

BLOOD PRESSURE

RATIONALE

Hypertension in children is defined as blood pressure (BP) at or above the 95th percentile based on sex, age, and height. If hypertension is not recognized and treated blood pressure may continue to rise and cause irreversible end organ damage, which may become life-threatening. In a 2005 report, a large national database indicated the prevalence of high BP in children and adolescents is increasing.¹ Hypertension in the majority of children less than 10 years of age is usually due to an identifiable cause, so it should be closely investigated. In contrast, the majority of hypertensive adolescents have essential hypertension without an identifiable cause. It is important to use height and weight in assessing blood pressure in children and adolescents. Early identification and treatment of hypertension may result in improved long-term outcomes and reduced morbidity.

The state of California Child Health and Disability Prevention (CHDP) program is implementing CHDP periodicity schedules to conform with the American Academy of Pediatrics [Bright Futures Recommendations for Periodic Preventive Health Care](#) and will provide updated CHDP blood pressure screening guidelines as information becomes available.

SCREENING REQUIREMENTS

- Measure blood pressure at each health assessment visit starting at three years of age.
- For children with a history of prematurity or conditions listed below, measurement of blood pressure should start with every well child check.
- Utilize the appropriate cuff size for the child's arm. Blood pressure by auscultation is the Gold Standard.
- Document the patient's position, the limb, and the cuff size with each measurement if hypertension is suspected.
- Compare blood pressure measurement with standard percentiles. [Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents, Blood Pressure Tables](#), pages 8-15.

Bright Futures*

[Performing Preventive Service: A Bright Futures Handbook](#). Blood Pressure, pages 57-64.

Conditions Under Which Children less than three years of age should have BP measured:²

- History of prematurity; very low birth weight; or other neonatal complication requiring intensive care

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- Congenital heart disease (repaired or non-repaired)
- Recurrent urinary tract infections, hematuria, or proteinuria
- Known renal disease or urologic malformations
- Family history of congenital renal disease
- Solid organ transplant
- Malignancy or bone marrow transplant
- Treatment with drugs known to raise BP
- Other systemic disorders associated with hypertension (neurofibromatosis, tuberous sclerosis, etc.)
- Evidence of elevated intracranial pressure

Basics of Blood Pressure Measurement³

- Obtain measurements of blood pressure with the patient seated in quiet surroundings. Fully expose the arm and rest the arm at the level of the heart.
- A well-fitting cuff will completely encircle the circumference of the arm and cover approximately 75 percent of the upper arm with the inflatable bladder of the compression cuff. Using too small a cuff results in falsely elevated measurements, while using too large a cuff results may make it difficult to obtain a measurement.
- Lightly place the bell of the stethoscope on the antecubital fossa over the brachial artery. Applying too much pressure can lead to inaccurate measurements. Rapidly inflate the cuff to about 20mm Hg above the normal cutoff for age of the child, then deflate the cuff at a rate of about 2 to 3 mm Hg per second. Use the onset of a tapping sound for determination of the systolic blood pressure. The diastolic BP is the disappearance of sounds through the bell.
- Compare the systolic and diastolic blood pressure measurements to the 90th and 95th percentiles according to sex and age found in [Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents, Blood Pressure Tables](#), pages 8-15. Consider the child's height and weight in your interpretation.

BP Classification/Interpretation²

BP is defined by systolic BP (SBP) and diastolic BP (DBP) percentiles for age, sex, and height.

- Normal BP: SBP and DBP < 90th. Recheck in one year.
- PreHypertension: SBP or DBP \geq 90th percentile to < 95 percentile or BP >120/80 mmHg to <95th percentile. Recheck in 6 months. Begin weight management (as appropriate).
- Stage 1 Hypertension (HTN): SBP and/or DBP \geq 95th percentile to \leq 99th percentile plus 5 mmHg. Recheck in 1 to 2 weeks. If BP remains at this level on

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recheck, begin evaluation and treatment including weight management if appropriate.

- Stage 2 HTN: SBP and/or DBP > 99th percentile plus 5 mmHg. Begin evaluation and treatment within 1 week, immediately if symptomatic.

CONSIDERATIONS FOR REFERRAL TREATMENT AND/OR FOLLOW-UP

See [Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents, Blood Pressure Tables](#), Blood Pressure Tables, pages 8-15.²

- Counsel and monitor children who are asymptomatic and whose initial blood pressure is in the high normal range for age.
- Recognize a single measurement of high blood pressure is not the basis for a diagnosis of hypertension and may be due to the lability of blood pressure in children.
- Further evaluate a child who sustains a systolic or diastolic reading at or above the 95th percentile for their sex and age (measured on at least three separate occasions and averaged together).

Resources

[National Heart, Lung and Blood Institute](#). (Pediatric) [High Blood Pressure](#).

U.S. Department of Health and Human Services. National Institute of Health. National Heart, Lung, and Blood, NIH Publication 07-5268. [A Pocket Guide to Blood Pressure Measurement in Children \(May 2007\)](#)

References

¹ U.S. Department of Health and Human Services. National Institute of Health. National Heart, Lung, and Blood. The Fourth Report on the [Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents](#). NIH Publication N. 05-5267. originally printed September 1996 (96-3790). Revised May 2005. Retrieved April 30, 2015.

² U.S. Department of Health and Human Services. National Institute of Health. National Heart, Lung, and Blood, NIH Publication 07-5268. [A Pocket Guide to Blood Pressure Measurement in Children \(May 2007\)](#). Retrieved May 5, 2015.

³ Nationwide Children's, [Blood Pressure Measurement](#). Retrieved June 30, 2015.

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