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.