Potential Barriers and Suggested Ideas for Change

***Key Activity:* Document the measurement of blood pressure for children over 3 years old in all visits.**

Rationale:

AAP guideline recommends children begin to have blood pressure (BP) measurement in a medical setting at age 3 years. The blood pressure standards by which a patient's BP is judged are based upon readings obtained in a standard way, an important concept to understand.

In some children less than 3 years of age who are at risk for hypertension (HTN), BP should be monitored. These include, for example, patients who have spent time in NICU 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 blood pressure measurement	
Age of patient (ie, 3 years of age)	• Patience, methods of distraction	• Added visit time to allow for more time to assess blood pressure
Time	• Standardized clinic visit forms created that include spaces for recording BP (include method used, location of BP assessment, BP value and percentile, state of patient at time when blood pressure obtained, eg, calm, crying, etc.)	• Visits dedicated to blood pressure assessment
	Gap: Accurate/appropriate technique for blood pressure measurement	
Equipment required for measuring blood pressure	• Equipment obtained for blood pressure assessment (ie, appropriate range of blood pressure cuff sizes, aneroid devices, oscillometric devices, etc.) • Devices calibrated (and a regular schedule developed)	• Local pediatric hypertension specialists consulted for device recommendations
Incorrect technique for blood pressure measurement	• Staff trained in appropriate measurement/documentation	• Periodic retraining of staff • Online videos that demonstrate correct techniques reviewed • Videos and other training materials available online

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Patients in special populations requiring earlier blood pressure screening		
Lack of knowledge regarding special conditions that require an earlier age at time of initial blood pressure assessment	• "Flag the chart" • Available/easily accessible list of conditions requiring earlier blood pressure assessment (eg, list in exam room)	• Signs in the clinic to encourage parents of children with these conditions to request BP assessment

Key Activity: ***Interpret the blood pressure measurement based on gender, age, and height percentile.***

Rationale:

Awareness of the issue is key, and having a firm understanding that pediatric BPs are stratified by age, gender, and stature.

Elevated BP readings (ie, greater than 90% percentile) obtained using an automated device should be repeated by auscultation.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Using the fourth report guidelines		
Knowledge of blood pressure cutoffs	• Training of staff (ie, nurses, medical assistants) on how to read tables • Laminated copies of the BP tables placed in clinic spaces (eg, spaces where vital signs are measured)	• Signs placed in the clinic to encourage parents to request blood pressure assessment • Enhancements to electronic medical record developed to identify high BP values
Height percentile for accurately assessing blood pressure obtained	• Place provided for height percentile in data collection tools • Use of EMR, but awareness that EMR may not completely overlap with Fourth Report tables	• Height percentile plotted by staff when child is seen and then recorded in the child's chart

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

Rationale:

Hypertension in children and adolescents is defined as systolic BP (SBP) and/or diastolic BP (DBP), that is, on 3 repeated measurements on different days greater than 95th percentile (not three consecutive 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	• Do it and document it (documentation tools). • Include tools in the EMR to identify elevated blood pressure readings.	• Add in a layered approach.
Hypertension acted upon, but no return follow-up by patient	• Implement mechanisms to catch the misses/no-shows for follow-ups (auto reminder systems).	• Develop a form letter explaining the importance of high BP to go out with appointment reminders.
Gap: Patients do not return for follow-up visits.		
Transportation limits availability of care	• Outsource recheck to school nurses, and/or loan home monitors.	• Empower colleges, families, community (ie, local fire departments) and others to assist.
Limited office hours	• Extend drop-in hours for blood pressure checks.	
Reminder not sent out or followed up	• Identify a staff champion.	• Create a tracking sheet and post in a prominent place in the office.

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

Rationale:

High blood pressure often clusters with other cardiovascular-related disorders (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 blood pressure	• Educate staff. • Develop itemized care plans.	• Implement layered interventions. • Implement a follow-up appointment to further the evaluation.
Gap: Documentation deficit		
Identifiable causes and co-morbity 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 EMR.	• Re-evaluate work flow and data collection.
Appointment duration		

***Key Activity:* 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.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Having the discussion with the patient and/or family		
Provider discomfort in initiation of the discussion	• Recommend that the patient/family to make use of Web sites (eg, USDA My-Plate).	• Keep preprinted healthy lifestyle information forms in the clinic waiting areas. • Employ a tiered assessments, eg, questionnaires, food diaries • Just do it. • Try again.
Knowledge on how to quickly convey healthy lifestyle recommendations to family	• AAP: 5-3-2-1-0. • Develop tools to provide information in verbal, written, and electronic forms. • Incorporate food diaries. • Refer patient/family to nutritionist.	
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 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.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Patient and/or family in denial		
Lack of family buy-in: time, interest, acceptance	• Use a motivational approach; recognize 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.	

***Key Activity:* Develop a treatment plan that includes lifestyle modifications, further tests for evaluation, referral to a specialist, and/or medications.**

Rationale:

High blood pressure may be one element of the child's condition (eg, athletic participation and/or special medical conditions). It is important to understand the impact it will have on the child's health and well-being. The plan should include lifestyle modifications, further tests for evaluation, referral to a specialist, and/or initiation of medications.

Refer patient to subspecialist

Not all elevated blood pressure is diagnostic of sustained hypertension, and subspecialists who are focused on high blood pressure are often in limited supply. Appropriate referrals need to be made if patients have stage II hypertension, are symptomatic, have left ventricular hypertrophy (LVH) or concomitant heart disease, or have persistent blood pressure on 2 additional occasions higher than the 95th percentile.

In addition to screening studies, some patients will require more extensive testing and finding a rational, cost-effective, and efficient approach is important.

Prescribe antihypertensive medications

Only children who have secondary HTN, stage 2 HTN, diabetes, hypertensive target organ damage (TOD) or other particularly high-risk disorders (ie, post-cardiac transplantation, Kawasaki disease with coronary artery involvement, etc.), or who have failed non-pharmacologic measures will be prescribed antihypertensive medications. Indication for prescribing will be charted.

Provide continuity of care

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

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Lack of resources		
Lack coverage of dietary counseling resources	• Preformatted tools for DASH or other dietary interventions • Fast food informational links for nutritional information • USDA MyPlate information provided (ie, http://www.choosemyplate.gov/) • Smart phone calorie/sodium app	• Possible consultation with local nutritionist or dietician discussed • Partnership with health education teachers in local school district
Lack of organized exercise programs	• Physical activity scheduled • Participation in team sports or the local YMCA encouraged	

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Lack physical activity interventions (eg, lack of time in school)	• Provide preformatted physical education routines. • Provide collection of local non-school resources (non-school sports, yoga, etc.). • Provide a pedometer to measure and encourage daily activity.	• Work with local school district to increase access to school facilities after hours.
Access to healthy food	• Develop list of local fresh food markets and farmers' markets.	
Gap: Tools/technology		
EMR/ICD not structured to accommodate pediatric hypertension	• Develop template for NP pediatric hypertension visit. • Print Fourth Report and NHLBI recommendations to post in clinical areas.	• Partner with local hospitals on EMR modifications.
No place for treatment goals/plan in EMR	• Provide a written treatment goal/plan that remains in the patient's paper chart. • Develop 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	• Call the insurance company. • 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 home BP recording and reinforcement of diet and exercise recommendations. • Develop defined roles/modules for RN/MA for HTN teaching/reinforcement.	
BP goal not clearly defined in communications	• Subheading of problem list	