Hypertension

Hypertension (HTN) is a common problem in children and adolescents. Elevated blood pressure (BP) in children has increased over the last decade, mostly due to obesity. In most cases, HTN is asymptomatic. You can identify both primary and asymptomatic secondary HTN by measuring BP during routine well-child visits. Elevated BP in childhood increases the risk for adult hypertension.

ASSESSMENT

In patients ≥3 years of age, perform a BP check annually. Perform a BP check at every encounter in the following patients ≥3 years of age:
- Overweight or obese
- Taking medications known to increase BP
- Have renal disease

You can diagnose HTN through auscultatory-confirmed BP readings ≥95th percentile at three different encounters. If you elect to use oscillometric devices for BP screening of young patients, use only a device that has been validated for the pediatric age group. Confirm elevated BP oscillometric readings through auscultation.

Perform a standard HPE, with probing questions about perinatal, nutritional, physical activity, and psychosocial histories as well as family history. Identify potential secondary causes of HTN through physical exam. No secondary evaluation for HTN cause is needed in pediatric patients ≥6 years of age if:
- Positive family history of HTN
- Overweight or obese

If you have clinical questions about patients with elevated BP/HTN, email lipid_HTN@cchmc.org.

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- New onset severe headache
- Heart palpitations
- Chronic vomiting
- Blurred vision
- UTI
- Associated syndromes, e.g., neurofibromatosis, Williams syndrome, Turner syndrome
- Family history of early onset HTN
- Family history of chronic kidney disease
- Tachycardia
- Decreased lower extremities pulse
- Heart murmur
- Abdominal brut
- Proptosis
- Abdominal mass
- Palpable kidneys

MANAGEMENT/TREATMENT

For overweight or obese patients with HTN, perform these standard screening tests:
- Chemistry panel including serum creatinine
- U/A
- Liver profile
- Serum glucose HgA1C
- Lipid profile

Manage Stage 1 primary HTN with a combination of the DASH diet (Dietary Approach to Stop HTN) and exercise. If the patient still has HTN after 6 months of prescribed diet and exercise, OR if the patient has stage 2 HTN, treat with antihypertensive medications, including long-acting calcium channel blockers, angiotensin converting enzyme inhibitors/angiotension receptor blockers, and thiazide diuretics.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children’s.

Tool developed by Cincinnati Children’s physician-hospital organization (known as Tri-State Child Health Services, Inc.) and staff in the James M. Anderson Center for Health Systems Excellence. Developed using expert consensus and informed by Best Evidence Statements, Care Practice Guidelines, and other evidence-based documents as available. For Evidence-Based Care Guidelines and references, see www.cincinnatichildrens.org/evidence.
# Hypertension

## Patient Presents

### BP Measurement

Two BP measurements (1 minute apart) on dominant arm in sitting position, 5 minutes rest, appropriate BP cuff size. If BP elevated, recheck using auscultation if initially measured using oscillometric device.

### If BP still elevated

#### Standard Workup

- Situational History
- Family History
- Physical Exam

#### HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

**History**
- New onset severe headache
- Heart palpitations
- Chronic vomiting
- Blurred vision
- UTI
- Associated syndromes (e.g., neurofibromatosis, Turner syndrome, Williams syndrome)

**Family History**
- Family history of early onset HTN
- Family history of chronic kidney disease

**Physical Exam**
- Tachycardia
- Decreased lower extremities pulse
- Heart murmur
- Abdominal bruit
- Proptosis
- Abdominal mass
- Palpable kidneys

### GOAL

**To identify patients who need referral to ED or HTN clinic**

- If elevated BP is associated with any of the history red flags (see above)
- Suspected secondary HTN
- Confirmed Stage 2 HTN
- Poor BP control despite initiation of antihypertensive medications

**To make initial evaluation and manage primary HTN**

- Standard screening for obese patient with hypertension: chemistry panel including serum creatinine, urine analysis, liver profile, serum glucose HgA1C, lipid profile
- DASH diet and exercise program
- If no improvement in 6 months, initiate treatment with antihypertensive medications (ACEI/ARBs or CCBs or Thiazide diuretics)
- If poor blood pressure control despite initiation of antihypertensive medications, refer to Cincinnati Children's Hypertension Clinic

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For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.