EQIPP: Hypertension
Barriers and Suggested Ideas for Change

Key Clinical Activity 1: ***Document the measurement of blood pressure for children 3 years and older.***

Rationale:

The AAP Clinical Practice Guideline (CPG) recommends children begin to have blood pressure (BP) measured in a medical setting at age 3 years. Routine BP measurement should take place annually for children 3 years of age and older. For children with risk factors for hypertension, BP measurement should be part of at each clinical encounter starting before 3 years of age.

The tables by which a patient's BP is evaluated are based upon readings obtained in a standard way, an important concept to understand.

BP should also be monitored in some children less than 3 years of age who are at risk for hypertension (HTN). These include, for example, patients with a history of prematurity and those with underlying cardiac or renal anomalies.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Additional time needed to take/document BP measurement		
Age of patient (ie, 3 years of age)	• Have patience. • Use methods of distraction. • Assign experienced staff to measure BP.	Measure BP in a different location or have the patient return later for BP check.
Time	• Create standardized clinic visit forms that include spaces for recording BP; or use the electronic health record to include method used, location of BP assessment, and BP value. Also consider documenting the state of the child during BP assessment if the child is upset. • Add visit time to allow for more time to assess BP.	Have dedicated visits for BP assessment.
Gap: Getting an accurate BP measurement		
Lack of proper equipment for measuring BP	• Obtain the needed equipment (ie, appropriate range of BP cuff sizes, aneroid devices, oscillometric devices, etc). • Calibrate devices and develop a regular schedule.	Consult local pediatric hypertension specialists for device recommendations or refer to www.dableeducational.org.

Incorrect technique for BP measurement	Train staff in appropriate measurement/documentation.	• Retrain staff periodically. • Direct staff to videos (such as other training materials available online).
Gap: Performing earlier BP screenings for patients in special populations		
Lack of knowledge regarding special conditions that require an earlier age of initial BP assessment	• Flag the chart. • Post a list of conditions requiring earlier BP assessment in the exam or triage room, or make one easily accessible.	Post signs in the clinic to encourage parents of children with these conditions to request BP assessment.

Key Clinical Activity 2: ***Interpret the BP measurement based on gender, age, and height percentile.***
Rationale: Awareness of the issue is key, as is having a firm understanding that pediatric BPs are stratified by age, gender, and height. Elevated BP readings (ie, ≥90th percentile) obtained using an automated device should be repeated by auscultation.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Using the AAP's latest CPG		
Knowledge of BP cutoffs	• Use Table 6, *Screening BP Values Requiring Further Evaluation*, in the AAP's latest CPG for determining which children require additional BP assessment; and use CPG Tables 4 and Table 5 (*Levels for Boys by Age and Height Percentile* and *Levels for Girls by Age and Height Percentile)* to determine which children truly have high BP. • Train staff (ie, nurses, medical assistants) on how to read the CPG tables. • Place laminate copies of the BP tables and diagnostic algorithm in clinic spaces (eg, places where vital signs are measured). • Use EHR tools or online calculators to calculate BP percentiles.	• Place signs in the clinic to encourage parents to request BP assessment. • Make enhancements to the EHR to flag high BP values. • Use population manager/tools to review BP values for all patients.

Key Clinical Activity 3: ***Discuss lifestyle modifications.***

Rationale:

Key elements of the treatment plan (especially related to reinforcement of dietary and exercise recommendations) can likely be better enforced when the primary care provider and subspecialist are communicating with each other, keeping the best interests of the patient as a focus (if applicable).

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Having the discussion [regarding lifestyle modifications] with the patient and/or family		
Provider discomfort in initiating the discussion	Recommend that the patient/family make use of websites: • USDA MyPlate (https://www.fns.usda.gov/tn/myplate) • 5-2-1-0 Let'sGo (http://www.letsgo.org) • Nutrition (https://www.healthychildren.org/english/healthy-living/nutrition/pages/default.aspx) • Kids Eat Right (http://www.eatright.org/resources/for-kids) • The DASH Diet Eating Plan (dashdiet.org)	• Keep preprinted healthy lifestyle information forms in the waiting areas. • Employ tiered assessments such as questionnaires or food diaries. • Refer patient/family to a nutritionist or weight management program.
Lack of knowledge on how to quickly convey healthy lifestyle recommendations to families regarding diet and exercise	• Refer to the AAP obesity prevention program: 5-3-2-1-0. • Develop tools to provide information in verbal, written, and electronic forms. • Incorporate food diaries. • Refer patient/family to nutritionist.	

Lack of awareness of appropriate limits on sports activities	• Review AAP guidelines on sports participation. • Create a simple summary of AAP recommendations and distribute to providers in the office. • Create patient handout on high BP and sports.	Create a chart or list.
Gap: Influence of external factors		
No access for patient/family to resources due to socio-economic and/or safety issues	Develop a list of community resources that provide safe, cost-effective activity options (the Y, school, church, Weight Watchers).	• Discuss options with community leaders to get children and families more involved. • Work with local school districts to increase access to school facilities after hours.
Gap: Patient and/or family in denial		
Lack of family buy-in: time, interest, acceptance	Use a motivational approach, recognizing the underlying issue affecting the acceptance of change.	Consider education seminars and support groups for both patient and family.
Patient fear of peer acceptance	Enlist help from peers and family in lifestyle changes.	

