The injection is given in the middle third of the thigh.

5. Administer medication.
   a. Check that the needle is securely attached to syringe.
   b. Cleanse top of vial with alcohol wipe or break ampule with gauze.
   c. Draw up appropriate dosage of medication and expel any air in syringe.
   d. Place child in comfortable position. You may need caregiver to hold child.
   e. Prepare selected site with alcohol wipe; allow to air dry.
   f. Grasp muscle firmly between thumb and other fingers to isolate and stabilize muscle. For obese children, it is necessary to firmly spread the skin with the thumb and index finger.
   g. Insert needle quickly with dartlike motion. Use the Z track and/or air-bubble technique, as indicated.
   h. Avoid any depression of the plunger during insertion of the needle.
[Note: Aspiration of IM is not indicated for immunizations and vaccinations. Aspiration may be indicated for injections that include large molecule injections i.e. Penicillin. If there is no blood aspirated, medication may be injected. If there is blood aspirated, withdraw needle, discard medication and syringe properly and repeat procedure, choosing another injection site.]
   i. Inject medication slowly at rate of 1 mL/10 seconds.
   j. Withdraw the needle, keeping slight pressure over the area to avoid the tissue from pulling upward as the needle is withdrawn.
   l. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Encourage caregiver to comfort child.
2. Utilize play opportunities to help the child master his/her feelings about injections.
3. Document in the patient’s record:
   a. Medication administered, dose, time, route and site.
   b. Patient’s response to procedure, side effects and management.
   c. Instructions given to caregiver.
   d. Communication with the physician.
PURPOSE:
To provide safe and accurate medication administration.
To instruct the parent/caregiver about oral medication administration and the medication regime.

CONSIDERATIONS:
1. Secure parent's/caregiver's participation when administering medications to infants and small children.
2. Hold or cuddle infants and small children to decrease combative ness.
3. Teach parent/caregiver age appropriate positioning of the child to secure cooperation and decrease combative ness.
4. Allow small children the opportunity to take the medication themselves.
5. Use a dropper, an oral medication administration device, or a nipple device for infants and young children.
6. When appropriate mix the medication in small amounts of food or liquid.
7. When possible have medication flavored with a chosen flavor.
8. DO NOT crush enteric coated and formulated slow-release medications.
9. Praise and reward the child after the medication is taken.
10. At each visit complete a medication history for compliance, side effects, effectiveness of the medication, medication changes and patient/caregiver knowledge.

EQUIPMENT:
Written patient medication guides (to be left in the home)  
Medication cup  
Oral medication syringe  
Nipple  
Water (or other medication-compatible fluid)  
Spoon  
Pill crusher

PROCEDURE:
1. Check the physician’s order for the patient’s medications. It should include:
   a. Name of the patient.
   b. Name of the medication.
   c. Medication dose, route and frequency.
2. Complete a medication history.
3. Instruct the parent/caregiver on the purpose, side effects, dosage and schedule of the medication.
4. Wash hands and gather supplies.
5. Demonstrate preparation of the medication.
6. Demonstrate age appropriate administration of medication as needed.
7. Parent/caregiver does return demonstration of medication preparation/administration as needed.
8. Provide the parent/caregiver with instructional medication handouts and teaching guides. Topics should include:
   a. Medication name, both trade and generic.
   b. Purpose of the medication.
   c. Dose and scheduling of administration times.
   d. Side effects.
   e. Normal appearance of the medication.
   f. Special considerations for administration (with food or not).
   g. When to call the visiting nurse or physician.
   h. Storage of the medication.
9. Teach the parent/caregiver techniques to promote compliance:
   a. Fit the medication into the patient’s daily routine.
   b. Use calendars or checklists with medication times marked and check off when it is given.
   c. Use appropriate medication containers.
   d. Request liquid preparations, if needed or preferred by the child.
10. Report to the physician therapeutic effects, side effects or compliance issues.
11. Encourage the use of a consistent pharmacy.
12. Consult with your agency for guidelines for drugs not FDA approved.

AFTER CARE:
1. Document in the patient’s record:
   a. Medication administered, dose, time and route.
   b. Patient’s tolerance to the procedure and response to the medication.
   c. Teaching and instructions given to the parent/caregiver.
   d. Parent/caregiver response to teaching.
   e. Communication with the physician.

REFERENCES:


PURPOSE:
To introduce eardrops into the ear, usually to treat an ear infection or inflammation, to soften cerumen for later removal, and/or for local anesthesia.

CONSIDERATIONS:
1. Medication should be warmed to body temperature before administration. Cold medication can cause vertigo, nausea and pain. The bottle can be rolled between the hands to warm the medication or be placed in a bowl of warm water prior to instillation.
2. Upon occasion, the doctor’s order includes an ear wick following eardrop administration. Wicks are usually pieces of cotton formed into a cone shape. The pointed end of the cone is covered with the medication. The pointed end of the cone is inserted first into the ear canal. The wick should be large enough to prevent disappearance of it into the ear canal.
3. For children younger than 3 years of age, gently pull the outer ear down and back while instilling.
4. For children 3 years and older, gently pull the top of the ear up and toward the back while instilling.
5. Use at least 2 patient identifiers prior to administering medications.

EQUIPMENT:
Prescribed otic medication.
Cotton balls
Gloves and personal protective equipment (PPE), as needed
Towel
Light source

PROCEDURE:
1. Check the physician order for the:
   a. Patient name.
   b. Medication.
   c. Dose.
   d. Time.
   e. Route.
2. Wash hands and gather supplies.
3. Explain the procedure to the parent and child.
4. Wash hands and don gloves.
5. Position child lying on the side opposite the ear to be instilled.
6. Position the wrist of the hand administering the medicine on the patient’s cheek or head to steady the hand.
7. Position the dropper so the drops fall against the side of the canal.
8. Instill the correct number of drops into the canal.
9. After instilling, insert a wick if ordered.
10. Attempt to keep the patient lying in the same position for 1 minute.
11. Gently massage the front of the ear to facilitate the flow of the medication into the inside of the ear.
12. Praise the child.
13. Discard soiled supplies in appropriate container.
14. Remove gloves and wash hands.
15. Have parent/caregiver do return demonstrations as needed and appropriate.

AFTER CARE:
1. Document in the patient’s record:
   a. Medication.
   b. Dose.
   c. Route.
   d. Time given.
   e. Complications
   f. Child’s response to the procedure.
   g. Parent/caregiver understanding of teachings.
2. Provide parent/caregiver with a teaching tool, including the following information:
   a. Medication action, dose, time, route and side effects.
   b. Age appropriate techniques for administration.
   c. Reasons to call the homecare nurse or physician.
PURPOSE:
To inject a prescribed medication into subcutaneous tissue between the fat and the muscle.

CONSIDERATIONS:
1. This route is commonly used for insulin, heparin, some narcotics, some chemotherapy, hormone replacement, allergy desensitization and some vaccines.
2. Common subcutaneous sites are outer aspects of arms and thighs.
3. Rotate injection sites to avoid trauma to same site.
4. Since infants and children move unexpectedly, have an extra needle available in case of contamination.
5. If the patient is a child, encourage him/her to help with the procedure by putting on the self-adhesive bandage.
6. A filter needle must be used to draw medication from an ampule and then replaced with appropriately-sized needle for injection.
7. Use at least two patient identifiers prior to administering medications.

EQUIPMENT:
Medication
Alcohol swabs/wipes
Gauze
Syringes with 24-30-gauge needles
19-gauge filter needle (optional)
Gloves
Impervious trash bag
Puncture-proof container

PROCEDURE:
1. Adhere to Standard Precautions.
2. Check doctor's order for dosage, frequency and route of administration.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
5. Select injection site.
6. Clean site with alcohol swabs, cleaning center first and moving outward in circular motion.
7. Pinch up skin gently to elevate subcutaneous tissue.
8. Insert needle at 45-degree angle for child with little subcutaneous tissue or 90-degree angle for child with more subcutaneous tissue.
9. Once needle is inserted, skin can be released.
10. Inject medication.
11. Withdraw needle. Hold gauze over site and apply pressure for a few seconds.
12. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Encourage caregiver to comfort the patient, if necessary.
2. Utilize play opportunities to help the patient master his/her feelings about injections.
3. Document in patient's record:
   a. Medication administered, dose, time, route and site.
   b. Patient's response to procedure, side effects and management.
   c. Instructions given to caregiver.
   d. Communication with the physician.
PURPOSE:
To provide Synagis (Palivizumab) injections to children less than 2 years of age at risk for Respiratory Syncytial Virus (RSV).

CONSIDERATIONS:
1. Synagis contains no preservatives and must be administered within 6 hours of reconstitution.
2. All premature infants qualify for Synagis injections to prevent the occurrence of RSV.
3. All children under the age of 2 years with a chronic health condition qualify for Synagis injections to prevent the incidence of RSV.
4. After the patient receives the initial injection, monthly injections between intervals of 25 – 30 days are administered from October to April, the prime time for RSV transmission.
5. Anterolateral thigh is the preferred injection site. Prior to delivery of the medication, the injection site must be ascertained.
6. Physician orders must be obtained every 60 days.

EQUIPMENT:
Gloves
Digital scale for weighing patient
Alcohol wipes
Palivizumab vial
Sterile water vial
1-3 mL syringe, 1/2-1 inch needle
Bandage
Sharps disposal container
Stethoscope

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to patient and/or caregiver.
3. Obtain consent.
4. Assess patient for signs of infections or illness; document all findings in patient visit note.
5. Weigh patient and document weight in patient visit note.
6. Calculate dosage using the following formula: (Patient weight in kilogram x 15 mg divided by 100 mg/mL = dosage to be given).
7. To prepare Synagis for injection:
   a. Wipe rubber stopper with alcohol.
   b. Reconstitute powder Synagis:
      (1) 100 mg vial with 1.0 mL of sterile water.
      (2) 50 mg vial with 0.6 mL of sterile water.
      (3) Gently swirl vial. DO NOT shake vile.
   c. Allow the reconstituted vial to stand for approximately 20 minutes until the solution is clear.
   d. Discard the used syringe.
   e. If the Synagis comes constituted, remove from refrigerator 1 hour prior to administration.
8. Double check dosage calculation. If more than 1 mL is to be administered, volume must be given in separate doses in separate locations.
9. Cleanse area for injection with alcohol. Best site is the anterolateral thigh.
10. Using a new syringe, administer intramuscular injection to patient. Apply bandage at completion of injection, if needed.
11. Observe patient for adverse reaction(s) for 20 minutes.

AFTER CARE:
1. Document in patient's record:
   a. Procedure and observations.
   c. Patient’s response to procedure.
   d. Contact physician if patient is ill or has an elevated temperature.
PURPOSE:
To increase through use of a spacer the amount of medicine that gets into the lungs when attached to a metered dose inhaler (MDI).

CONSIDERATIONS:
1. Different types of spacers are used depending on the age of the child. Options may include Aerochamber with Mask, Inspirease and Aerochamber.
2. It is important to ensure the child’s lips have a proper seal around the spacer. If using a mask, ensure proper seal to face.

EQUIPMENT:
Metered dose inhaler
Spacer
Warm water (used for cleaning portion of this procedure)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Gather all equipment.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
4. Auscultate lung sounds.
5. Remove cap from inhaler.
6. Shake canister to mix the medicine before use. Attach inhaler to the spacer.
7. The patient should stand up straight and hold his/her head tilted back slightly.
8. Instruct the patient to exhale slowly and completely before using inhaler.
9. Depress inhaler. This will send one puff of the medicine in the holding chamber of the spacer.
10. Place the mouthpiece of the spacer immediately to the patient’s mouth. Be sure to have the patient form a tight seal with his/her lips around the mouthpiece. Instruct him/her to inhale slowly.
11. Instruct the patient to hold his/her breath for 10 seconds. This will allow the medicine to reach deep into the lungs. It may be helpful to hold the patient’s nose closed to be sure that the medication goes into his/her throat.
12. If ordered dose is greater than one puff, repeat the above steps. Shake inhaler well before each puff.
13. Upon completion, remove inhaler from spacer and replace protective cap.
14. Instruct the patient to rinse his/her mouth with water and spit out. It is important not to swallow. Rinsing the mouth will help prevent a dry throat and relieve any unpleasant aftertaste.
15. Auscultate lung sounds.

AFTER CARE:
1. Instruct the patient to rinse his/her inhaler mouthpiece, cap and spacer once a day with warm water. This will prevent the equipment from clogging and not working well. After rinsing the equipment, allow to air dry. DO NOT towel dry as this may leave lint in the spacer.
2. Document in the patient’s record:
   a. Lung sounds before and after treatment.
   b. Vital signs.
   c. Instructions given to caregiver.
   d. Status of oral mucosa.
PURPOSE:
To accurately measure height and weight of pediatric patients.

CONSIDERATIONS:
1. For accurate measurements, use infant-measuring device for recumbent length and stadiometer for standing height.
2. Normally, height is less if measured in the afternoon than in the morning.

EQUIPMENT:
Scale
Stadiometer

PROCEDURE:
1. Height:
   a. Children younger than 24-36 months:
      (1) Place supine with head in midline.
      (2) Grasp knees and push gently toward table to FULLY extend legs.
      (3) Measure from top of head to heels of feet (toes pointing upward).
   b. Standing children older than 24-36 months:
      (1) Remove socks and shoes.
      (2) Have child stand as tall as possible, back straight, head in midline and eyes looking straight ahead.
      (3) Check for flexion of knees, slumping shoulders, raising of heels.
      (4) Measure from top of head to standing surface.
      (5) Measure to the nearest centimeters or 1/8 inch.
2. Weight:
   a. Weigh infants and young children nude on platform-type scale; protect infant by placing hand above body to prevent falling off scale.
   b. Weigh older children in underwear (and gown if privacy is a concern) and no shoes on standing-type upright scale.
   c. Check that scale is balanced before weighing.
   d. Cover scale with clean sheet of paper for each child.
   e. Measure to the nearest 10 grams or 1/2 ounce for infants and 100 grams or 1/4 pound for children.

AFTER CARE:
1. Document height and/or weight of child/infant in patient record.
2. Dress child/infant appropriately after measurements to prevent chilling.
3. Restore comfort and recognize child’s cooperation through positive reinforcement.
PURPOSE:
To measure systolic and diastolic blood pressure in a child.

CONSIDERATIONS:
1. The systolic pressure of the child may be raised by crying, vigorous exercise or anxiety. It is therefore appropriate to choose a time when the child is quiet and comfortable.
2. Blood pressure (BP) measurement by noninvasive methods is part of a routine vital sign determination.
3. BP monitoring in children is a valuable method for assessing and managing suspected hypertension.
4. The most important factor in accurate measurement of BP is the use of an appropriately sized cuff.
5. The width of the cuff bladder should be approximately 40% of the arm circumference measuring at a point midway between the olecranon and the acromion. Bladder cuff length should cover 80-100% of the circumference of the arm but not overlap.
6. If the appropriate size is not available use an oversized cuff rather than an undersized cuff.
7. DO NOT measure blood pressure in an extremity with damaged or altered blood flow or an IV.
8. The recommended method of blood pressure determination is by auscultation.

EQUIPMENT:
Blood pressure cuff, appropriate size for age
Sphygmomanometer
Stethoscope

PROCEDURE:
Measurement in the arm:
1. Securely place the cuff around the upper arm so that the bladder of the cuff is midline over the brachial artery.
2. The pressure should be measured with the cubital fossa of the arm at heart level.
3. Palpate the radial artery. Place the diaphragm or bell of the stethoscope over the brachial artery below the bottom edge of the cuff. Inflate the cuff to approximately 20 mm Hg above the point where the radial pulse disappears.
4. Deflate cuff at 2-3 mm Hg/second.
   a. The systolic reading is the onset of the Korotkoff sounds or the point when the initial tapping sound is heard. At least two consecutive beats should be heard as the pressure falls.
   b. The onset of muffling is the best index of diastolic pressure in children up to 12 years of age. In children and adolescents, diastolic reading is the disappearance of the Korotkoff sounds.
5. When all sounds have disappeared, the cuff should be deflated rapidly and completely. One to two minutes should elapse before further determinations are made, to allow release of blood trapped in veins.

Measurement in the thigh (popliteal artery):
1. The child should lie face down and the cuff applied with the bladder over the posterior aspect of the mid-thigh. If the child is unable to lie face down, obtain the pressure reading with the child supine, by flexing the knee just enough to permit application of the stethoscope over the popliteal space.
2. Place the stethoscope over the popliteal fossa to obtain the reading.
3. The larger bladder usually records systolic pressure in the thigh as 10-40 mm Hg higher than that in the arm, but the diastolic pressure is essentially the same for both.

Measurement in the calf (posterior tibial artery):
1. Position the distal border of the cuff at the malleoli, the bony prominence on each side of the ankle.
2. Auscultate over the posterior tibial or dorsalis pedis artery.

