

Practice Guidelines

Screening and Management of High BP in Children and Adolescents: An Updated Guideline from the AAP

Key Points for Practice

- BP should be measured yearly in patients three years and older.
- BP should be measured at every visit for patients who are obese; have renal disease, diabetes mellitus, or a history of aortic obstruction or coarctation; or who are taking medications associated with elevated BP.
- Ambulatory BP monitoring should be performed in the setting of suspected white coat HTN, elevated category of blood pressure for at least one year, or with stage 1 HTN at three separate office visits.
- The goal of treatment in children should be to reduce systolic and diastolic BP to less than the 90th percentile and less than 130/80 mm Hg in those 13 years and older.

From the *AFP* Editors

The American Academy of Pediatrics (AAP) previously published guidance on screening for and managing high blood pressure (BP) in children and adolescents in 2004. An updated guideline was released by the AAP to address increased interest in childhood hypertension (HTN) and an updated search of the literature on the topic.

Recommendations

STRONG

Oscillometric devices that have been validated for use in children can be used for BP screening, but if high BP is detected, this should be confirmed with auscultation measurements. Ambulatory BP monitoring should be performed in those suspected to have white coat HTN, with diagnosis confirmed by mean systolic and diastolic BPs less than the 95th percentile and systolic and diastolic BP loads less than 25%. It should also be performed in patients who have undergone coarctation repair to aid in identifying HTN. During evaluation for high BP, a perinatal, nutritional, physical activity, psychosocial, and family history should be obtained and physical examination performed to determine if there is a secondary cause. Electrocardiography should not be performed in patients

with HTN undergoing an assessment for left ventricular hypertrophy because the positive predictive value for identifying this condition is low.

In patients with chronic kidney disease, evaluation for HTN should be performed at every medical visit. Those found to have HTN should be treated to lower their 24-hour mean arterial pressure to less than the 50th percentile on ambulatory BP monitoring. They should also be assessed for proteinuria, and if it is found, they should be prescribed an angiotensin-

converting enzyme inhibitor or angiotensin receptor blocker. In addition, ambulatory BP monitoring should be performed at least yearly to screen for masked HTN in all patients with chronic kidney disease and a history of HTN despite controlled BP in the office.

Although there may be a few exceptions, patients with high BP or HTN under the care of a health care professional who specializes in children should be transferred to a health care professional for adults no later than 22 years of age, with information on etiology, manifestations, and complications of their HTN.

MODERATE

BP should be measured yearly in patients three years and older; however, those who are obese; who have renal disease, diabetes mellitus, or a history of aortic obstruction or coarctation; or who are taking medications associated with elevated BP should have their BP monitored at every medical visit. All patients with type 1 or 2 diabetes should also be evaluated for HTN at each medical examination and treated if their BP measurement is at least in the 95th percentile or greater than 130/80 mm Hg in patients 13 years and older.

Coverage of guidelines from other organizations does not imply endorsement by *AFP* or the AAFP.

This series is coordinated by Sumi Sexton, MD, Editor-in-Chief.

A collection of Practice Guidelines published in *AFP* is available at <https://www.aafp.org/afp/practguide>.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 503.

Author disclosure: No relevant financial affiliations.

PRACTICE GUIDELINES

HTN can be diagnosed if BP is at least in the 95th percentile on auscultation measurement at three separate office visits. In patients with HTN who are at least six years of age, extensive evaluation for secondary causes is not necessary if they have a family history of HTN, are overweight or obese, or do not have findings on history or physical examination consistent with a secondary cause of HTN (e.g., tachycardia, history of snoring, sickle cell anemia, malar rash). Routine testing for microalbuminuria is not recommended in patients with primary HTN.

In patients whose BP falls in the elevated category for at least one year or who have stage 1 HTN at three separate office visits, HTN should be confirmed by ambulatory BP monitoring. Routine ambulatory BP monitoring can also be strongly considered in patients with high-risk conditions (e.g., obesity, chronic kidney disease) to determine the severity of HTN and if there are abnormal circadian BP patterns. It should be performed in a standardized manner with monitors that have been validated for use in this population; normative data from children and adolescents should be used to interpret the results. Although BP monitoring at home should not be used to confirm HTN or masked or white coat HTN, it may be beneficial for use in addition to office and ambulatory BP measurement in patients with confirmed HTN.

In patients with HTN in whom medication is being considered, echocardiography should first be used to identify cardiac target organ damage. Left ventricular hypertrophy can be diagnosed in patients older than eight years when there is a left ventricular mass larger than 51 g per m^{2.7}; it should be larger than 115 g per body surface area in boys and 95 g per body surface area in girls. Echocardiography can be performed every six to 12 months in patients with HTN not amenable to treatment, concentric left ventricular hypertrophy, or reduced left ventricular ejection fraction to monitor target organ damage. Echocardiography can also be performed annually in those who do not have organ injury on imaging initially, but who do have stage 2 HTN, secondary HTN, or chronic stage 1 HTN not appropriately treated (e.g., medication resistance). Doppler renal ultrasonography may be performed to assess for renal artery stenosis in patients at least eight years of age who are at a healthy weight, but who may have renovascular HTN.

The goal of treatment in children with confirmed HTN should be to reduce systolic and diastolic BP to less than the 90th percentile and less than 130/80 mm Hg in those 13 years and older. Angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, long-acting calcium channel blockers, or thiazide diuretics should be prescribed in patients with HTN in whom lifestyle changes have not worked. Ambulatory BP monitoring can aid in monitoring

the effectiveness of HTN treatment. Patients with HTN may play competitive sports after target organ effects and cardiovascular risk have been determined and treatment provided to lower BP below stage 2.

WEAK

When elevated BP or HTN is diagnosed, physicians should educate the patient and caregiver about the Dietary Approaches to Stop Hypertension (DASH) eating plan and getting at least 30 minutes of moderate to vigorous physical activity at least three days each week. Based on expert opinion, patients diagnosed with acute severe HTN and life-threatening symptoms should be prescribed a short-acting antihypertensive; however, BP should not be lowered more than 25% of the planned reduction in the first eight hours. Computed tomographic angiography or magnetic resonance angiography can be performed if renal artery stenosis is suspected. In addition, it may be beneficial for electronic health records to include alerts for abnormal results on BP measurement.

Editor's Note: The AAFP found insufficient evidence to recommend routine screening for primary hypertension in asymptomatic children and adolescents (<https://www.aafp.org/patient-care/clinical-recommendations/all/hypertension.html>). Of note, multiple guidelines on hypertension recommend ambulatory blood pressure monitoring as the reference standard to confirm the diagnosis (<https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/high-blood-pressure-in-adults-screening>). However, there is little practical information available to physicians on implementing this strategy in the primary care setting. The following resources may be helpful, but more are needed: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4877527/>, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4814006/>, and <https://www.aafp.org/afp/2003/0601/p2343.html>.

Guideline source: American Academy of Pediatrics

Evidence rating system used? Yes

Systematic literature search described? Yes

Guideline developed by participants without relevant financial ties to industry? Yes

Recommendations based on patient-oriented outcomes? No

Published source: *Pediatrics*. September 2017;140(3):1-72

Available at: <http://pediatrics.aappublications.org/content/140/3/e20171904>

This guideline was reviewed by the AAFP and received an Affirmation of Value: <https://www.aafp.org/patient-care/clinical-recommendations/all/hbp-child.html>.

Lisa Hauk

AFP Senior Associate Editor ■