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Key Clinical Activity 4: ***Confirm the diagnosis of hypertension.***

Rationale:

Hypertension in children and adolescents is defined as systolic BP (SBP) and/or diastolic BP (DBP) that measures ≥95th percentile on 3 repeated measurements taken on different days.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Diagnosis not confirmed		
Hypertension not recognized OR Hypertension recognized, but not acted upon	• Post hypertension tables in exam rooms. • Include tools in the EHR to identify elevated BP readings.	• Use population management tools to catch misses. • Train different levels of staff (medical assistants, nurses, MDs) to recognize hypertension.
Hypertension acted upon, but no return follow-up by patient	Implement mechanisms to catch the misses/no-shows for follow-ups (auto-reminder systems).	• Send a form letter explaining the importance of high BP, along with appointment reminders. • Make a note in the chart so it can be caught at an unrelated visit.
Gap: Patients not returning for follow-up visits		
Transportation limits availability of care	Outsource recheck to school nurses, and/or loan home monitors.	Outsource recheck to school nurses and/or loan home monitors.
Limited office hours	Extend drop-in hours for BP checks.	
Reminder not sent out or followed up	Identify a staff champion.	Create a tracking sheet and post it in a prominent place in the office.

Key Clinical Activity 5: *Evaluate for identifiable causes and comorbidity associated with hypertension.*

Rationale:
High BP often clusters with other cardiovascular-related disorder, including obesity, diabetes, and dyslipidemia.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Knowledge deficit—not recognizing contributing factors		
Initial recognition of meaning of BP	• Educate staff. • Develop simple processes for staff taking BP at check-in to identify abnormal BP. (See CPG Table 6, *Screening BP Values Requiring Further Evaluation*; or if using an electronic health record [EHR], investigate EHR alerting tools.) • Develop itemized care plans.	Develop EHR prompts.
Gap: Documentation deficit		
Identifiable causes and comorbity not captured in the medical record	• Develop clinical practice pathways. • Develop standardized data collection forms. • Train non-physician staff member to collect data. • Add tools to EHR.	Re-evaluate work flow and data collection.
Appointment duration		

Key Clinical Activity 6: *Develop a treatment plan that may include lifestyle modifications, further tests for evaluation, referral to a specialist, and medications.*

Rationale:

High BP may be only one element of a child's medical condition, and it is important to understand the impact it will have on the child's health and well-being. The treatment plan may include lifestyle modifications, further tests for evaluation, a referral to a specialist, and initiation of medications.

Referring Patient to Subspecialist

Not all abnormal BP readings are diagnostic of sustained hypertension, and subspecialists who are focused on high BP are often in limited supply. Appropriate referrals should be considered if patients have elevated BP for 12 months, stage I hypertension for 3 months, or stage II hypertension at a single visit. Any child with symptomatic stage II HTN, or with BP >30 mm Hg above the 95th percentile (or >180/120 mm Hg in an adolescent) should be referred to an immediate source of care (CPG Table 11, Patient Evaluation and Management According to BP Level).

Further Testing

In addition to obtaining screening studies (See CPG Table 10, *Screening Tests and Relevant Populations*), some patients will require more extensive testing, and finding a rational, cost-effective, and efficient approach is important. Subspecialists may assist with identifying the most suitable approach.

Prescribing Antihypertensive Medications

In hypertensive children and adolescents who have failed lifestyle modifications, clinicians should initiate pharmocologic treatment. This recommendation applies especially to those with the following:

- LV hypertrophy on echocardiography
- Symptomatic HTN
- Stage 2 HTN without a clearly modifiable factor (eg, obesity)

Providing Continuity of Care

Continuity of care is essential, and supporting the idea of a medical home where the patient is likely to be seen more often is a key to success.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Lack of resources		
Lack of dietary counseling resources	• Use preformatted handouts for DASH diet or other dietary interventions. • Provide fast-food informational links for nutritional information. • Provide USDA MyPlate information (http://www.choosemyplate.gov/). • Encourage use of a smart phone calorie/sodium app.	• Discuss possible consultation with a local nutritionist or dietician. • Develop a partnership with health education teachers in local school districts.
Access to healthy food	Develop a list of local fresh food markets and farmers' markets.	
Lack of organized exercise programs	• Encourage scheduling physical activity. • Encourage participation in team sports or the local YMCA.	
Lack of physical activity interventions (eg, lack of time in school or resources)	• Provide preformatted physical education routines. • Provide a collection of local non-school resources (non-school sports, yoga, etc).Provide a list of online, age-appropriate physical activity instructional videos. • Provide a pedometer to measure and encourage daily activity.	• Work with local school districts to increase access to school facilities after hours. • Partner with community programs or YMCAs. • Embed patient navigators/resource specialists within the clinic to help patients and families find resources.
Gap: Tools/technology		
EHR not structured to accommodate pediatric hypertension	• Develop a template for pediatric hypertension visit. • Print new CPG blood pressure screening tables (Tables 3 and 6) to post in clinical areas; make copies of more detailed BP tables easily available in examination rooms.	Partner with local hospitals on EHR modifications.

No place for treatment goals/plan in EHR	• Provide a written treatment goal/plan that remains in the patient's paper chart or can be scanned into EHR. • Develop a flow sheet that can be individualized with each patient's treatment plan.	
Gap: Prescribing antihypertensive medications		
Lack of knowledge related to indications	Educate staff; include indications in the follow-up template.	
Limits on formularies	• Develop a templated appeal letter with rationale for the specific medication (eg, pediatric indication available, etc). • Become familiar with generic antihypertensives and limit prescribing to generics.	Conduct political actions and lobbying.
Gap: Continuity of care/goals		
Wrong MD on consult (ie, ER referral)	• Confirm the referring doctor on check-in. • Educate families to let the doctor know if they were referred from the ER.	
Limited time/visits	• Use formatted tools for reinforcement of diet and exercise recommendations. • Develop defined roles/modules for RN/MA for HTN teaching/reinforcement.	Consider onsite nutrition.