Measurement in the lower arm (radial artery):
1. Secure the cuff at mid lower arm above the wrist.
2. Place the stethoscope over the radial artery to obtain the reading.
3. Position limb at level of heart.
4. Rapidly inflate the cuff to about 20 mm Hg above point at which radial pulse disappears.
5. Release cuff at a rate of 2-3 mm per second.
6. Record systolic - clear tapping sound (first Korotkoff sound).
7. Record diastolic pressure as low pitched muffled sound (fourth Korotkoff sound).

Palpable pressure:
1. Inflate the cuff to approximately 20-30 mm Hg above where pulse is no longer felt.
2. Slowly release pressure until a pulse is felt. This is the systolic pressure.
3. The diastolic pressure is recorded as “P” for palpation. The systolic pressure obtained by palpation is 5-10 mm Hg lower than obtained by auscultation.

Electronic pressure:
1. Use steps above for cuff selection and placement.
2. Set up machine according to manufacturer’s instructions.
3. Turn machine on and obtain reading.
4. Remove cuff.
5. Oscillometry has digital read-outs for systolic, diastolic and mean arterial pressures (MAP) and for pulse.
6. Electronic readings are higher than measuring with auscultation by approximately 10 mm Hg.
AFTER CARE:

1. Document in patient's record:
   a. Blood pressure reading and method used.
   b. Patient's response to procedure.
   c. Instructions given to caregiver.
   d. Contact physician for any significant changes in blood pressure reading.
PURPOSE:
To obtain mean blood pressure (BP) of an infant.

CONSIDERATIONS:
1. The Korotkoff sounds are not heard over the brachial artery in infants.
2. Measurement of blood pressure provides baseline data and may indicate cardiovascular problems.
3. BP is most easily and accurately assessed using an electronic blood pressure machine that uses oscillometry or with palpation.
4. The appropriate sized cuff will provide the most accurate reading. The cuff width to arm ratio should be 45-70%.
5. Oscillometry readings are most reliable when mean arterial pressure is greater than 40 mm Hg.
6. Best results are obtained when infant is quiet or sleeping.
7. Crying may raise the systolic pressure of an infant. Crying is a normal response for an infant.
8. DO NOT measure blood pressure in an extremity with damaged or altered blood flow or an IV.
9. If using a manual BP cuff, an accurate systolic reading can be obtained by palpation of:
   a. Brachial artery if using upper arm.
   b. Radial artery, if using lower arm.
   c. Dorsalis pedis or posterior fibial arteries, if using calf.
10. A diastolic pressure reading cannot be measured when obtaining a manual BP by palpation.

EQUIPMENT:
Blood pressure cuff - appropriate size for age
Sphygmomanometer
Electronic BP machine

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify patient and explain procedure to caregiver.
3. Properly sized cuff is placed around the infant's upper arm, lower arm or calf.
4. Expose extremity to be used for BP measurement while maintaining proper body temperature of infant.
5. If using manual cuff, locate appropriate artery.
6. Inflate cuff to 20-30 mm Hg above where pulse no longer palpable or above expected systolic pressure.
7. The cuff pressure is decreased at a rate of 2-3 mm Hg while palpating for pulse.
8. Continue to release pressure until pulse is palpable. This is the systolic pressure reading.
9. The diastolic pressure is recorded as “P.”
10. Deflate cuff rapidly and completely; remove from arm.
11. Wait 2 minutes before taking another blood pressure.
12. If using electronic monitoring devise, follow manufactures’ instructions.

AFTER CARE:
1. Document in patient's record:
   a. Blood pressure reading and extremity used.
   b. Patient's response to procedure.
   c. Instructions given to caregiver.
   d. Contact physician if noted to be hypertensive or there is a significant change. Presence of hypertension can be a sign of a significant underlying problem.
Temperature is taken to ascertain the presence of hypothermia, hyperthermia or normal temperature.

1. The normal temperature for the child is approximately 98.6 degrees Fahrenheit (37 degrees Celsius) orally.
2. Oral temperatures are not usually taken on children under 5 years of age. Axillary temperatures are usually recommended for the child under 1 year, when unable to cooperate with oral route.
3. The time needed to achieve accurate temperature is generally reduced with an electronic thermometer.
4. If possible use disposable or electronic thermometer. The use of glass thermometers with mercury is discouraged.

Thermometer
Disposable thermometer sheaths
Cleansing solution
Alcohol

1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver and patient, in age appropriate manner.
3. Place the thermometer sheath over the thermometer.
4. Turn digital thermometer on.
   a. Axillary Option:
      (1) Place bulb under arm, well up into armpit, with arm pressed close to body.
      (2) Leave in place for 3 to 5 minutes, or until electronic thermometer beeps.
      (3) If necessary, hold child's arm close to body.
   b. Oral Option:
      (1) Place the bulb under the side of the child's tongue. Have child close mouth while instructing child not to bite the thermometer.
      (2) Leave the thermometer under the tongue for 3 to 5 minutes, or until electronic thermometer beeps.
5. Remove and read thermometer.
6. Remove sheath or wash thermometer with soap and tepid water, rinse with alcohol and return to thermometer container.
7. Discard soiled supplies in appropriate containers.

1. Document in patient's record:
   a. Temperature reading, including method.
   b. Associated symptoms if temperature is elevated.
   c. Notification of physician, if indicated.
   d. Instructions given to caregiver.
Temperature is taken to ascertain the presence of hypothermia, hyperthermia or normal temperature.

CONSIDERATIONS:
1. There is danger of perforation of the rectum in the young infant because it is quite short. Obtain rectal temperature only if no other route is available.
2. The normal temperature for the child is approximately 99.6 degrees Fahrenheit (37.5 degrees Celsius) rectally.
3. It is difficult to determine febrile state in an infant by touch during the first year of life.
4. There is a natural tendency by the child to expel the thermometer. Babies usually have a bowel movement.
5. A safe restraint method should be used to prevent the child's moving which might push the thermometer further into the rectum.
6. A physician’s order may be required for taking a rectal temperature, as it is an invasive procedure.
7. The use of mercury filled glass thermometers should be discouraged.

EQUIPMENT:
Rectal thermometer
Cleansing solution
Alcohol
Lubricant
Disposable thermometer sheaths
Gloves

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify patient and explain procedure to caregiver and patient, if age appropriate.
3. Place the thermometer sheath over the thermometer and turn thermometer on.
4. Lubricate thermometer bulb if insufficient lubrication from the thermometer sheath. Place child on stomach, or on back with both legs up, or on one side with upper leg bent.
5. The non-dominant forearm should be placed firmly across the child's hip area when child is on his/her stomach.
6. Use the thumb and forefinger of the non-dominant hand to separate the buttocks, then the dominant hand is free to gently insert the lubricated thermometer.
7. Insert rectal thermometer into the rectum approximately 1/4 inch or until bulb is covered.
8. Hold thermometer in place until thermometer beeps. Sometimes it is helpful to hold buttocks closed.
9. Remove and read.
10. Wipe rectal area with tissues.
12. Remove sheath or wash thermometer with soap and tepid water. Cleanse with alcohol and return to thermometer container.
13. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Temperature reading, including method.
   b. Associated symptoms if temperature is elevated.
   c. Notification of physician, if indicated.
   d. Instructions given to caregiver.
PURPOSE:
To remove secretions blocking the trachea and to maintain an open airway.

CONSIDERATIONS:
1. Cardiac arrhythmias, vagal stimulation and laryngospasm may occur.
2. Oxygen depletion may occur.
3. Suction should not last more than 5 seconds in an infant, 15 seconds in an older child. Supplemental oxygen may need to be given before and after the procedure.
4. On each telephone in the home, all emergency phone #’s should be listed (i.e., 911, local hospital, child’s PCP).
5. Suction apparatus should be set at 50-95 mm Hg (3-5 inches Hg) for infants and 90-115 mm Hg (5-10 inches Hg) for children.
6. Suction apparatus should be cleansed and tubing changed at least every 24 hours according to durable medical equipment vendor’s protocol.

EQUIPMENT:
- Gloves
- Suction apparatus capable of producing negative pressure (standard is 80 mm of pressure, range is from 40-100 mm)
- Container for secretions
- Suction catheter (size 6, 8 or 10 French)
- Clean containers for rinsing catheters
- Normal saline solution
- Sterile water
- Impervious trash bag
- Supplemental oxygen

PROCEDURE:
1. Adhere to Standard Precautions.
2. Gather all equipment.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
4. Turn on suction to check system and regulate pressure, if indicated.
5. Set up saline cup and open catheter.
6. Position the child facing straight ahead with his/her head slightly tilted back. The infant should be placed with chin up, head tipped slightly backward.
7. Determine how far to insert the catheter. Measure the catheter using the distance between the tip of the nose and the ear lobe.
8. Lubricate catheter tip with sterile water or saline.
9. Leaving the vent in the catheter open, insert the catheter into the external nares, point the catheter upward to the septum, then downward.
10. If obstruction is encountered, DO NOT force, but remove and insert at another angle or try the other nostril.
11. For suctioning, intermittently occlude vent with the thumb. Slowly rotate the catheter between the thumb and finger of the other hand while removing the catheter. Never suction for more than 5 seconds in an infant, 15 seconds in an older child, at one time. Allow 1 to 2 minutes to recover and/or re-oxygenate with supplemental oxygen.
12. Monitor the child’s heart rate and color throughout the procedure.
13. Repeat Steps 9-12 in other nostril.
14. Last, suction oral secretions. You may use the same catheter used for naso suctioning.
15. Remove the catheter slowly when suctioning is completed. Clean the catheter and connecting tubing by aspirating remaining sterile water or saline solution.
16. Turn off suction. Disconnect catheter.
17. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient’s record:
   a. Color of patient.
   b. Consistency of color and amount of secretions.
   c. Patient’s tolerance of procedure.
   d. Changes in vital signs or complications that may have occurred.
   e. Instructions given to caregiver.

REFERENCE:
PURPOSE:
To maintain a patent airway and prevent infection due to the accumulation of secretions.

CONSIDERATIONS:
1. The best times to perform this procedure are when the child wakes up, before bedtime, before meals or 1 hour after meals.
2. The child must be placed in several different positions for the postural drainage. Some children are unable to tolerate certain positions.
3. Length of treatment in each position should be at least 2 to 3 minutes of percussion followed by vibration.
4. The bottom of a baby bottle nipple can be padded with tissue secured with adhesive tape and used for percussion of an infant. A percussion cap should be used for children.
5. During percussion, a hollow sound should be produced (not a slapping sound).
6. Have the child wear a shirt so your hand does not touch the child's bare skin during percussion.
7. Percussion and vibration are performed over the rib cage, not over sternum, spine, stomach, kidneys or liver.
8. Infants and small children can be positioned in your lap. For older children, a padded slant board can be used. If a slant board is not available, a bed or couch at a comfortable height can be used. Pillows are helpful in positioning the child comfortably.

EQUIPMENT:
Percussion cup or padded nipple
T-shirt or small blanket

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify and explain procedure to caregiver and patient, if age appropriate.
3. Remove any constricting clothing from child.
4. Review physician's orders for location of affected lung segment(s), prescribed treatment, and sequence of procedure, e.g., if ordered, include use of nebulizer prior to treatment, percussion/clapping and vibration in each position.
   a. Apical segment of the upper lobes (posterior): Percuss over the right and left scapula from midscapula up.
   b. Apical segment of the upper lobes (anterior): Percuss over the area of the right and left clavicles.
   c. Posterior segment of upper lobes: Percuss over the area above the midscapular line in the right and left sides.
   d. Anterior segment of upper lobes: Percuss in the area above the breast to the clavicle.
   e. Right middle lobe and lingula of left upper lobe: Percuss above or below breast on the respective side.
   f. Lower lobes (anterior): Percuss from the breast to the base of the last rib.
   g. Lower lobes (lateral): Percuss from the base of the axilla to the base of the last rib.
   h. Lower lobes (posterior): Percuss from the midscapula area to the base of the last rib.
5. Auscultate breath sounds to determine baseline prior to vibration and/or percussion treatment.
6. Encourage deep breathing with complete exhalation. The child can also use special blow bottles or try to blow up a balloon. These help the child to take deep breaths and encourage coughing. Give patient a soft pillow or stuffed toy to hug while coughing to provide support.
7. Percuss by cupping the area for about 2 to 3 minutes throughout inhalation and exhalation.
8. During exhalation vibrate the area as the child breathes out. Repeat this for 3 breaths. If the child is too young to understand how to breathe deeply and slowly, just vibrate during a few breaths.
9. Encourage the child to cough 3 consecutive times. Since he may not be able to cough when lying down, help the child to a sitting position to produce a deep cough.
10. Watch the child carefully for signs of tiredness. The postural drainage should be stopped before the child becomes exhausted. It can be continued after the child has had an opportunity to rest.
11. Auscultate breath sounds upon completion of vibration and/or percussion.

AFTER CARE:
1. Document in patient’s record:
   a. Breath sounds before and after procedure.
   b. Secretions expelled.
   c. Patient's response to procedure.
   d. Instructions given to caregiver.
PURPOSE:
Pulse oximetry measures arterial hemoglobin oxygen saturation (SaO2) by passage of two different wavelengths of light through blood-perfused tissues to a photodetector.

CONSIDERATIONS:
1. Normal range is 95-99%.
2. There are two types of oximeter probes, alligator clip style and adhesive strip sensor.
3. The alligator clip style may be used on an older child and the finger is placed in the bed of the clip. This is appropriate for the child that can sit still for several minutes.
4. The adhesive strip sensor style is appropriate to use on an infant or child. The sensor can be placed on the earlobe, finger or great toe. In smaller infants, the sensor works best when placed on the bottom of the foot.
5. Avoid sites where blood flow is compromised or restricted.
6. Avoid IV dyes, colored nail polish and artificial nails. False readings may occur.
7. With use of sensor strip on a child, secure cord with tape or self-adhering wrap to avoid interference from patient movement. Keep site warm by placing a sock over the foot or hand if the site is cool.
8. Sensor strip should be changed every 4 to 8 hours. Be cautious if the child is compromised in order to prevent pressure necrosis. Sensor should be changed more frequently, if needed.

EQUIPMENT:
Pulse oximeter
Sock (if needed)
Tape (if needed)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Gather all equipment.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
4. Assess finger or toe to be used. Clean finger or toe with soap and water, if any dirt. Ensure site to be used is free of any ointment or dressing.
5. When using adhesive strip sensor, peel off clear strip that covers the adhesive strip. Sticky side should be exposed. DO NOT touch the sticky side of the adhesive strip.
6. Place light on the finger or toe ensuring it is in full contact with the skin.
7. Wrap adhesive strip around finger or toe. Ensure sensor is attached firmly to the site.
8. The pulse oximeter will then search for a pulse. It may be necessary to hold the child’s foot or finger still if he/she is moving as the sensor may not be able to pick up a signal. It may take 30 to 60 seconds to obtain a signal when using either the adhesive strip sensor or alligator clip.
9. Once pulse is detected, the monitor will read the oxygen saturation. If the pulse oximeter model being used has the ability to detect a pulse reading, verify that the pulse is accurate by manually checking for a pulse. If the pulse is not accurate for the infant or child, then the oxygenation reading is not reliable.
10. Verify with the physician the infant/child’s target oxygen saturation range.

AFTER CARE:
1. Document in the patient’s record:
   a. Oxygen saturation reading. Be sure that oxygen saturation parameters are documented in the patient’s orders.
   b. Patient's response to procedure
   c. Instruction given to patient/caregiver.
   d. Communication with physician when necessary.
PURPOSE:
To transition the patient from ventilator support to completely spontaneous breathing, during which time the patient assumes the responsibility for effective gas exchange.

CONSIDERATIONS:
1. Detailed physician order for weaning patient from ventilator.
2. Determine patient’s status prior to weaning trial. This includes: respiratory status, vital signs, patient’s color, oxygen saturation, nutritional status and alertness:
   a. Must be alert and pleasant.
   b. The patient is able to ventilate.
   c. The patient is able to oxygenate.
   d. The patient is able to protect his/her airway.
   e. Patient must have an accurate oxygen saturation > 94-95% on room air.
   f. No gastrointestinal upset, irritability or change in level of consciousness.
   g. Stable vital signs.
3. Registered nurse must oversee and train the LPN during the weaning process.
4. To provide care it is recommended that nurses successfully complete a ventilator weaning competency.
5. The nurse must be at the patient’s bedside at all times during the weaning process.
6. Ventilator, oxygen and suction equipment must be checked and functioning properly.
7. Emergency backup portable vent, oxygen and suction equipment must be readily available.

EQUIPMENT:
Patient’s chart with physician weaning order
Gloves
Ambu/Resuscitation Bag
Back-up portable ventilator
Suction machine and suctioning supplies
Pulse oximeter
Oxygen tank and oxygen supplies
Tracheostomy tray at bedside that includes: one size smaller tracheostomy
Trach with obturator, scissors, suction catheter, gloves, trach collar and ties.

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain procedure to caregiver and patient.
3. Administer physician-ordered pulmonary toilet 30 minutes prior to start of weaning trial.
4. Deflate cuff.
5. Remove from ventilator for physician-ordered length of time and patient tolerance. Place vent on the standby mode.
6. Apply Passy Muir Valve or Artificial Nose.
7. Observe for signs and symptoms of respiratory distress which include:
   a. Decrease level of consciousness.
   b. Decreased oxygen saturations.
   c. Cyanosis.
   d. Retracting.
   e. Nasal Flaring.
   f. Tachypnea.
   g. Increased heart rate >140.
   h. Decreased heart rate <60.
8. If patient develops any signs of respiratory distress, immediately place patient back on vent. The DOPE pneumonic may be utilized for potential causes of respiratory distress:
   D isplaced Tube.
   O bstruction.
   P neumothorax.
   E quipment Failure.
9. Once weaning trial is complete, place patient back on vent at previous ventilator settings.
   a. Reinflate cuff.
   b. Observe for patent airway.
   c. Observe for signs and symptoms of respiratory distress.
   d. Auscultate lung sounds and monitor respiratory rate.
   e. Complete ventilator flow sheet/check.

AFTER CARE:
1. Document patient’s response to trial.
3. Continue to monitor patient throughout shift.
4. Document instructions given to caregiver.
PURPOSE:
To clear the airway and remove secretions which cannot effectively be coughed up.

CONSIDERATIONS:
1. The cardinal indication for suctioning is the presence of coarse breath sounds or rhonchi that persist in spite of the patient's effort to cough. Other indications include constant cough, retractions and inability to clear secretions.
2. Suctioning should only be done as needed to keep the tracheostomy tube patent. The need can be determined by chest auscultation and signs of increased respiratory effort.
3. Cardiac arrhythmia, vagal stimulation and laryngospasm may occur during suctioning. In the event of heart irregularity or color changes, suctioning should be discontinued.
4. Suction apparatus should be cleaned or tubing changed according to durable medical equipment (DME) vendor's protocol.
5. Suction apparatus should be set at 40-60 mm Hg for neonate to six months, 60-100 mm Hg for six months to 10 years, 80-120 mm Hg for 10 years to adolescent.
6. Occlusion of the tracheostomy tube is life threatening. Infants and children are at greater risk than adults because of the smaller diameter of the tube.
7. To avoid trauma to the tracheobronchial wall, the suction catheter should be marked prior to suctioning. Calibrated catheters may be utilized or measurement may be performed by placing suction catheter through sample tracheostomy tube (same size as child's). Mark a line on the catheter, which will provide a guide to inserting catheter. Suction catheter should be inserted to a point just beyond the end of tracheostomy tube. Suctioning should require no more than 5 seconds.
8. In children who require long-term cannulation with a tracheostomy tube and who are not immunosuppressed, using a sterile suction catheter for each suction pass may not be optimal. Replacing the suction catheter at least every 24 hours and using a clean, no-touch technique may be used.
9. If the clean, no-touch is an option, the recommendation of the equipment company supplying the tracheostomy supplies should be followed to clean and store the suction catheter between suctioning.
10. Avoid suctioning after meals.

EQUIPMENT:
Suction apparatus capable of producing negative pressure (standard is 80 mm of pressure, range is from 40-100 mm)
Container for secretions
Suction catheter (the diameter should be approximately half the diameter of the tracheostomy tube) No. 8-10
Two cups
Sterile saline
Sterile water
Impervious trash bag
Gloves
Supplemental oxygen

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify the patient and explain procedure to caregiver and patient, in age appropriate manner. Wash hands before procedure and apply gloves.
3. Test suction apparatus.
4. Check tracheostomy tube to be sure it is tied securely.
5. Hyperventilate the child with 100% oxygen before and after suctioning (using a bag-valve-mask or increasing the Fio2 ventilator setting).
6. Remove sterile catheter from wrapping and attach to plastic suction tubing.
7. Aspirate secretions.
   a. Leaving thumb off air vent, gently insert catheter into tracheostomy to premeasured line.
   b. Gently aspirate secretions by covering the air vent and rotating catheter. Never exceed 3 to 4 seconds with each suctioning.
   c. In presence of tenacious secretions, 0.5 mL to 2 mL of sterile saline may be instilled into tracheostomy tube prior to suctioning.
   d. Each time you remove the catheter, allow the patient 3 to 5 breaths before repeating procedure or re-oxygenate with supplemental oxygen.
   e. The oral cavity can be suctioned after the tracheostomy tube is cleared. Never suction oral cavity first unless catheter is changed before inserting into tracheostomy tube.
   f. Rinse catheter tubing with sterile water to prevent clogging.
   g. Auscultate lungs to ascertain results.
8. Discard soiled supplies and solutions in appropriate containers.

AFTER CARE:
1. Reassure patient and caregiver.
2. Document in patient's record:
   a. Color of patient.
   b. Consistency, color and amount of secretions.
   c. Patient's tolerance of procedure.
   d. Changes in vital signs or complications that may have occurred.
   e. Instructions given to caregiver.
3. Clean and change tubing according to DME supplier's guidelines.
REFERENCE:
PURPOSE:
To prevent infection and skin breakdown of tracheostomy and surrounding area.

CONSIDERATIONS:
1. Child should be restrained, as needed. Two adults are preferred for doing procedure. If only one person available, put new ties on before cutting old ties.
2. Have all equipment assembled prior to beginning procedure.
3. Place a blanket roll under the patient's shoulders to provide access to the tracheostomy.
4. Suction before changing ties.
5. Placement of the knot should be alternated at each change. DO NOT place over the carotid artery or at the nape of neck.

EQUIPMENT:
Twill tape (or alternate type of ties):
Cut 2 pieces of twill tape, each 12 inches long
Cut the end of the tape at a diagonal to make threading easier
Check to see that the end will not unravel
Make a slit in each twill tape 1/2 inch from one end
Scissors
Blanket roll
Tracheostomy tube of the same size
Gloves

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify and explain procedure to caregiver and patient, in age appropriate manner.
3. Have assisting adult place fingers on each side of the flanges to hold the tracheostomy tube as close to the neck as possible.
4. Carefully cut and remove tracheostomy ties without tugging on tracheostomy tube.
5. Thread the slitted end of the twill tape up through the tab and pull through past the slit.
6. Bring the free end of the twill tape through past the slit and pull securely.
7. Repeat for other side.
8. Tie the ends of the twill tape in a loop around the neck to secure the tracheostomy tube.
9. Apply gentle tension until the ties are snug around the neck.
10. Check the ties for tightness. One finger should just fit between the ties and neck. If possible, check the tension with child lying down and sitting up with his/her neck bent toward the chest.
11. Adjust the tightness as necessary.
12. Pull ends of bow-tie through making a secure double knot. Tie one more loop making it a triple knot.
13. Pull ends of bow-tie through making a secure double knot. Tie one more loop making it a triple knot.

Alternate Tie Procedure:
Supplies needed are the same as above except the twill tape is 36 inches long.
1. Adhere to Standard Precautions.
2. Place your fingers on each side of the tabs to hold the tracheostomy tube as close to the neck as possible.
3. Cut and remove the tracheostomy ties carefully without tugging on tracheostomy tube.
4. Thread the twill tape through the hole in one tab of the tube. Bring the free ends of the twill tape together behind the neck.
5. Thread one free end through the hole in the opposite tab of the tube.
6. Gently hold the end of the tie to correctly align around the neck.
7. Tie the ends of the twill tape in a loop around the neck to secure the tracheostomy tube.
8. Apply gentle tension until the ties are snug around the neck.
9. Tie the ends into a bow-tie.
10. Check the ties for tightness. One finger should just fit between the ties and neck. If possible, check the tension with child lying down and sitting up with his/her neck bent toward the chest.
11. Adjust the tightness as necessary.
12. Pull ends of bow-tie through making a secure double knot. Tie one more loop making it a triple knot.

AFTER CARE:
1. Document in patient's record:
   a. Date and time of procedure.
   b. Assessment of tracheostomy site.
   c. Patient's response to procedure.
   d. Instructions given to caregiver.
PURPOSE:
To maintain or re-establish a patent airway via a tracheostomy tube.

CONSIDERATIONS:
1. Size and type of tracheostomy tube to be used will be decided by the physician. Plastic and silastic tubes have replaced metal ones.
2. Two people should be present to change a tracheostomy tube.
3. Keep extra sterile tracheostomy tube and obturator at bedside in case of accidental expulsion of the tube (one of same size and one smaller size).
4. Tracheostomy tube should be changed:
   a. Weekly or monthly (physician should order frequency).
   b. PRN if dislodgement is suspected or if tube is plugged.
5. Dislodgement of a tracheostomy tube should be suspected if:
   a. Respiratory distress is unrelieved by suctioning.
   b. Sudden phonation occurs.
   c. Tube protrudes above skin surface.
   d. Suction catheter cannot be passed through tube.
   e. Neck bulges and face puffs with ventilation.
6. Child's temperature should be taken daily and physician notified if temperature > 101 degrees Fahrenheit.
7. Child may cough or gag during insertion and removal of the tracheostomy tube.
8. Use of distraction techniques is encouraged for the child depending on the child's developmental level/illness and overall condition.

EQUIPMENT:
Sterile tracheostomy tube of same size, with obturator
Water-soluble lubricant
Bandage
Scissors
2x2 gauge tracheostomy dressing
Twill-tape ties
Small blanket roll
Suction catheter
Gloves
Resuscitation bag (optional)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Identify patient and explain procedure to caregiver and patient, if age appropriate.
3. Perform hand hygiene before the procedure and don gloves.
4. Check the new tracheostomy tube to be sure the inner and outer cannulas and obturator fit properly. If balloon is used, check inflation/deflation to ensure no leaks.
5. Put tracheostomy ties on new tracheostomy tube.
6. Place child in an infant seat or sitting upright.
7. If child is unable to cooperate, have caregiver/assistant hold child's arms while tube is being inserted.
8. Suction child. (See Pediatrics- Respiratory: Tracheostomy Suctioning.)
9. Insert the obturator into outer cannula and hold in place with your thumb. Keep the inner cannula within reach.
10. Cut ties and remove tracheostomy tube presently in neck. Quickly inspect skin.
11. Standing at child's side, open the stoma by spreading the skin with your fingers.
12. Quickly dip the clean tracheostomy tube in the sterile saline, and shake to remove excess water. Insert the tip of the new tracheostomy tube into the opening (stoma), gently insert cannula, and follow the curvature of the tube until it is completely in place.
13. Quickly remove the obturator (if used) and allow child to breathe while holding onto the outer cannula firmly at the flanges.
14. Listen for air exchange bilaterally.
15. Inflate balloon, if used.
16. If the child is breathing well, secure the tracheostomy ties.
17. Suction as needed.
18. Insert the inner cannula.
19. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Date and time of procedure.
   b. Size and type of tracheostomy tube inserted.
   c. Patient's response to the procedure.
   d. Instructions given to caregiver.

REFERENCES:
PURPOSE:
To remove contents of the internal reservoir at regular intervals via catheter.

CONSIDERATIONS:
1. The sensation a patient will feel when the bladder is full will be different than before surgery.
2. Initially, the patient may notice a small leak from the opening of the stoma as the bladder reaches its full capacity.
3. Never force the catheter as you can traumatize mucosa and cause bleeding.
4. Due to the mucosal lining of a stoma, most patients do not need a lubricating jelly. If lubrication is needed, use only water-soluble types. Never use petroleum jelly.
5. Catheterization schedule is determined by the physician. Generally it is suggested to catheterize approximately every 3 hours at first. As the bladder's capacity to hold urine increases, the number of times the patient may need to be catheterized will decrease.

EQUIPMENT:
Non Sterile Gloves
Catheter—size determined by physician based on age
Clean paper towel
Urine drainage bag or appropriate receptacle for urine collection
Moist towelette or soap and water
Antimicrobial solution
Clean paper towel
Water soluble lubricant (optional)
Syringe -60 mL
Squeeze bottle
Resealable bag
Stoma covering (Telfa covering cut to appropriate size, large bandage or manufactured stoma cover)

PROCEDURE:
1. Adhere to Standard Precautions.
2. Gather all equipment.
3. Identify the patient and explain procedure to caregiver and patient, if age appropriate.
4. Don non sterile gloves.
5. Use a moist towelette or soap and water to clean the stoma. Use a circular motion, starting at the center and working your way outward.
6. Gently insert the catheter into the stoma.
7. If urine does not begin to drain, gently rotate the catheter or move it in or out slightly.
8. Allow urine to flow freely and empty bladder completely using gravity drainage.
9. Upon completion, slowly remove the catheter.
10. Place stoma covering over stoma.
11. Discard in an impervious trash bag.
12. Discard gloves
13. Wash hands.

AFTER CARE:
1. Soak used catheters in hot, soapy water. Use syringe to run water through catheter. Use same method to rinse with clear, hot water; making sure all soapy residue has been removed.
2. Dry outside of catheter with paper towel.
3. Using squeeze bottle or extra syringe, run antimicrobial solution through the center or the catheter.
4. Catheter can then be placed on clean paper towel to air dry.
5. Cleaned catheters can be stored in a resealable bag.
6. Document in the patient's record:
   a. The amount, color and odor of urine.
   b. Patient's response to procedure.
   c. Instruction given to patient/caregiver.
   d. Communication with physician when necessary.

REFERENCES:
PURPOSE:
Stool may need to be collected when a child exhibits any form of gastrointestinal dysfunction. The most frequent problem in childhood is acute diarrheal disturbances. Stool can be collected for the following purposes:

1. To check for the presence of blood, ova, parasites, bacteria, fat or sugar.
2. To determine the status of the child and the effectiveness of therapy.

GENERAL GUIDELINES:
Observe universal precautions and strict infection control if an acute infectious gastroenteritis is suspected.

EQUIPMENT:
- Tongue blade
- Plastic liner for diaper (when stool is watery)
- Specimen container
- Personal Protective Equipment

RECORD:
1. Date and time the specimen when collected.
2. Color, amount, consistency, and odor of stool.
3. The test collected, label specimen in front of caregiver, and disposition of specimen.
4. Follow up and record test results.
5. Note condition of the skin.

FAMILY EDUCATION:
1. Reinforce with the family the information given by the physician regarding results of this test. Correct any misinformation and fill in gaps of needed information.
2. Explain the need for continuous monitoring of the child once treatment has begun.
3. If the child has impaired perianal skin integrity, the following instructions may be helpful to the family:
   a. If the skin is slightly red but intact: Clean diaper area with water and mild soap after each bowel movement. Allow to air dry. May apply medicated ointment or cornstarch to area.
   
   Note: cornstarch is preferred to talc, which is dangerous if inhaled. Cornstarch is more absorbent than talc, and does not promote fungal growth.

   b. If skin is excoriated or very erythematous, clean diaper area with water and mild soap at least once a day after bowel movement, then apply occlusive skin barrier such as ointment or wafer-type dressing (example: Duoderm CGF Thin) to affected area. The objective of care with non-intact skin is to provide a moist, protected healing environment.

   c. Disposable diapers with absorbent gelling material (AGM) (ultra absorbent type) help keep skin drier (a primary objective in preventing skin irritation) and helps prevent mixing of urine and stool (a primary factor in causing skin irritation).

   d. An occlusive skin barrier such as zinc oxide, A&D ointment, Aquaphor, or petroleum jelly (Vaseline) may be used around anal area and buttocks at the onset of diarrhea to prevent any initial irritations or skin breakdown.

PROCEDURE:
Wash hands before and after patient contact. Observe universal precautions.

1. Explain the stool collection procedure to the child and family.

   Note: The family will help with the collection procedure especially if they understand the importance of the specimen.

2. If a stool specimen is needed from a child whose stools are loose or watery enough to absorb into a diaper, line the diaper with a piece of plastic. Place the liner between the diaper and the skin. If stools are soft, use diaper only.

   Note. The liner will allow the loose, watery stool specimen to be collected from the liner and not be absorbed into the diaper.

3. Check the diapered child frequently to see if defecation has occurred. Stool may be obtained from the bedpan or potty with a toilet-trained child.

   Note: A fresh specimen should be obtained so test results will not be distorted by time lapse. If a specimen is needed that cannot be contaminated with urine, place a urine collection bag on infant to separate urine from stool.

For Further Information See: Collecting Urine Specimens from Infants and Children.

In home, loosely covering the toilet under the seat with plastic wrap facilitates collection of
4. Don gloves and other PPE as needed.

5. Remove the soiled diaper and clean perineal area before applying a clean diaper.

   **Note:** Cleaning the perineal area will prevent skin irritation from the stool. Diarrheal stool is alkaline and contains enzymes that cause excoriation when in contact with the skin.

6. Remove a small amount of stool from the diaper, bedpan, or potty hat on the toilet with the tongue blade and place it in the specimen container.

7. Send labeled specimen to the laboratory. Label with child’s name, physician and date/time of collection.
PURPOSE:
With the administration of an enema, fluid is introduced into the rectum and sigmoid colon to stimulate peristalsis and stooling. Tap water and hypotonic solutions should be used with caution. The potential exists for fluid volume deficit or excess, related to enema induced fluid shifts. This, however, is more likely to occur in the infant rather than the older child.

They type of enema used most frequently in the home is cleansing or retention, used to empty the lower intestine. Isotonic saline or commercially prepared solutions (oil retention) may be used for this type of enema.

GENERAL GUIDELINES:
The amount of fluid given depends on the age and size of the child and the reason for the enema. Table adapted from Whaly and Wong, 1990.

<table>
<thead>
<tr>
<th>Age</th>
<th>Infant (5-10kg)</th>
<th>Small Child (11-30kg)</th>
<th>Large Child (31-50kg)</th>
<th>Adolescent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Fluid</td>
<td>120-240ml (4-8 oz.)</td>
<td>240-360 ml (8-12oz.)</td>
<td>360-480 ml (12-16oz.)</td>
<td>480-720 ml (16-24 oz.)</td>
</tr>
<tr>
<td>Distance to Advance Catheter</td>
<td>2.5 cm (1&quot;)</td>
<td>5.0 cm (2&quot;)</td>
<td>7.5 cm (3&quot;)</td>
<td>10 cm (4&quot;)</td>
</tr>
</tbody>
</table>

EQUIPMENT:
- Enema kit or prepackaged enema
- Bedpan, diaper, or potty chair
- Solution
- Bath thermometer
- Towels
- Waterproof pad
- Lubricant
- Non-sterile gloves and other Personal Protective Equipment as needed.

RECORD:
1. Reason for enema
2. Solution used
3. Date and time of procedure
4. How well the child tolerated the enema
5. The results of the enema

FAMILY EDUCATION:
1. Teach the proper procedure for administering an enema.
2. Teach perineal hygiene and use of analgesic rectal ointment, or sitz baths, for anal discomfort.
3. Diet teaching and education to prevent constipation, if applicable. Include information on increased fluid, fruit and fiber intake, and activity.

PROCEDURE:
Wash hands before and after patient contact. Observe universal precautions.
Gastroesophageal Reflux (GERD) is the regurgitation of gastric contents through the incompetent or relaxed sphincter between the stomach and the esophagus. Physiologic GERD is common in premature infants and in the first year of life. Frequency and severity of GERD varies greatly. Occurrence is common in children with neurologic impairment and failure-to-thrive. GERD can lead to serious complications such as aspiration, apnea and even death.

For Further Information See: Equipment chapter, Home Cardio-Respiratory Monitoring Infant (Transthoracic Impedance Monitor)

GENERAL GUIDELINES:
There is much controversy concerning appropriate treatment of the child with GERD. Traditionally, frequent small feedings have been employed; however, more recent studies indicate that this extends postprandial time, which is when most episodes occur. Conflicting studies have explored the use of thickened formula and elevated prone positioning in treatment of GERD. Although there is substantial evidence that both interventions do not make a difference, their use is widespread.

Pharmacological agents may also be employed to treat GERD. Some controversy exists regarding the efficacy of medications, however, frequently they will be ordered. Commonly used medications are Metoclopramide Hydrochloride (Reglan) and Cisapride (Propulsid). Antacids are employed if esophagitis is suspected: Maalox and Mylanta. Acid suppressing medications may include Cimetidine (Tagament), Ranitidine (Zantac), Famotidine (Pepcid), Omeprazole (Prilosec).

Physiologic GERD usually continues until about one year of age. Surgical correction (fundoplication) may be performed in the event of cases with severe complications such as reflux related respiratory disease, bronchopulmonary dysplasia, failure-to-thrive, and severe neurologic impairment.

EQUIPMENT:
• Positioning aids:
  ✓ Elevated head of bed
  ✓ Commercial fabric harness to maintain infant position
  ✓ Blanket and towel rolls
• Formula (thickening may be used)
• Medication (as ordered by physician)
• Personal Protective Equipment

RECORD:
Type and amount of formula or feeding
1. Type of thickening and amount
2. Note tolerance of feeding, any emesis or related symptoms
3. Positioning and positioning aids
4. Any reddening of the skin or pressure areas
5. Note teaching activities

FAMILY EDUCATION:
1. Teach the use of a bulb syringe or other oral suctioning device.
2. If cardio-respiratory monitoring is in use, ensure initial teaching of monitor use and maintenance, CPR, and follow up education.
3. Teach methods of providing head-elevated positioning. The crib mattress can be elevated with blankets or blocks. A commercial harness may be used. A portable, adjustable commercial bed is also available.
4. Teach preventive skin care, such as using soft clothing or padding between skin and mattress, keeping pressure off any reddened areas until normal skin color returns.
5. Car seats and umbrella strollers are problematic because the positioning predisposes to reflux. Plan trips 2 hours after a feeding. Keep trips short.

PROCEDURE:
Always wash hands prior to patient care and observe universal precautions.

INFANT:
1. Assess health history, feeding patterns, sleep patterns, and related pulmonary symptoms.
   Note: Reflux can trigger bronchospasm, obstructive apnea, reflex central apnea and bradycardia. Infants with GERD with associated apnea and bradycardia are monitored using a cardio-respiratory monitor.
2. Review physician’s orders for feeding type, frequency, use of cereal or other thickening agents, medication and positioning requirements.
   Note: Medication is usually given 30 minutes prior to a feeding. The goal of medication is to improve gastric emptying and decrease reflux.
3. Bathe and diaper infant prior to feeding. Avoid tight diapering and restrictive clothing.
   Note: Diapering and other activities after feeding will result in reflux.
4. Thicken formula (or expressed breast milk) with cereal, if ordered. The usual mixture is one tablespoon to one ounce of formula. Enlarge the nipple opening as
necessary, or use a crosscut nipple.

**Note:** Traditional treatment is to give smaller feedings to prevent over distension of the stomach and thickened feedings to prevent reflux.

5. Feed slowly in an upright position. Burp frequently; at least every ½ ounce.

**Note:** The upright position prevents reflux by use of gravity. Frequent burping prevents over-distension of the stomach.

6. The infant may be held in an upright position for 20-30 minutes after feeding. After feeding, gently position on the back with the head of the bed/crib elevated 30°. Do not use an infant seat.

**Note:** Infants in the head-elevated position have fewer episodes of reflux than in the infant-carrier position, in which the slumped posture usually submerges the gastroesophageal junction, permitting reflux. The physician may order the infant to be placed in a prone position with head elevated after feeding.

7. Feed 2 to 4 ounces every 2 to 3 hours, or as ordered. The amount and frequency may be gradually increased as the infant gets older. For the breast-fed infant, have the mother express some milk before feeding to prevent a sudden surge of milk with the let-down reflex.

**Note:** Frequent, smaller feedings may minimize episodes of reflux. This expressed milk can then be mixed with cereal, if thickener is ordered. The remainder of the feeding may be at the breast.

8. Maintain an elevated position except for feeding, bathing, and diaper changes, or as ordered.

**Note:** If a prone position with head elevated is ordered, pad the positioning aid with sheepskin or egg-crate foam padding (with convoluted side against mattress, not infant) to protect the infant’s knees and elbows. **Note:** These devices add comfort but do not reduce pressure between skin and mattress.

9. Provide developmental stimulation as appropriate.

**OLDER CHILD:**

1. Feed the child smaller, more frequent meals during the day (solid and liquid gastric/enteral feedings).

**Note:** Smaller meals help prevent increased abdominal pressure. Continuous enteral feeding at night help decrease reflux.

2. Have the mobile child sit upright during the day. Avoid semi-reclining position.

3. Feed last meal at least 4 hours before bedtime.

**Note:** Fasting permits gastric emptying, and decreases nocturnal reflux.

4. Position prone if possible with the head of the bed elevated 30° for sleep.

**Note:** The prone position is better than supine for older children. Placing the child on assisted ventilation in the elevated prone position for sleep can be beneficial (as ordered by the physician).

5. If chest physiotherapy is ordered, perform several hours after meal.

**Note:** Chest physiotherapy can induce reflux by gravity and/or, abdominal pressure. Antacids (Mylanta, Maalox) may be employed prior to CPT.
PURPOSE:
The goal of deep breathing exercise is to produce a maximum sustained inhalation. Deep breathing can improve ventilation and oxygenation. Use of an incentive spirometer complements breathing exercises by providing visual and auditory feedback to the child.

Coughing cleanses and protects the airways and lungs from secretions and inhaled particles such as dust and bacteria.

Children with chronic lung conditions such as cystic fibrosis, asthma, chronic bronchitis, and children with neuromuscular disease such as cerebral palsy benefit from a regular pulmonary program which includes deep breathing and controlled coughing.

GENERAL GUIDELINES:
Review child’s history and current respiratory status. Conditions which interfere with deep breathing and coughing include asthma, cystic fibrosis, bronchopulmonary dysplasia, a body cast, trauma, surgical incision, pain, fatigue, malnutrition, anemia and paraplegia.

Assess respiratory signs and symptoms which indicate the need for deep breathing and coughing; abnormal breath sounds, respiratory distress and thick or foul smelling sputum.

EQUIPMENT:
- Pillow
- Glass of water
- Tissues and garbage bag
- Incentive spirometer (if ordered and available)
- Sterile specimen container, plastic bags, and covered container for transportation of specimen (if specimen needed)
- Personal Protective Equipment

RECORD:
1. Assessment related to child’s respiratory status and any signs of atelectasis or pneumonia.

   **Note:** Presence of pain and child’s response to analgesic agents and supportive care.

2. Observations related to character and frequency of cough
3. Description of sputum and disposition of any specimens collected.
4. Anxiety, pain, and dyspnea associated with cough
5. Effect of coughing on appetite, sleep, and physical strength
6. Presence of hemoptysis or vomiting
7. Child’s understanding and participation in deep breathing, coughing, or incentive spirometry exercises.

   **Note:** Family’s ability to assist child with maneuvers.

8. Record place and time of teaching

FAMILY EDUCATION:
1. Teach family and child rationale for regular deep breathing and coughing.
2. Teach correct techniques
3. Teach signs and symptoms to report to health care providers.

PROCEDURE:
1. Wash hands before and after patient contact. Observe Universal Precautions.
2. Explain benefits of deep breathing and coughing in an age appropriate manner.
   a. Deep breathing helps to prevent pneumonia and other lung problems
   b. Demonstrate techniques of deep breathing and coughing
   c. Work with child and family to develop a schedule for deep breathing and coughing.

   **Note:** If the child and family assist in goal development, compliance will improve.
   **Example:** deep breathing with coughing will be done 4 times per day.
   d. Discuss optimum timing for deep breathing and coughing.
3. If ordered, administer aerosol treatments before or after deep breathing and coughing.

   **Note:** Aerosolized water or saline may help with removal of secretions. Bronchodilators are given to open airway and move secretions. CPT usually accompanies aerosol treatments.

4. Position the child in a sitting position with feet on floor, if possible.

   **Note:** Sitting relieves pressure on the diaphragm and allows for lung expansion. For a child confined to bed, elevate the head of the bed and support head and chest with pillows. A small child may be held on the employee’s/caregiver’s lap.

5. Have the child hug a small pillow or stuffed toy. With arms crossed, hands should be placed along lower rib border. Caregiver/employee can “hug” child and place hands over the child’s hands.
Note: This supports the chest during deep breathing and coughing and will reduce pain and fatigue. Practice this technique with the child and observe for proper technique.

6. For deep breathing and controlled coughing:
   a. Have the child bend forward and drop head while exhaling air through pursed lips.
   
   Note: Lungs are emptied of as much air as possible in preparation for maximum inspiratory effort. Pursed lip breathing helps slow down child’s breathing.
   
   b. Assist child to up-right position, instruct to inhale slowly and deeply through nose while pushing out abdomen.
   
   Note: Slow deep inhalation opens the bronchi and bronchioles to proved sufficient amounts of air behind mucus to propel from airways. Slow breaths also prevent hyperventilation.
   
   c. Explain to child that during inhalation, the diaphragm and abdominal organs descend and the chest wall expands. Chest and shoulders should not be used while deep breathing. Have child watch abdomen.
   
   Note: Explanation, demonstration, and practice reinforces the correct method of breathing.
   
   d. Have child hold slow, deep breath for slow count of 3 to 5, and then drop head and bend forward, slowly exhaling through pursed lips.
   
   Note: By using pursed lip breathing alveolar ventilation and oxygenation is enhanced, reducing the work of breathing.
   
   e. Repeat slow, deep, inhalation-pursed lip exhalation sequence 3 to 4 times.
   
   Note: Repetitions of inhalation and exhalation help mobilize secretions toward the main bronchi where they can be coughed out.

7. For controlled coughing:
   a. Following repetition of inhalation-exhalation sequence, instruct child to bend forward, use abdominal muscles and cough forcefully during exhalation. Repeat until the airway is cleared.
   
   b. Teach the child and family about hygiene measures related to disposal of sputum. If a specimen is needed, collect in a sterile container, place in a plastic bag, and transport in a covered container.
   
   Note: Proper hygiene measures reduce spread of micro-organisms. Sputum should be collected in a tissue and disposed correctly.

8. For deep breathing:
   a. Have a child perform breathing exercises 5 to 10 times. Children with chronic conditions should have deep breathing exercises incorporated as a part of their regular therapy program, as tolerated.
   
9. Teach child to breathe normally for few breaths in between deep breathing or coughing maneuvers to prevent hyperventilation and fatigue.

10. Practice the techniques several times with the child. Provide verbal guidance and positive reinforcement.
   
   Note: Positive reinforcement boosts child’s self-esteem. Practice will improve motor skills.

11. Use play therapy:
   a. For deep breathing: blowing soap bubbles; blowing through a straw into oral fluids; blowing pinwheels whistle toys and toy horns.
   
   Note: These play strategies are appropriate as long as maximal inhalation is sustained for 3 to 5 seconds. An adult should always supervise.
   
   b. The child can practice the techniques with a friend.
   
   Note: Play therapy encourages cooperation.

12. Incentive spirometry:
   a. Instruct child to place lips around mouthpiece.
   b. Have child exhale slowly through pursed lips, then inhale slowly, maintaining a constant flow through unit.
   c. When maximum inhalation is reached, as evidenced by a signal light that indicates a pre-determined volume has been reached, instruct child to hold his or her breath for 2 to 3 seconds, then exhale slowly through pursed lips. Have the child breathe normally for a few seconds before repeating the cycle.

   
   Note: Adequate hydration helps keep secretion thin and aids their removal from airways.

14. Give medications as ordered by physician to control pain or paroxysmal coughing.
Note: Fatigue, pain and discomfort must be minimized.
PURPOSE: Oxygen is administered to infants and children to alleviate or prevent hypoxia and to minimize work of breathing and decrease cardiac effort. Oxygen is a medication; therefore the flow rate and concentration must be ordered by a physician and checked frequently. Oxygen therapy can be considered either short-term or long-term. Short-term therapy is generally used for acute problems. Long-term oxygen is administered for longer than 30 days and generally is used for chronic disorders.

1. Indications for short-term therapy in the home include:
   a. Documented SaO₂ less than 90
   b. Reduced cardiac output
   c. Cyanosis, related to increased work of breathing during oral feedings
   d. Endotracheal suctioning

2. Indications for long-term therapy in the home include:
   a. Failure of other therapy to optimize oxygenation
   b. Significant hypoxia at rest or during sleep, documented by a pulse oximeter SaO₂ of 85% or less
   c. Significant hypoxia during exercise or feeding

GENERAL GUIDELINES: Oxygen therapy must be ordered by the physician. In emergency situations, administer oxygen in generous amounts.

EQUIPMENT:
1. Delivery Systems: The nasal cannula, which is relatively comfortable and inexpensive, may be used for long-term or short-term therapy and is routinely applied to infants and children for home care. Flow rates may be from 1/16L. to 3 or more liters per minute. Face tents and several kinds of oxygen masks are available for pediatric patients. Face tents are soft, plastic tent-shaped devices that fit around the child’s chin and are held in place around the jaw by elastic straps. Gas flow should be a minimum of 6L/min. to ensure adequate carbon dioxide removal. Oxygen masks and tracheostomy collars usually deliver inspired oxygen concentrations up to 55%.

   Note: Oxygen in Use Signs should be placed in the room and on the main outside door of residence to alert family, health care providers, and visitors of necessary safety precautions.

2. Reliable oxygen source is necessary for effective home therapy.
   a. Compressed oxygen comes in four cylinder sizes (H, K, D, and E). D and E cylinders are small enough to be portable.
   b. Oxygen concentrators, which plug into standard three-prong electrical outlets, extract oxygen from room air.
   c. Liquid oxygen is stored under pressure and can be used with any oxygen delivery method. Liquid oxygen systems are light weight and easy to transport.

3. Flow meter is used to regulate the liter flow of oxygen.

4. Humidification source is frequently used in conjunction with oxygen therapy. Adding humidity counteracts the drying of mucous membranes and thickening of secretions which occurs with the use of supplemental oxygen. Sterile water is used to provide moisture.

5. Connective tubing is used to deliver oxygen to the delivery system (cannula, mask, etc.); Large bore (22mm) for nebulizers and heated humidifiers and small bore for other delivery systems.

6. An oxygen analyzer is used periodically to measure and maintain oxygen concentration as needed by the patient and as ordered by the physician.

RECORD:
1. FiO₂ oxygen source
2. Oxygen delivery system in use
3. Humidification in use
4. Temperature of humidifier
5. Vital signs
6. Client response to oxygen therapy and equipment maintenance
7. Family teaching and return demonstrations will also be documented.

FAMILY EDUCATION:
1. The child and/or family will be taught the purpose and operation of the oxygen equipment.

2. The following issues will be addressed in teaching sessions:
   a. Secure oxygen tanks in place, because they can be easily knocked over. A fall could knock the valve off and release an intense concentration of oxygen, increasing the risk of fire
   b. Prohibit cigarette smoking in any room where oxygen is being used, and take precautions against lighted candles or use of a fireplace.
   c. The oxygen system should be a least 10 feet away from any open fires, including pilot lights in stoves, furnaces, and water heaters.
   d. The oxygen system should be at least 10 feet away from electric equipment that may spark. Keep heating pads and electric blankets off the bed.
   e. Avoid using petroleum jelly, face creams, lip balms, alcohol, or oils, since all are flammable and have the potential to explode in oxygen-rich environments.
   f. Have child wear 100% cotton garments. Silk, wool, and synthetic fabrics are subject to static electricity, which could ignite in the presence of oxygen.
g. Have an all-purpose fire extinguisher available and visible.

3. Emphasize to the family that oxygen is considered a drug. It should be used only as prescribed. Too much or too little cause medical complications. If the child seems to be in respiratory distress, the family should notify their physician and follow the advice given. Do not change the non emergency flow rates unless ordered by the physician.

4. Change and clean oxygen equipment every 1-3 days. Masks, oxygen extension tubing, corrugated tubing, and other re-usable supplies may be cleaned in warm soapy water and rinsed thoroughly. Disinfect equipment after cleaning. There are several acceptable methods of disinfecting. Two safe methods are:

   a. Soak the equipment for 5 minutes using Control III cleaning solution; 1 tablespoon of Control III to two quarts of water. Discard and re-mix solution every two weeks or per manufacturer’s recommendations. Rinse thoroughly. Hang tubing to dry, air dry other equipment on a clean towel.

   b. Soak the equipment for 5 minutes using a 1:10 bleach and water solution. Rinse thoroughly. Discard solution. Hang tubing to dry, air dry other equipment on a clean towel.

5. Teach family to tape all tubing and attachment connections securely with waterproof tape so that the child does not disconnect the oxygen. Frequently children on oxygen therapy have many feet of tubing to allow them some mobility.

PROCEDURE:

1. Wash hands before and after patient contact. Observe universal precautions.

2. Monitor vital signs every 4-8 hours, or as needed.

3. Observe child for changes in respiratory rate, effort, or color. Notify Clinical Manager or physician of clinical changes.

4. Auscultate breath sounds for symmetry and adventitious sounds.

5. Analyze inspired oxygen per HME agency policy, or as ordered by physician.

   Note: Drifting of oxygen concentration may be a problem; thus, regular monitoring is necessary.

6. Ensure that the inspired oxygen is humidified and warmed unless otherwise ordered by the physician.

   Note: Humidification prevents drying of the nasal mucosa. Warming prevents hypothermia and helps liquefy and mobilize secretions.

7. Position child appropriately:
   a. Semi-Fowler for a child in distress

b. Prone for a child with copious mucus production

8. Ensure that tubing associated with oxygen delivery is changed every 1-3 days as necessary.

   Note: This will minimize the risk of microorganisms multiplying in a warm moist environment and will decrease the risk of infection. Tubing can be cleaned and reused.

9. Post NO SMOKING-OXYGEN IN USE signs on the patient’s door.

10. Avoid oily, greasy, or alcohol-based substances on equipment.

   Note: These substances are potentially flammable.

11. Encourage parents to provide familiar toys and objects that are safe in an oxygen-rich environment.

   Note: Do not use electrical equipment close to oxygen source. (Radios, portable room heaters, etc.).

12. Consult with educators or child-life specialists regarding play activities appropriate for growth, development, and health status.

   Note: The oxygen devices place physical limitations on the child; thus creative activities should be initiated.

13. Monitor equipment function at least every 1-4 hours and as needed.

   Note: Equipment malfunction may lead to overheating, cold stress, dehydration, fluid overload, mucosal damage, hypoxia, oxygen toxicity or hypercapnia

   a. Check liter flow rate.

   Note: Flow rates are easily altered by children and others. Inappropriate flow rates can lead to hypoxia and hypercapnia.

   b. Check water level in humidifier/nebulizer and check and document temperature of humidifier.

   Note: Inadequate fluid levels decrease available humidity, increasing the risk of overheating and thickened secretions. Refill as needed.

   c. If using portable oxygen source, check amount of oxygen remaining in the tank currently in use
every 2-4 hours. Check all tanks in the home daily to avoid running out of oxygen.

Note: Family must also be taught to check oxygen levels.

d. Remove condensation from large bore tubing by disconnecting and emptying onto towel or into other clean receptacle frequently.

Note: As heated vapor cools, condensation forms. Condensation interferes with oxygen delivered and provides a medium for bacterial growth.

e. Check tubing for kinks or disconnection. Check mask or cannula for proper placement.

Note: Inadequate gas flow may decrease oxygen concentrations.

f. Check nasal prongs and nares for patency.

Note: Nasal secretions may occlude prongs and nasal passages.

g. Change oxygen equipment every 1-3 days and as necessary. Empty all water, and change daily.

Note: Pseudomonas, Serratia, and other microorganisms proliferate in the warm moist environment of respiratory equipment.

h. Suction airway as needed.

For Further Information See: Suctioning of Secretions From Nose and Mouth and Suctioning a Tracheostomy Airway.

i. Follow manufacturer’s guidelines for equipment set-up and general maintenance.

j. Notify local police, fire department, and telephone and electric company that there is oxygen in the home. Other emergency arrangements must be made as indicated by community or geographical area.

Note: Evacuation plans may be necessary for children on oxygen, ventilators, etc. in areas prone to hurricanes, tornados, floods, etc. In case of interruption of service, service restoration is a priority.
<table>
<thead>
<tr>
<th>OXYGEN CONCENTRATOR</th>
<th>CYLINDER OXYGEN</th>
<th>LIQUID OXYGEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separates oxygen from room air; provides low-flow oxygen.</td>
<td>Oxygen stored in a cylinder; H, K, D, or E</td>
<td>Oxygen stored in a liquid state under pressure</td>
</tr>
<tr>
<td><strong>Advantages:</strong></td>
<td><strong>Advantages:</strong></td>
<td><strong>Advantages:</strong></td>
</tr>
<tr>
<td>Cost effective for the patient who needs continuous low-flow oxygen.</td>
<td>Cost effective for the patient who needs high-flow or intermittent oxygen.</td>
<td>Cost effective for the patient who needs continuous low to moderate flow oxygen</td>
</tr>
<tr>
<td></td>
<td>Can be used with a high flow oxygen mask, nasal cannula or nebulizer.</td>
<td>Can be used with any oxygen delivery system.</td>
</tr>
<tr>
<td></td>
<td>Portable when an E cylinder is used.</td>
<td>Smaller and more lightweight than other oxygen systems.</td>
</tr>
<tr>
<td><strong>Disadvantages:</strong></td>
<td><strong>Disadvantages:</strong></td>
<td><strong>Disadvantages:</strong></td>
</tr>
<tr>
<td>Cannot be used with a high-flow mask or a nebulizer.</td>
<td>Requires a humidification source if the flow is greater than ¾ liter.</td>
<td>Humidification source required if flow will exceed ¾ liter.</td>
</tr>
<tr>
<td>Requires electricity source.</td>
<td>Must be used in a stand. The safety cap must be fastened securely.</td>
<td>May cause burns if oxygen comes into contact with skin.</td>
</tr>
<tr>
<td>An oxygen cylinder must be available as a back up oxygen source.</td>
<td></td>
<td>Must be used in an upright position.</td>
</tr>
<tr>
<td>Large, bulky, noisy and emits heat.</td>
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</tbody>
</table>

PURPOSE:
The Peak Flow Meter is an inexpensive hand-held device which is used to measure the Peak Expiratory Flow rate (PEFR).

GENERAL GUIDELINES:
PEFR is used to determine the need for and response to asthma medications. A drop in PEFR can be detected much earlier than wheezing or other signs of narrowed airway. Almost every asthmatic child over 4 years of age should learn to use a peak flow meter.

EQUIPMENT:
- Peak Flow Meter
- Personal Protective Equipment

RECORD:
1. The highest PEFR for the 3 tests
2. The date and time of test
3. The child’s respiratory status prior to use of peak flow meter and medication, if any, administered.
4. The medication given and effectiveness. Another peak flow meter reading should be obtained after medication is given and readings compared.
5. Teaching session, return demonstration and response to teaching.

FAMILY EDUCATION:
1. Teach the family and child the correct use of the peak flow meter and to document date, time and readings.
2. Teach family and child to use the peak flow meter as an early warning signal to identify times for early administration of asthma medication.

PROCEDURE:
1. Wash hands before and after patient contact. Observe universal precautions.
2. Prepare family and child for teaching procedure.
3. Place the mouthpiece on the flow meter.
4. Check that the indicator is at the zero of the number scale before taking a measurement.
5. Have child stand and hold the meter so that the mouthpiece and cylinder are parallel to the floor. Take care not to cover the opening at the end of the tube with fingers.
6. Have the child inhale as deeply as possible with mouth open.
7. With lips closed tightly around the outside of the mouthpiece, have the child blow out as hard and as fast as possible into the mouthpiece. This will cause the indicator to move up the number scale.

   Note: Have the child place the mouthpiece over tongue.

8. The final position of the indicator is the peak flow or PEFR.
9. Repeat the test two more times. Wait at least 10 seconds between tests.

10. Record the highest PEFR achieved and compare to previous reading of child’s baseline.

   Note: Peak flow meters typically have three zones defined: green for normal, yellow for borderline, and red for abnormal. PEFR in the yellow or red zones should be reported to the physician.

11. Wash plastic mouthpiece and air dry.
PURPOSE:
Meter-Dose Inhalers (MDI) are customarily used for children with chronic respiratory problems such as asthma. Inhaled medications are easy and inexpensive to use, but they may be difficult to administer to children because of the need to synchronize medication delivery with breathing.

GENERAL GUIDELINES:
The dose of medication appropriate for the child is dependent on age, height and weight. A child’s development status will impact his/her ability to understand the need for and administration of MDI medications.

Until a child has the ability to coordinate breathing with administration, the use of a “spacer” will allow effective delivery of the medication. A spacer can be purchased commercially, however most MDI’s used with children come with a spacer. The child places his/her mouth over the other end of the tube and administers the medication. The spacer acts as a holding chamber for the medication and prevents a spray of medication against the back of the throat.

The amount of inhalant remaining in the canister can be determined by immersing the canister in a large bowl of water. If full, the canister will sink to the bottom. If half-full, the canister will be partially submerged. If near-empty, the canister will float on the top of the water.

EQUIPMENT:
- Correct drug order
- MDI canister
- Inhaler mouthpiece
- Spacer device (optional)
- Personal Protective Equipment

RECORD:
1. Date, time, medication, dose, and route.
2. Respiratory assessment before and after administration.
3. Teaching sessions and child/family’s ability to use MDI correctly. Teach signs of side effects or complications, and evidence of therapeutic effects.

FAMILY EDUCATION:
1. The child with respiratory problems who needs frequent medication may benefit from a medication alert bracelet or necklace.
2. Contents of MDI canister are under pressure and should never be punctured or incinerated.
4. Teach how to determine the amount of medication remaining in the canister.
5. Teach parents to maintain a calm demeanor when administrating a MDI to children with respiratory problems or respiratory distress. If the parent remains calm, the child will more likely remain calm.

PROCEDURE:
Wash hands before and after patient contact. Observe universal precautions.

1. Read the medication label to ensure correctness of the medication on hand. Review Five Rights of Medication Administration at this time.

   **Note:** Five Rights of Medication Administration
   - Right Child
   - Right Medication
   - Right Dose
   - Right Route
   - Right Time

2. Assemble inhaler equipment.
   a. Remove cap and mouthpiece from medication container
   b. Insert metal container tip into the short end of the plastic mouthpiece if not already assembled.

   **Note:** Some MDI’s simply require removal of mouthpiece cover, whereas others must be assembled. For commercially available spacer devices, follow manufacturer’s instructions.

3. If parent or child has used an MDI before, observe family administer the medication.

   **Note:** It is often less traumatic for the child if the parent or child administers the inhalant while the nurse observes for correct technique.

4. If child has not previously used an MDI, provide demonstration of what child is expected to do.

   **Note:** The child must learn MDI administration and should practice exhalation and inhalation before administration.

5. Shake inhaler for 2 to 4 seconds.

   **Note:** Inhaler must be shaken with each use to mix medication with propellant.

6. Position inhaler with canister upside down. Hold canister with index finger on top and thumb on bottom. Remove mouthpiece cover.

   **Note:** This position allows for easy compression to deliver medication.

7. Instruct the child to exhale normally to the end of a breath.

   **Note:** Exhaling allows inspiration of medication deeper into airways.
8. Place the mouthpiece in child’s mouth. If a spacer device is used, have the child place the mouthpiece on the tongue, making a seal with the lips.

9. Instruct the child to breathe in through the mouth for a count of “one, two.” Press the canister down into the mouthpiece to administer the puff at the count of “three, four, five” while the child inhales deeply. With a spacer, administer puff; then have child breathe in slowly.

   **Note:** This action releases exact dose of medication for inhalation and increases likelihood of medication deposition in the lungs instead of the mouth. Pinching the nose shut may help.

10. Ask child to try and hold breath for a few seconds (8-10) after the medication has been delivered.

   **Note:** If mist can be seen escaping from child’s mouth or nose, technique is incorrect. A young child using a space may need to hold breath for 5 seconds and repeat inhale/exhale 3 more times to benefit from all of the medication.

11. Remove mouthpiece and have child breathe out slowly through pursed lips.

   **Note:** Exhaling against pursed lips keeps distal bronchioles open, allowing increased absorption and diffusion of medication.

12. If second does of a bronchodilator MDI is prescribed, wait 2 to 10 minutes before administering it.

   **Note:** Time delay allows medication to dilate airways, allowing second puff to penetrate more deeply into bronchial tree.

13. Have child rinse mouth, gargle, and spit out fluid, particularly after using an MDI containing steroid medication.

   **Note:** Continuous use of steroids is known to cause Candida infection(s).


15. Reinforce expected therapeutic benefit and need to notify physician immediately if an unexpected reactions occur.

   **Note:** The child and family should learn to monitor reaction to medication.

16. Replace cap.

   **Note:** The cap keeps the valve clean.

17. Clean MDI daily by taking apart and washing and rinsing mouthpiece with soapy solution and warm water for 1 minute. Allow parts to air dry.

   **Note:** Daily cleaning prevents growth of bacteria and maintains patency of inhaler mouthpiece.
PURPOSE:
Urine collection for testing is difficult in the infant and toddler because frequency of voiding is not predictable. This procedure outlines two methods of urine collection.

EQUIPMENT:
- Equipment for collection using a urine bag:
  - Warm water
  - Mild soap
  - Soft wash cloth
  - Urine collection bag
  - Specimen container with tight fitting lid or cap
- Personal Protective Equipment

RECORD:
1. Date and time specimen collected
2. Color and character of urine
3. Any lab test done in the home and results
4. For lab test to be done in laboratory, record identification and transport of specimen, and follow-up on results.
5. Note condition of perineal skin and any use of skin prep.

FAMILY EDUCATION:
If an infection is suspected, the following instructions may be helpful:
1. Increase fluid intake to encourage regular and frequent voiding to promote bladder emptying.
2. Practice good perineal hygiene, especially wiping from front to back after a bowel movement.
3. Avoid constipation and “holding” urine before voiding.
4. Avoid the use of bubble baths, particularly females, and tight, heat-retaining clothing, such as nylon panties or tight briefs or pants.
PROCEDURE:
Wash hands before and after patient contact. Observe universal precautions.
1. Explain the urine collection procedure to the family.
2. Position the child so that the genitalia are exposed by laying the child on the back with legs flexed at knees and abducted at hips.
3. Gently cleanse the genital area.
   Male: Wipe tip of penis with wash cloth and soap solution, cleaning down towards the scrotum. Thoroughly rinse soap from the area. Dry and replace foreskin, if present.
   Female: Wipe labia majora with wash cloth and soap solution from top to bottom (clitoris to anus). Then spread the labia apart while wiping labia minora in the same manner, using a clean section of the cloth. Thoroughly rinse with water. Dry.

   Note: This method of cleansing will prevent contamination of the urine specimen.

4. Remove the paper backing from the adhesive wings of the collection bag.

   Note: A skin prep such as benzoin may be helpful in securing the bag. However, it should not be used in infants or any child with delicate or irritated skin. Skin prep must be washed off after bag is removed.

5. For the male, insert the penis through the opening in the bag. For the female, apply the round opening over the vulva and beneath the urethral orifice.

   Note: Proper placement of collection bag will prevent repeat applications of a urine bag.

6. Press the adhesive wings firmly against the skin and check adherence.
7. Diaper the child.
8. Check every 30-60 minutes for urine in the bag.

   Note: May cut slit in disposable diaper and pull bag through. Urine is less likely to leak and is easily seen.

9. When the child has voided, pour urine into specimen cup and cover.
10. Clean, dry, and re-diaper child.
11. Perform home lab test as ordered (specific gravity, pH, etc.) or label specimen for transport to laboratory.

   Note: To prevent growth of organisms, place in refrigerator until transport is possible.

12. Dispose of contaminated items in appropriate receptacle.
PURPOSE:
A catheter may be introduced through the urethra into the bladder to obtain urine from a child or infant who cannot void. Two types of urinary catheters are straight catheters and indwelling catheters. The straight catheter is a single lumen tube with a small opening about ½ inch from the insertion tip. The indwelling, or Foley catheter, contains a second smaller tube throughout its length on the inside. This tube is connected to a balloon near the insertion tip. After catheter insertion, the balloon is inflated to hold the catheter in place. The outside end of the Foley catheter is bifurcated; one opening to drain the urine and one end to inflate the balloon.

GENERAL GUIDELINES:
For indwelling catheterization, sterile technique will be used in the home setting.

For intermittent, straight catheterization sterile technique may be used; however, clean technique is usually employed in the home setting.

EQUIPMENT:
For indwelling urinary catheters:
(Sterile Technique)
- Personal Protective Equipment (including sterile gloves)
- Drapes (optional)
- Antiseptic solution (povidone-iodine)
- Cotton balls
- Forceps (povidone-iodine swab sticks may be used in the place of antiseptic solution, cotton balls and forceps)
- Water-soluble lubricant
- Specimen container (optional)
- Sterile Foley catheter (of appropriate size)
- Drainage bag
- Syringe filled with sterile water to inflate the balloon
- Tape or other methods to secure bag.

For straight catheterization:
- Personal Protective Equipment
- Antiseptic solution (povidone-iodine)
- Cotton Balls
- Water-soluble lubricant
- Straight catheter (clean or sterile; may also use #5 or #8 French feeding tube to catheterize an infant)
- Container for urine collection

RECORD:
1. Date and time of procedure
2. Type of catheterization
3. Size of catheter
4. Urine amount obtained
5. Color, odor and appearance of urine
6. Assessment of urinary meatus
7. Child’s tolerance of procedure

Note: Children requiring frequent catheterization, such as those with neurogenic bladder, may develop an allergy to latex. Always document the allergy and use only non-latex products.

FAMILY EDUCATION:
1. Teach procedure for intermittent catheterization and routine catheter care.
2. Teach signs and symptoms of urinary tract infections and renal calculi.
3. Teach cleaning of urinary catheters for re-use:
   a. Squirt soapy water (Dial or other antibacterial soap; do not use perfumed soaps) through the lumen of the catheter(s) with 20-30cc syringe. Wash exterior of catheter(s) with soapy water also.
   b. Fill the syringe with white vinegar and squirt through catheter lumen and rinse exterior with vinegar also.
   c. Rinse thoroughly, inside and out, with clean tap water.
   d. Hang catheter(s) until completely dry, inside and out.
   e. Store DRY catheters in clean covered container.

PROCEDURE:
1. Always wash hands before and after patient contact. Observe Universal Protective Precautions.
3. Place the child in supine position with knees flexed and thighs externally rotated. An assistant may be needed to hold the child in position.
4. Drape the child (optional).
5. Pour the povidone-iodine solution over the cotton balls.

   Note: Povidone-iodine swab sticks may be used instead of cotton balls.

6. Test – inflate the balloon on the indwelling catheter to check for defects. Deflate balloon and place catheter on sterile field.
7. Don sterile gloves for indwelling catheter. Use non-sterile gloves for straight catheterization, clean technique.
8. Lubricate the insertion tip of the catheter with the water-soluble gel.

Note: With a physician’s order, a Lidocaine gel is also available which may anesthetize the area for less painful insertion. With older child, use relaxation and distraction techniques.
9. **Female:** Separate the labia majora with the thumb and index finger and clean the labia minora on each side, using forceps and cotton balls soaked in povidone-iodine solution. Use a new swab for each pass, moving downward from the clitoris to the anus. Separate the labia minora, exposing the urinary meatus. Clean from the meatus downward and then on either side, using a new swab for each pass. Hold the labia apart. Gently insert the catheter in the urinary meatus until urine flows.

   **Note:** Holding the labia apart prevents contamination.

**Male:** Grasp the penis firmly behind the glans, and spread the meatus between the thumb and forefinger. Retract the foreskin of an uncircumcised male. The hand holding the penis is contaminated. With the sterile hand, clean the meatus with the cotton balls soaked in povidone-iodine solution and forceps in a circular motion. Discard each swab after one wipe. To insert the catheter, lift the penis perpendicular to the body or toward the trunk and exert slight traction. Gently insert the catheter until urine flows.

   **Note:** Lifting the penis towards the trunk straightens the urethra and makes passage easier. Do not force catheter

10. **For the indwelling catheter:**
   a. Attach the catheter to the drainage bag.
   b. When urine flow stops, slowly remove the catheter holding the tip up so that any urine in the catheter will not spill.

   **Note:** If urine begins to flow again, stop removing the catheter and allow it to empty.

c. Wash, rinse and dry genital area.
d. Wash and rinse urinary catheter.

   **Note:** Straight catheterization may be performed as a clean procedure in the home setting.

11. **For straight catheterization:**
   a. Drain urine into container

   **Note:** Assess urinary meatus for odor, inflammation, swelling or discharge

12. **To remove the indwelling urinary catheter:**
   a. Wear non-sterile gloves.
   b. Insert empty syringe into the balloon inflation port and aspirate all fluid.
   c. Slowly remove the catheter holding the tip up so that any urine in the catheter will not spill.
   d. Wash, rinse and dry genital area.
   e. Dispose of catheter and drainage bag in appropriate receptacle.

   **Note:** The balloon must be deflated to prevent trauma to the urethra. Explain to the child and parent that removal is not painful.
PURPOSE:
Chronically ill children may have increased nutritional needs. Normal growth may suffer when caloric and nutrient intake cannot meet both growth and illness demands.
In the pediatric population, risk factors for malnutrition include congenital heart disease, gastrointestinal disease, cancer, HIV/AIDS, chronic renal disease, trauma, burns, medication side effects, and low socio-economic status.

GENERAL GUIDELINES:
A nutritional assessment can:
1. Identify those children at nutritional risk
2. Monitor weight
3. Monitor longitudinal growth
4. Identify physical changes related to nutritional status
5. Assess family values and interaction and how these affect nutrition.
6. Identify developmental needs
7. Assess relevant historic data

EQUIPMENT:
- Scale
- Tape measure
- Growth chart
- Personal Protective Equipment as needed

RECORD:
1. Date and time of assessment
2. Length or height, weight, head circumference
3. Current diet and feeding patterns
4. Current physical assessment
5. Historic data
6. Referrals made
7. Family teaching

FAMILY EDUCATION:
1. Guide families who follow special dietary practices (i.e. vegetarians) to supplement the child’s diet with non-animal protein, iron, etc.
2. Referrals to dietician, ST, OT, PT, and community agencies, as appropriate
3. Help families plan new ways to prepare and present food.
4. Teach oral activities which may improve eating skills: non-nutritive sucking, gentle oral stroking, tasting lollipops, etc.
5. Teach nutrition basics: Food Guide Pyramid, appropriate snacks, frequency of meals, need for family to be consistent with meal times
6. Tech family about their child’s special nutritional needs. For example, chronically ill children may have increased caloric requirements.

PROCEDURE:
1. Always wash hands before and after patient contact. Observe universal precautions
2. Perform physical examination. Areas which reflect signs of malnutrition are:
   a. Skin
   \[\text{Note: Skin is dry, scaly, poor turgor, pallor, seborrheic dermatitis, delayed wound healing.}\]
   b. Hair
   \[\text{Note: Hair is dull, thin, dry, loss of color and easily broken.}\]
   c. Eyes
   \[\text{Note: Eyes are dull, pale, dry, hardening and scaling of cornea and conjunctiva, photophobia, burning and itching.}\]
   d. Lips, tongue, gums, teeth
   \[\text{Note: Lips are dry, cracked with fissures at corners. Defective enamel and dental caries. Tongue is swollen.}\]
   e. Musculoskeletal
   \[\text{Note: Flabby, weak, generalized wasting, kyphosis, scoliosis, bowed legs.}\]
   f. Abdomen
   \[\text{Note: Distended, flabby, poor musculature, pot belly, constipation or diarrhea.}\]
   g. Behavior
   \[\text{Note: Listless, irritable, and mentally slow.}\]
3. Measure physical growth.

\[\text{Note: The best interpretation of growth is made from serial measurements. Therefore, previous}\]
heights and weights should be plotted on a growth curve, if available.

For Further Information See:
Procedures for Pediatric Height and Weight Measurements and Neonatal size and Weight Measurements.

a. Measure length, recumbent, for children over 2 years.
b. Measure standing height (stature) for children over 2 years.

Note: Plot standing height only on 2 to 18 years National Center for Health Statistics physical growth percentiles. Growth chart for birth to 36 months are used only for recumbent length.

c. Record weight
d. Record head circumference for children under 18 months old.
e. Plot all measurements on age-appropriate growth charts.

Note: Up to 24 months, correct for gestational age: Subtract the number of weeks premature from the child’s current age. Document age correction on the chart and in nursing notes.

4. Assess objective and historic data for information related to nutrition.

a. Previous measurements of growth which are compared to current data.

Note: A deviation of two percentiles is considered significant. Significant deviation in a medically fragile child may be less than two percentiles.

b. Social/family factors which impact nutrition and eating habits.

Note: Cultural habits, family diet, (ex. vegetarianism).

c. Previous illnesses or present diagnosis.

Note: May limit food intake while increasing metabolic needs.

d. Current medications.

Note: Medication may interfere with appetite, absorption.

e. Socio-economic status.

Note: If the family has inadequate resources for food/formulas, referrals to WIC, food stamp programs and community-based agencies are appropriate.

f. Feeding history: PO, NG, OG, G-tube, G-button (skin-level device), J-tube, gastroesophageal reflux, rumination, etc. should all be assessed.

Note: Some children who were orally intubated for long periods and children with a history of maxillofacial surgeries may be orally aversive. Referrals to speech and occupational therapists are appropriate.

g. History of vomiting, gastroesophageal reflux, diarrhea and sometimes formula changes.

Note: All are indicators of possible caloric deficits.

h. Feeding environment.

Note: for example: Is the child fed alone, in a group, in front of the TV, is there social interaction.

i. Assess family’s interactional patterns.

Note: Feeding problems can be physical and psychosocial.

5. Obtain a 24 hours diet recall from child and/or family. Alternatively, a three to five day diet diary may be kept by the child and/or family.

Note: Indications of nutritional intake are obtained from recall. Include TPN/IV replacement fluids and formulas.

6. Child’s nutritional status will be followed throughout course of care.

Note: Reports to physician or other health care provider on regular basis, as needed.

For Further Information See: Growth Chart
PURPOSE: Assessing development is essential to the nursing care of children. From infancy to adolescence, motor, social, language and cognitive development is intense. The most rapid changes take place in the first three years of life.

By understanding and assessing the developmental milestones a child should have mastered at a given chronological age, the nurse can reassure families and/or begin the referral process for intervention. Chronically ill children frequently experience developmental delays.


EQUIPMENT: Developmental Screening Tool (optional)

RECORD: 1. Date and time and place of assessment. 2. Significant historical information and physical information. Note person(s) present, at which developmental age level a child is tested, variations from the expected norm and the developmental level at which the child is performing. 3. Communication with primary care provider and referrals made.

FAMILY EDUCATION: 1. Parents are taught management of their child which is appropriate to the child’s developmental level. 2. Formal developmental testing is arranged for any child with suspected delay. 3. Family is assisted in enriching the child’s environment to enhance development.

PROCEDURE: 1. Always wash hands before and after patient contact. Observe universal precautions. 2. Assessment of chronological age. Up to 24 months of age, correct for pre-maturity by subtracting the number of weeks premature from current age.

RECUMBENT: a. Place the infant supine on the firm table. Note: Tape measure or ruler is fixed to the table.

b. Fully extend the legs and measure from the heel to the top of the head.
PURPOSE:
Assessing and monitoring hydration is of particular concern in childhood illnesses. Fluid balance is especially important in children because they have a higher total body water percentage by weight, which decreases with age. Pre-term infant, 80% to 85%; full-term infant, 75% to 80%, by age 3, 63%; and by age 12 and older, approximately 58% depending on amount of body fat (Whaley and Wong, 1996).

GENERAL GUIDELINES:
Children are more vulnerable to imbalances because they must ingest and excrete a greater volume per day, up to one half total body water compared with one sixth for adults in order to excrete metabolic waste. In addition to renal immaturity, a child has a greater metabolic rate than an adult and has a greater surface area, thus a greater insensible water loss.

EQUIPMENT:
- Scale
- Stethoscope
- Intake and Output flow sheet (optional)
- Hydration fluids, if indicated
- Measuring cup, syringe, graduated baby bottle, etc. to measure intake
- Graduated container to measure output
- Personal Protective Equipment

RECORD:
1. Date, time and baseline fluid balance assessment
2. Ongoing observations of weight
3. Physical signs of hydration status
4. Behavioral changes
5. Systemic perfusion and I & O
6. Treatments, interventions and family teaching

FAMILY EDUCATION:
1. Teach family and child how to monitor and record intake and output.
2. Caution family to avoid high salt fluids (ex: broth) and excessive free water intake.
3. Teach family to recognize signs of dehydration, and when to contact health professional.

PROCEDURE:
1. Always wash hands before and after patient contact. Observe universal precautions.
2. Assess child’s current hydration status.
   
   Note: Fluid balance and requirements vary based on age. Younger children are more susceptible to fluid balance changes.

3. Assess pre-existing conditions, present status and current therapies for factors which may influence fluid balance.
   
   Note: Feeding problems, emesis, reflux, G-tubes, tubes, renal insufficiencies, medications, humidified air or oxygen, etc., all affect fluid balance.

4. Weigh child and compare to recent weight measurements.
   
   Note: Short term weight changes are reliable indicators of fluid loss or gain.

5. Obtain daily weights for the child with fluid imbalance.

6. Assess for physical signs of hydration status.
   a. Infant only: anterior fontanel should be soft and flat.

   Note: A sunken, pulsing fontanel indicates dehydration. (A tense bulging fontanel may be a sign of increased intracranial pressure).

   b. Eyes and orbits should be firm.

   Note: Sunken eyes indicate dehydration.

   c. Mucous membranes and conjunctiva should be moist. Tears should be noted with crying after 6 weeks of age.

   Note: Absence of tears and dry mucous membranes indicate dehydration. Look for presence of saliva bubbles under the tongue – a good indicator of adequate hydration.

   d. Assess skin turgor. If abdominal skin is pinched, it should recoil in less than one second.

   Note: “Tenting” of skin is seen in dehydration.

   e. Skin should be firm and smooth. Assess for edema of the hands and feet.

   Note: Excess fluid will accumulate in dependent extremities.

   f. Breath sounds should be clear with minimal effort. “Wet” breath sounds may indicate fluid overload.


   Note: Behavioral changes may be seen with fluid shifts and electrolyte imbalances.

8. Assess systemic perfusion:
   a. Capillary refill should be 1 to 2 seconds. Hands
and feet should be warm and peripheral pulses should be palpable and strong.

**Note:** Poor capillary refill, cool extremities and weak pulses all indicate poor perfusion.

b. Urine volume should be at least minimally acceptable, by weight.

**Note:** Minimal output guidelines:
- **Infants:** 2cc/kg/hr
- **Child:** 1cc/kg/hr
- **Adolescent:** .5cc/kg/hr

(Hazinski, 1998)

c. Urine specific gravity normal – 1.005 to 1.020.

**Note:** Decreased urine output with an increased specific gravity may indicate poor perfusion. An increased urine output with decreased specific gravity may indicate water intoxication.

d. Skin color should be a consistent color with pink mucous membranes.

**Note:** Pallor and mottled color indicate poor systemic perfusion.

e. Assess vital signs and compare to normal values for this child.

**Note:** Heart rate may increase in response to severe dehydration. Tachypnea can signal metabolic acidosis or pulmonary edema.

9. Assess intake and output (I & O):

**Note:** Amount and type of I & O assists in initial assessment of the child's hydration.

a. Intake: amounts, type of food, liquids or formula taken and retained.

**Note:** Oral intake: should include liquids taken with meals, medication administration, and liquids in solid form such as ice chips, ice cream, gelatin, and pudding.

Gastric/Enteral intake: should include NG, GT, JT feedings, flushes for feedings, and medication administration.

Parenteral intake: should include all TPN/IL, other IV fluids, IV medications and flushes.

b. Urine and stool: amount of urine output, or the number of times child has voided or number of wet diapers in past 24 hours; appearance of urine; and stool amount consistency.

**Note:** Less than minimum urine output in 24 hours indicates serious dehydration. Liquid stools may account for significant fluid loss.

c. Insensible losses through respiration and evaporation through the skin. Perspiration is not an insensible loss.

**Note:** insensible losses, under ordinary circumstances, account for one third of total maintenance volume.

d. Other losses: emesis, wound drainage, suctioning.

**Note:** Assess any other avenues of fluid loss.

10. Provide replacement fluids, if indicated.

a. Oral re-hydration solutions (ORS), such as Infalyte and Pedialyte, contain approximately 5mEq/100ml sodium and 2 to 2.5g/100ml glucose. Avoid liquids that are high in carbohydrates or that have inappropriate electrolyte composition. Ex: broth, fruit juice, gelatin, carbonated drinks.

**Note:** Oral re-hydration solutions contain recommended concentrations of fluids and electrolytes to replace losses and provide maintenance requirements.

For Further Information See:
Infusion Therapy Procedures; Nutritional Therapies, Pediatric Nutritional Guidelines for basic guidelines for fluid and nutritional needs.

11. If fluids are being restricted:

**Note:** Fluid restriction may be necessary as a preventive or therapeutic measure.

a. For oral intake, provide approximately 50% of total during the day; 35% to 40% during the evening; and 10% to 15% during the night.

**Note:** A young infant may need equal amounts for around-the-clock feedings.

b. Help child cope with fluid restriction: perform frequent mouth care; spray mouth with water; touch and cuddle frequently; provide infant with pacifier; use distraction techniques.

**Note:** With fluid restriction, oral secretions tend to thicken and accumulate on the tongue, teeth, and mucous membranes. A moistened gauze may aid in removing accumulated secretions.
12. Teach family and child how to monitor I & O:
   measure and record all oral, enteral and parental
   intake and all measurable output.
   
   **Note:** Accurate records are necessary to assess
   fluid balance and need for replacement or
   restriction.
PURPOSE:
Pain is subjective and defined by the infant who experiences it. Non-verbal infants have difficulty in reporting pain. Healthcare professionals are to assess for signs and symptoms of pain in the non-verbal patient.

GENERAL GUIDELINES:
There is no single standard used to assess pain. There are 3 measurements that are used to collect data.
1. **Verbal** – Crying in non-verbal infant
2. **Behavioral** – Changes in behavior reflect stress and distress. Facial changes and crying are easily observed; however, these changes may also be the result of fear and anxiety, not necessarily pain.
3. **Physiologic** – Changes in cardio-vascular measurements, respiratory rate and diaphoresis may indicate pain, but are not specific for pain. Even in severe pain vital signs may be normal.

EQUIPMENT:
1. Personal protective equipment as needed.
2. COVERS Scale

RECORD:
1. Date and time of assessment
2. Comfort measures used and taught to caregiver

FAMILY EDUCATION:
1. Instruct caregiver on signs and symptoms of pain in the infant.
2. Instruct caregiver on comfort measures

REFERENCE:
CDC Growth Charts: United States

Weight-for-length percentiles: Girls, birth to 36 months

Published May 30, 2000 (modified 6/8/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
Weight-for-age percentiles: Girls, birth to 36 months

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
Weight-for-age percentiles: Boys, birth to 36 months

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
CDC Growth Charts: United States

Weight-for-age percentiles:
Boys, 2 to 20 years

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
CDC Growth Charts: United States

Stature-for-age percentiles:
Girls, 2 to 20 years

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
Length-for-age percentiles: Boys, birth to 36 months

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
Published May 30, 2000 (modified 4/20/01).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

Birth to 36 months: Boys
Length-for-age and Weight-for-age percentiles

NAME ___________________________

DATE_________ AGE:_____ WEEKS_________

Mother’s Stature _________ Father’s Stature _________ Gestational Age:______ Weeks

Weight:_____________ Length: ___________ Head Circ:_____________

Published May 30, 2000 (modified 4/20/01).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts
2 to 20 years: Girls

Stature-for-age and Weight-for-age percentiles

| Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion |

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703
### Stature-for-age and Weight-for-age percentiles

**2 to 20 years: Boys**

#### Source:
- Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion.
- Published May 30, 2000 (modified 11/21/00).

#### Formula to Calculate BMI:
- Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
- or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703

#### Chart Details:
- **Mother’s Stature**
- **Father’s Stature**
- **Date**
- **Age**
- **Weight**
- **Stature**
- **BMI**

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**Table:**

<table>
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<th>NAME</th>
<th>RECORD #</th>
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**Diagram:**

- **AGE (YEARS):**
- **CM:**
  - 120, 150, 180, 210
  - 175, 170, 165, 160
  - 155, 150, 145, 140
  - 135, 130, 125, 120
  - 115, 110, 105, 100
  - 95, 90, 85, 80
  - 75, 70, 65, 60
  - 55, 50, 45, 40
  - 35, 30, 25, 20
  - 15, 10, 5
  - 0

- **IN:**
  - 5, 6, 7, 8, 9, 10, 11
  - 12, 13, 14, 15

- **WEIGHT (LB):**
  - 100, 150, 200, 250
  - 300, 350, 400, 450
  - 500, 550, 600, 650
  - 700, 750, 800, 850
  - 900, 950, 1000
  - 1050, 1100, 1150

- **WEIGHT (KG):**
  - 25, 50, 75
  - 100, 125, 150
  - 175, 200, 225

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**Published May 30, 2000 (modified 11/21/00).**
- SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
- http://www.cdc.gov/growthcharts
Recommended Immunization Schedule for Persons Aged 0–6 Years—UNITED STATES • 2008

For those who fall behind or start late, see the catch-up schedule

<table>
<thead>
<tr>
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<th>Birth</th>
<th>1 month</th>
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This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 0 through 6 years. Additional information is available at www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for high-risk conditions: http://www.cdc.gov/vaccines/pubs/ACIP-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB), (Minimum age: birth)
   - At birth:
     - Administer monovalent HepB to all newborns prior to hospital discharge.
     - If mother’s HBsAg status is unknown, administer HepB within 12 hours of birth. Determine the HBsAg status as soon as possible and if HBsAg-positive, administer HBIG (no later than age 1 week).
   - If mother is HBsAg-negative, the birth dose can be delayed, in rare cases, with a provider’s order and a copy of the mother’s negative HBsAg laboratory report in the infant’s medical record.
   - After the birth dose:
     - The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered no earlier than age 24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of at least 3 doses of a licensed HepB series, at age 9–18 months (generally at the next well-child visit).
   - 4-month dose:
     - It is permissible to administer 4 doses of HepB when combination vaccines are administered after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.

2. Rotavirus vaccine (Rota), (Minimum age: 6 weeks)
   - Administer the first dose at age 6–12 weeks.
   - Administer the final dose in the series at age 32 weeks. Do not administer any dose later than age 32 weeks.
   - Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP), (Minimum age: 6 weeks)
   - The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
   - Administer the final dose in the series at age 4–6 years.

4. Haemophilus influenzae type b conjugate vaccine (Hib), (Minimum age: 6 weeks)
   - If PRP-OMP (PedvaxHIB® or Comvax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
   - TriHIB (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters following any Hib vaccine in children age 12 months or older.

5. Pneumococcal vaccine, (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPV])
   - Administer one dose of PCV to all healthy children aged 24–59 months having any incomplete schedule.
   - Administer PPV to children aged 2 years and older with underlying medical conditions.

6. Influenza vaccine, (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])
   - Administer annually to children aged 6–59 months and to all close contacts of children aged 0–59 months.
   - Administer annually to children 5 years of age and older with certain risk factors, to other persons (including household members) in close contact with persons in groups at higher risk, and to any child whose parents request vaccination.
   - For healthy nonpregnant persons (those who do not have underlying medical conditions that predispose them to influenza complications) ages 2–49 years, either LAIV or TIV may be used.
   - Children receiving TV should receive 0.25 mL if age 6–35 mos or 0.5 mL if age 3 years or older.
   - Administer 2 doses (separated by 4 weeks or longer) to children younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season, but only received one dose.

7. Measles, mumps, and rubella vaccine (MMR), (Minimum age: 12 months)
   - Administer the second dose of MMR at age 4–6 years. MMR may be administered before age 4–6 years, provided 4 weeks or more have elapsed since the first dose.

8. Varicella vaccine, (Minimum age: 12 months)
   - Administer second dose at age 4–6 years; may be administered 3 months or more after first dose.
   - Do not repeat second dose if administered 28 days or more after first dose.

9. Hepatitis A vaccine (HepA), (Minimum age: 12 months)
   - HepA is recommended for all children aged 1 yr (i.e., aged 12–23 months).
   - The 2 doses in the series should be administered at least 6 months apart.
   - Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
   - HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.

10. Meningococcal vaccine, (Minimum age: 2 years for meningococcal conjugate vaccine [MCV4] and for meningococcal polysaccharide vaccine [PPSV4])
    - MCV4 is recommended for children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. Use of PPSV4 is also acceptable.
    - Persons who received PPSV4 3 or more years prior and remain at increased risk for meningococcal disease should be vaccinated with MCV4.
**Recommended Immunization Schedule for Persons Aged 7–18 Years—UNITED STATES • 2008**

For those who fall behind or start late, see the green bars and the catch-up schedule

<table>
<thead>
<tr>
<th>Vaccine ▼</th>
<th>Age ▲</th>
<th>7-10 years</th>
<th>11-12 years</th>
<th>13-18 years</th>
<th>Range of recommended ages</th>
<th>Catch-up immunization</th>
<th>Certain high-risk groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria, Tetanus, Pertussis</td>
<td>see footnote 1</td>
<td>Tdap</td>
<td>Tdap</td>
<td>Tdap</td>
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<tr>
<td>Human Papillomavirus</td>
<td>see footnote 2</td>
<td>HPV (3 doses)</td>
<td>HPV Series</td>
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<tr>
<td>Meningococcal</td>
<td>MCV4</td>
<td></td>
<td>MCV4</td>
<td>MCV4</td>
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<tr>
<td>Influenza</td>
<td>Influenza (Yearly)</td>
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<td>Hepatitis A</td>
<td>HepA Series</td>
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<td>Hepatitis B</td>
<td>HepB Series</td>
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<tr>
<td>Inactivated Poliovirus</td>
<td>IPV Series</td>
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<td></td>
</tr>
<tr>
<td>Measles, Mumps, Rubella</td>
<td>MMR Series</td>
<td></td>
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<td></td>
</tr>
<tr>
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</tbody>
</table>

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 7–18 years. Additional information is available at [www.cdc.gov/vaccines/recs/schedules](http://www.cdc.gov/vaccines/recs/schedules). Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for high risk conditions: [http://www.cdc.gov/vaccines/pubs/ACIP-list.htm](http://www.cdc.gov/vaccines/pubs/ACIP-list.htm). Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete VAERS form is available at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.

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**1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).** *(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL®)*
- Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids (Td) booster dose.
- 13–18 year olds who missed the 11–12 year Tdap or received Td only, are encouraged to receive one dose of Tdap 5 years after the last Td/DTaP dose.

**2. Human papillomavirus vaccine (HPV).** *(Minimum age: 9 years)*
- Administer the first dose of the HPV vaccine series to females at age 11–12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

**3. Meningococcal vaccine.**
- Administer MCV4 at age 11–12 years and at age 13–18 years if not previously vaccinated. MPSV4 is an acceptable alternative.
- Administer MCV4 to previously unvaccinated college freshmen who
  - have certain other high-risk groups.
  - live in dormitories.
- Administer MCV4 at age 11–12 years for those who have completed the meningococcal series and have not received a tetanus and diphtheria toxoids (Td) booster dose.

**4. Pneumococcal polysaccharide vaccine (PPV).**
- Administer PPV to certain high-risk groups.

**5. Influenza vaccine.**
- Administer annually to all close contacts of children aged 0–59 months.
- Administer annually to persons with certain risk factors, health-care workers, and other persons (including household members in close contact) in groups at higher risk.
- Administer 2 doses (separated by 4 weeks or longer) to children younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season, but only received one dose.
- For healthy nonpregnant persons (those who do not have underlying medical conditions that predispose them to influenza complications) ages 2–49 years, either LAIV or TIV may be used.

**6. Hepatitis A vaccine (HepA).**
- The 2 doses in the series should be administered at least 6 months apart.
- HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.

**7. Hepatitis B vaccine (HepB).**
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

**8. Inactivated poliovirus vaccine (IPV).**
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child’s current age.

**9. Measles, mumps, and rubella vaccine (MMR).**
- If not previously vaccinated, administer 2 doses of MMR during any visit, with 4 or more weeks between the doses.
- Administer 2 doses of varicella vaccine to persons aged 13 years or older at least 4 weeks apart.

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*The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).*

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**1111 Last Update 9/10**
### Catch-up Immunization Schedule for Persons Aged 4 Months–18 Years Who Start Late or Who Are More Than 1 Month Behind

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child’s age.

#### CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS–6 YEARS

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 2 to Dose 3</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B¹</td>
<td>Birth</td>
<td>4 weeks</td>
<td>8 weeks (and 16 weeks after first dose)</td>
<td>4 weeks</td>
<td>6 months</td>
<td>6 months³</td>
</tr>
<tr>
<td>Rotavirus²</td>
<td>6 wks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks³</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis²</td>
<td>6 wks</td>
<td>8 weeks (as final dose)</td>
<td>No further doses needed if first dose administered at age 15 months or older</td>
<td>8 weeks (as final dose)</td>
<td>8 weeks (as final dose)</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Haemophilus influenzae type b⁴</td>
<td>6 wks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Pneumococcal⁵</td>
<td>12 wks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Inactivated Poliovirus⁶</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Measles, Mumps, Rubella³</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Varicella⁸</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Hepatitis A³</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>3 months</td>
<td>3 months</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
<tr>
<td>Varicella⁸</td>
<td>6 mos</td>
<td>4 weeks</td>
<td>3 months</td>
<td>3 months</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
</tbody>
</table>

#### CATCH-UP SCHEDULE FOR PERSONS AGED 7–18 YEARS

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 2 to Dose 3</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, Diphtheria/ Pertussis¹⁰</td>
<td>7 yrs⁹</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>6 months</td>
<td>6 months</td>
</tr>
<tr>
<td>Human Papillomavirus¹¹</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Hepatitis A¹</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Haemophilus influenzae type b conjugate vaccine (Hib)</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>8 weeks (and 16 weeks after first dose)</td>
<td>8 weeks (and 16 weeks after first dose)</td>
<td>8 weeks (and 16 weeks after first dose)</td>
<td>8 weeks (and 16 weeks after first dose)</td>
</tr>
<tr>
<td>Measles, Mumps, Rubella³</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Varicella⁸</td>
<td>12 mos</td>
<td>4 weeks</td>
<td>3 months</td>
<td>3 months</td>
<td>4 weeks</td>
<td>8 weeks (as final dose)</td>
</tr>
</tbody>
</table>

1. Hepatitis B vaccine (HepB).  
   • Administer the 3-dose series to those who were not previously vaccinated.  
   • A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

2. Rotavirus vaccine (Rota).  
   • Do not start the series later than age 12 weeks.
   • Administer the final dose in the series by age 32 weeks.
   • Do not administer a dose later than age 32 weeks.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).  
   • The fifth dose is not necessary if the fourth dose was administered at age 4 years or older.
   • DTaP is not indicated for persons aged 7 years or older.

4. Haemophilus influenzae type b conjugate vaccine (Hib).  
   • Vaccine is not generally recommended for children aged 5 years or older.
   • If current age is younger than 12 months and the first 2 doses were PRPOMP (PedvaxHIB®) or ComVax® (Merck), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
   • If first dose was administered at age 7–11 months, administer 2 doses separated by 4 weeks plus a booster at age 12–15 months.

5. Pneumococcal conjugate vaccine (PCV).  
   • Administer one dose of PCV to all healthy children aged 24–59 months having an incomplete schedule.
   • For children with underlying medical conditions administer 2 doses of PCV at least 8 weeks apart if previously received less than 3 doses or 1 dose of PCV if previously received 3 doses.

6. Inactivated poliovirus vaccine (IPV).  
   • For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age 4 years or older.
   • If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child’s current age.
   • IPV is not routinely recommended for persons aged 18 years and older.

7. Measles, mumps, and rubella vaccine (MMR).  
   • The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
   • If not previously vaccinated, administer 2 doses of MMR during any visit with 4 or more weeks between the doses.

8. Varicella vaccine.  
   • The second dose of varicella vaccine is recommended routinely at age 4–6 years but may be administered earlier if desired.
   • Do not repeat the second dose in persons younger than 13 years of age if administered earlier if desired.

9. Hepatitis A vaccine (HepA).  
   • HepA is recommended for certain groups of children, including in areas where vaccination programs target older children. See MMWR 2006;55(No. RR-7):1–23.

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).  
    • Tdap should be substituted for a single dose of Td in the primary catch-up series or as a booster if age appropriate; use Td for other doses.
    • A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. A booster (fourth) dose is needed if any of the previous doses were administered at younger than 12 months of age. Refer to ACIP recommendations for further information. See MMWR 2006;55(No. RR-3).

11. Human papillomavirus vaccine (HPV).  
    • Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

Information about reporting reactions after immunization is available online at [http://www.cdc.gov/vaccines](http://www.cdc.gov/vaccines) or by telephone via the 24-hour national toll-free information line 800-222-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at [http://www.cdc.gov/vaccines](http://www.cdc.gov/vaccines) or telephone 800-CDC-INFO (800-232-4636).

Last Update 9/10
# Normal Blood Pressure Readings

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic</th>
<th>Diastolic</th>
<th>Systolic</th>
<th>Diastolic</th>
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<tbody>
<tr>
<td>03 Days</td>
<td>74</td>
<td>55</td>
<td>72</td>
<td>55</td>
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<td>07 Days</td>
<td>76</td>
<td>54</td>
<td>78</td>
<td>54</td>
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<td>01 Month</td>
<td>86</td>
<td>52</td>
<td>84</td>
<td>52</td>
</tr>
<tr>
<td>02 Months</td>
<td>91</td>
<td>50</td>
<td>87</td>
<td>51</td>
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<tr>
<td>04 Months</td>
<td>91</td>
<td>50</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>06 Months</td>
<td>90</td>
<td>53</td>
<td>91</td>
<td>53</td>
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<tr>
<td>08 Months</td>
<td>90</td>
<td>55</td>
<td>91</td>
<td>53</td>
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<tr>
<td>10 Months</td>
<td>90</td>
<td>56</td>
<td>91</td>
<td>53</td>
</tr>
<tr>
<td>01 Year</td>
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<td>16 Years</td>
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<td>67</td>
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<tr>
<td>18 Years</td>
<td>121</td>
<td>70</td>
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# Normal Ranges of Heart Rates for Infants and Children

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<thead>
<tr>
<th>Beats/Minute</th>
<th>Newborn</th>
<th>1 week to 3 months</th>
<th>3 months to 2 years</th>
<th>2 years to 10 years</th>
<th>10 years to adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting (awake)</td>
<td>100-180</td>
<td>100-200</td>
<td>80-150</td>
<td>70-110</td>
<td>55-90</td>
</tr>
<tr>
<td>Resting (sleeping)</td>
<td>80-160</td>
<td>80-180</td>
<td>70-120</td>
<td>60-100</td>
<td>50-90</td>
</tr>
<tr>
<td>Exercise (Fever)</td>
<td>Up to 200</td>
<td>Up to 200</td>
<td>Up to 200</td>
<td>Up to 180</td>
<td>Up to 180</td>
</tr>
</tbody>
</table>

# Normal Temperatures in Children

<table>
<thead>
<tr>
<th>Temperature</th>
<th>3 months</th>
<th>6 months</th>
<th>1 year</th>
<th>3 years</th>
<th>5 years</th>
<th>7 years</th>
<th>9 years</th>
<th>11 years</th>
<th>13 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fahrenheit</td>
<td>99.4</td>
<td>99.5</td>
<td>99.7</td>
<td>99.0</td>
<td>98.6</td>
<td>98.3</td>
<td>98.1</td>
<td>98.0</td>
<td>97.8</td>
</tr>
<tr>
<td>Celsius</td>
<td>37.5</td>
<td>37.6</td>
<td>37.7</td>
<td>37.2</td>
<td>37.0</td>
<td>36.8</td>
<td>36.7</td>
<td>36.7</td>
<td>36.6</td>
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</table>

# Normal Respiratory Rates for Children

<table>
<thead>
<tr>
<th>Age</th>
<th>Rate (Breaths/Minute)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>35-55</td>
</tr>
<tr>
<td>1 to 11 months</td>
<td>30-40</td>
</tr>
<tr>
<td>2 years</td>
<td>25</td>
</tr>
<tr>
<td>4 years</td>
<td>23</td>
</tr>
<tr>
<td>6 years</td>
<td>21</td>
</tr>
<tr>
<td>8 years</td>
<td>20</td>
</tr>
<tr>
<td>10 years</td>
<td>19</td>
</tr>
<tr>
<td>12 years</td>
<td>19</td>
</tr>
<tr>
<td>14 years</td>
<td>18</td>
</tr>
<tr>
<td>16 years</td>
<td>17</td>
</tr>
<tr>
<td>18 years</td>
<td>16-18</td>
</tr>
</tbody>
</table>
PEDiatric AND PERINATAL PROCEDURES:
INJECTION SITES:

Sites for injections. 

A, subcutaneous injection sites. 
B, intramuscular injection site for children in the vastus lateralis muscle. 
C, deltoid muscle injection site. 
D, injection site in the buttock (dorsogluteal site). 
E, injection site in the anterolateral thigh (ventrogluteal site).
**Posterior Segments of Upper Lobes**
- Child in upright position
- 30° angle forward
- Percuss over upper posterior thorax

**Apical Segments of Upper Lobes**
- Child in upright position
- 30° angle forward
- Percuss over area between clavicle and tip of scapula
Right or Left Anterior Basal Segment of Lower Lobes

- Child lies on appropriate side, rotated 20° backward
- 30° Trendelenburg
- Percuss anteriorly above lower border of rib cage

Superior Segments of Lower Lobes

- Child prone
- 30° Trendelenburg
- Percuss below scapula in midback region
- Do NOT percuss on spine
Anterior Segments of Upper Lobes
- Child flat
- Supine position
- Percuss over anterior chest between clavicles and nipple line
- Do NOT percuss on sternum

Lateral Basal Segments of Lower Lobes
- Child lies on appropriate side, rotated 30° forward
- 30° Trendelenburg
- Percuss over upper portion of lower ribs
- Do NOT percuss on spine or over kidneys
# Pediatric Nutritional Risk Assessment

**Patient Name __________________________________________________________ Client # __________________**

**Score:**
- A Total of 8 or > High risk, consult with Doctor and/or nutritionist.
- 4-7 Moderate risk, provide education
- 0-3 Low risk

<table>
<thead>
<tr>
<th>YES</th>
<th>Child’s family does not always have money to buy needed food/formula</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>Child is below the 10th % weight for height</td>
<td>2</td>
</tr>
<tr>
<td>YES</td>
<td>Child is above the 95th% weight or height or on steroids</td>
<td>2</td>
</tr>
<tr>
<td>YES</td>
<td>Child takes 5 or more medications per day</td>
<td>1</td>
</tr>
<tr>
<td>YES</td>
<td>Child has a disease process that requires specialized feedings/special diet (tube feedings, TPN)</td>
<td>3</td>
</tr>
<tr>
<td>YES</td>
<td>Child has difficulty chewing/swallowing, sucking or dental mouth pain</td>
<td>2</td>
</tr>
<tr>
<td>YES</td>
<td>Child has illness/surgery/developmental delay or oxygen</td>
<td>2</td>
</tr>
<tr>
<td>YES</td>
<td>Child has food allergy</td>
<td>1</td>
</tr>
<tr>
<td>YES</td>
<td>Child has fever &gt; 100 degrees F x 3 cays with dehydration/change in feedings</td>
<td>3</td>
</tr>
<tr>
<td>YES</td>
<td>Child has persistent nausea/vomiting/diarrhea/constipation</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>No Referral needed</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Referral made to:</th>
<th>Date</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Currently receiving services specify:</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Employee Signature:</th>
<th>Date</th>
</tr>
</thead>
</table>

## COVERS Scale. 0 – 10

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crying</strong></td>
<td>No</td>
<td>High Pitched or visibly crying</td>
<td>Inconsolable or difficult to soothe</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>&lt; 30%</td>
<td>&gt; 30%</td>
</tr>
<tr>
<td><strong>Oxygen requirement</strong></td>
<td>At baseline O₂ Breathing Comfortably</td>
<td>↑ &lt; 20% Change in breathing pattern</td>
<td>↑ &gt; 20% Significant change in breathing pattern</td>
</tr>
<tr>
<td><strong>Vital Signs</strong></td>
<td>HR &amp;/or BP WNL for age or at baseline</td>
<td>HR &amp;/or BP ↑ &lt; 20% of baseline</td>
<td>HR &amp;/or BP ↑ &gt; 20% of baseline</td>
</tr>
<tr>
<td></td>
<td>No apnea or bradycardia or at baseline</td>
<td>↑ in frequency of apnea &amp; bradycardia</td>
<td>↑ in frequency and severity of apnea &amp; bradycardia</td>
</tr>
<tr>
<td><strong>Expression</strong></td>
<td>None/facial muscles relaxed</td>
<td>Grimace, min-mod brow bulge, eye squeeze, nasolabial furrow</td>
<td>Grimace/grunt, mod-max brow bulge, eye squeeze, nasolabial furrow</td>
</tr>
<tr>
<td><strong>Resting</strong></td>
<td>Sleeping most of time</td>
<td>Wakes at frequent intervals – fussy</td>
<td>Constantly awake (even when not disturbed)</td>
</tr>
<tr>
<td><strong>Signaling distress</strong></td>
<td>Relaxed</td>
<td>Arms/legs flexed or extended, “time-out signals”</td>
<td>Flailing, arching</td>
</tr>
</tbody>
</table>

**TOTAL:**
Pain Level Chart

Describing Your Pain:
Use this chart to help you describe your particular level of pain to your health care provider.

My pain is:

☐ Throbbing
☐ Stabbing
☐ Dull
☐ Aching
☐ Pinching
☐ Other (please describe)

Use the scale below to better estimate the level of the pain you are experiencing:
Remember that pain affects everyone differently and only you know what you are feeling.
The following scale can help you define the intensity of your pain and describe your discomfort
to caregivers so they can provide the best treatment.

<table>
<thead>
<tr>
<th>No pain</th>
<th>Distressing pain</th>
<th>Unbearable pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

0-1: Very little or barely noticeable pain.

2-3: Pain is present, but you may have to stop and think about it to really tell if it is there or gone. You seem just fairly comfortable.

4-5: You now notice your pain, perhaps at rest or during activity. It may interfere with your activities. Level “4” is the level at which it is a good idea to start introducing some avenues of relief.

6-7: Your pain is distracting you, but you may be able to focus on something else rather than the pain for a short period of time. You may be “gritting your teeth” to carry out activities.

8-9: Your pain may be severe enough that it makes you stop in the middle of an activity, or not be able to complete it at all. It is difficult to think of anything else but your pain at this level. You may be uncomfortable even during rest or quiet times.

10: Your pain is now the worst you can imagine. It is important to remember that the best way to treat the pain is to stay ahead of its increasing intensity, and to maintain a regular schedule of pain relief. **Do not wait for Level “10” before you discuss options with your health care provider.**

REPORT ALL CHEST OR POSSIBLE HEART PAIN TO YOUR HEALTH CARE PROVIDER IMMEDIATELY.
# Modified Finnegan Neonatal Abstinence Score Sheet

<table>
<thead>
<tr>
<th>System</th>
<th>Signs and Symptoms</th>
<th>Score</th>
<th>AM</th>
<th>PM</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System Disturbances</td>
<td>Excessive high-pitched (or other) cry &lt; 5 mins</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuous high-pitched (or other) cry &gt; 5 mins</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sleeps &lt; 1 hour after feeding</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sleeps &lt; 2 hours after feeding</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sleeps &lt; 3 hours after feeding</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperactive Moro reflex</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Markedly hyperactive Moro reflex</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mild tremors when disturbed</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-severe tremors when disturbed</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mild tremors when undisturbed</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-severe tremors when undisturbed</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased muscle tone</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excoriation (chin, knees, elbow, toes, nose)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Myoclonic jerks (twitching/jerking of limbs)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Generalised convulsions</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metabolic/Vasomotor/Respiratory Disturbances</td>
<td>Sweating</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperthermia 37.2-38.3C</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyperthermia &gt; 38.4C</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequent yawning (&gt; 3-4 times/ scoring interval)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mottling</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nasal stuffiness</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sneezing (&gt; 3-4 times/scoring interval)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nasal flaring</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respiratory rate &gt; 60/min</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respiratory rate &gt; 60/min with retractions</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal Disturbances</td>
<td>Excessive sucking</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor feeding (infrequent/uncoordinated suck)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regurgitation (≥ 2 times during/post feeding)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Projectile vomiting</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loose stools (curds/seedy appearance)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Watery stools (water ring on nappy around stool)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Score**

**Date/Time**

**Initials of Scorer**

---

Pediatric Fall Risk Assessment Under Age 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Score</th>
<th>Patient Status/Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Level of Consciousness/Mental Status</td>
<td>0</td>
<td>Alert/Active</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Seizures</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Loss of Consciousness</td>
</tr>
<tr>
<td>B History of Falls in past month</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1 -2 Falls</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3 or more Falls</td>
</tr>
<tr>
<td>C Ambulation/Elimination Status</td>
<td>0</td>
<td>Ambulatory with or without diaper</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Not ambulatory</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Immobile i.e. spica cast</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Development delays</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Gait dysfunction with assistive devices</td>
</tr>
<tr>
<td>D Vision Status</td>
<td>0</td>
<td>Normal vision with or without glasses</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Legally blind</td>
</tr>
<tr>
<td>E Gait/Balance</td>
<td>0</td>
<td>Pt. to stand on both feet w/o assistance, walk thru doorway and turn/if ambulatory</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Balance problem while standing or walking</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Decreased muscular coordination</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Change in gait pattern</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Jerking/unstable with turning</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Requires assistance</td>
</tr>
<tr>
<td>F Medications</td>
<td>0</td>
<td>Anesthetics, antihistamines, diuretics, antihypertensives, antiseizure, benzodiazepines</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>hypoglycemics, psychotropics, sedative/hypnotic</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1 -2 Medications</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3 -4 Medications</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Add point if change in medications/dose in past 5 days</td>
</tr>
<tr>
<td>G Predisposing Diseases</td>
<td>0</td>
<td>Seizures, Fractures, Hydrocephalic</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1 -2 present</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3 or more present</td>
</tr>
<tr>
<td>H Equipment</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Oxygen tubing, pulse oximeter, apnea monitor</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Other:</td>
</tr>
</tbody>
</table>

**TOTAL SCORE**

Score of 10 or more: high risk for falls, complete Fall Risk Assessment Algorithm

Caregiver has bee informed about fall risk and safety/fall prevention recommendations:

Yes [ ] No [ ] see visit note for additional instructions given.

Comments

__________________________________________

Staff Signature ___________________________ Date ________________

Patient Name _______________________________ Patient Number _____________
FALL RISK ASSESSMENT ALGORITHM

FALL RISK SCORE OF 10 OR GREATER

ADDITIONAL SERVICES NEEDED

- Impaired Mobility
- History of Falls
- Predisposing Dx
- Weakness
- Knowledge Deficit or noncompliance with activity restrictions
- Unsafe Living Environment
- Patient demo unsafe behavior or choices
- Limited Resources
- At risk and lives alone
- Patient is care giver for another
- ADL/IADL Deficits
- Sensory Deficits
- Decreased Cognition
- Unsafe living environment
- UE limitations
- Elimination Deficit
- Medication Issues
- Predisposing Dx
- Uncontrolled pain
- Medical instability or decline
- Incontinence
- ADL/IADL Deficit
- Elimination Deficit
- Impaired Mobility

PT
MSS
OT
SN
Aide

APPROPRIATE REFERRALS MADE

☐ Additional Services Requested:
   ☐ SN ☐ PT ☐ OT ☐ MSS ☐ AIDE ☐ Other: ________________________

☐ If no additional services requested, check reason:
   ☐ Discipline already ordered.
   ☐ Patient has been assessed by this discipline within last 30 days.
   ☐ Patient refused additional discipline.

☐ Comments: ______________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
REFERENCES


GENITO-URINARY AND ELIMINATION REFERENCES (and recommended reading):


