



<b>Body System:</b> Cardiovascular		
<b>Session Topic:</b> Pediatric Hypertension		
Educational Format		Faculty Expertise Required
<b>REQUIRED</b>	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
<b>OPTIONAL</b>	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> <li>• There exist discrepancies between guidelines with regard to screening.</li> <li>• Family physicians may need additional training on effective counseling methods for patients to encourage healthy behavior changes to reduce their risk for developing hypertension or prehypertension.</li> <li>• Family physicians need additional training on guideline recommendations for diagnosing and appropriately treating patients with hypertension using a stepwise approach to achieve stable tight control of blood pressure.</li> <li>• Family physicians should recognize barriers to care that may prevent some patients from making appropriate health decisions, and they should understand ways to address them and/or offer alternative options.</li> <li>• Family physicians should</li> </ul>	<ol style="list-style-type: none"> <li>1. Integrate guidelines for evaluating all children with confirmed hypertension, and overweight children with prehypertension, for additional risk factors for CVD, diabetes, and hyperlipidemia.</li> <li>2. Screen children with confirmed hypertension for underlying renal disease.</li> <li>3. Develop an evidence-based treatment plan that encourages patient adherence to the prescribed therapy.</li> <li>4. Counsel parents of children with prehypertension or hypertension to make therapeutic lifestyle changes to lower blood pressure.</li> </ol>	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.



<p>also be aware that blacks and Hispanics may have higher risk of developing hypertension, and that hypertension in these populations could be more severe, requiring enhanced physician vigilance and aggressive management.</p> <ul style="list-style-type: none"> <li>• While patients who have poorly controlled hypertension do not necessarily have “resistant hypertension,” family physicians should still be prepared to offer treatment regimens of antihypertensive medications and tools to improve patient adherence.</li> <li>• There exist new AHA Ambulatory Blood Pressure Monitory in Children and Adolescent guidelines.</li> </ul>		
<b>ACGME Core Competencies Addressed</b> (select all that apply)		
X	Medical Knowledge	Patient Care
X	Interpersonal and Communication Skills	Practice-Based Learning and Improvement
	Professionalism	Systems-Based Practice
<b>Faculty Instructional Goals</b>		
<p>Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.</p> <ul style="list-style-type: none"> <li>• Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy &amp; reference citations</li> <li>• Facilitate learner engagement during the session</li> <li>• Address related practice barriers to foster optimal patient management</li> <li>• Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the <u>References</u> section below are a good place to start             <ul style="list-style-type: none"> <li>○ Visit <a href="http://www.aafp.org/journals">http://www.aafp.org/journals</a> for additional resources</li> <li>○ Visit <a href="http://familydoctor.org">http://familydoctor.org</a> for patient education and resources</li> </ul> </li> <li>• Provide recommendations for integrating current guidelines for evaluating all children with confirmed hypertension, and overweight children with prehypertension, for</li> </ul>		



additional risk factors for CVD, diabetes, and hyperlipidemia.

- Provide recommendations for screening children with confirmed hypertension for underlying renal disease.
- Provide recommendations for developing an evidence-based treatment plan that encourages patient adherence to the prescribed therapy.
- Provide strategies and resources for counseling parents of children with prehypertension or hypertension to make therapeutic lifestyle changes to lower blood pressure.
- Provide an overview and evidence-based recommendations regarding a comparison of current vs. new pharmacologic therapies.

### Needs Assessment

Hypertension is the most common condition for which patients make physician office visits. According to the CDC's 2011 *National Ambulatory Medical Care Survey (NAMCS)*, hypertension was the top-ranked medical diagnosis by physicians at office visits; essential hypertension was the most commonly diagnosed condition seen at an office visit.<sup>1</sup>

Hypertension (HTN) begins in childhood and adolescence, and is a major contributor to the early development of cardiovascular disease (CVD). There have been several large population-based surveys since the 1980's that have shown pediatric HTN to be on the rise in the United States.<sup>2-4</sup>

Pediatric cardiovascular disease (CVD) is becoming an increasing public health concern with the growing rates of chronic diseases, overweight and obesity among children and adolescents in the U.S. Research indicates that childhood obesity is associated with numerous health consequences, most notably hypertension, hyperlipidemia and abnormal glucose tolerance (which appears to be leading to increased rates of Type 2 diabetes in pediatric populations).<sup>5</sup>

As primary care providers for more than 30 million children in the U.S.,<sup>1</sup> family physicians often are the first to diagnose and treat conditions that serve as early precursors to CVD. As such, they are uniquely positioned to help patients – as well as their parents or caregivers – make appropriate behavioral modifications to prevent or reduce their risk for developing a number of conditions. They can also help patients to understand how some conditions that cause CVD (e.g., Type 1 diabetes, familial hypercholesterolemia) can be controlled.

In addition, the prevalence of hypertension is significantly higher in blacks than in whites—39% compared to 29%, and uncontrolled hypertension may cause up to one-quarter of all deaths among black adults. Blacks also experience earlier onset of hypertension, their disease is more aggressive, and it is more difficult to treat and severe, especially when considering organ damage (e.g., renal failure).<sup>6,7</sup> The prevalence of hypertension in Hispanics is comparable to or lower than that of whites, but the rates have been increasing, and Hispanics who have hypertension are less likely to have their blood pressure treated and controlled than are whites or blacks.<sup>7</sup> The causes of these disparities are not completely understood, though differences in access to care, clinician management, hypertension severity and patient adherence to treatment all may play roles.<sup>6</sup> Family physicians should be aware of these disparities, as well as their own potential bias when treating minority patients, and pay close attention to any signs or symptoms of hypertension.<sup>8</sup>



Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have significant knowledge gaps with regard to managing pediatric hypertension, patient-adherence/shared decision making, and cardiovascular pharmacology.<sup>9</sup> More specifically, CME outcomes data from 2013 AAFP Assembly: *Pediatric Hypertension* sessions suggest that physicians need more continuing medical education with regard to integration of recommendations from current guidelines into practice (generally); consistent blood pressure screening practices; screening for comorbid conditions (e.g. renal disease, and end organ tissue damage); health coaching and lifestyle modifications, monitoring therapy adherence, and evidence-based prescribing practices.<sup>10</sup>

Although most physicians routinely check blood pressure as part of regular office visits, hypertension remains a challenging condition for both patients and physicians. The American Heart Association (AHA) reports that interventions targeting weight loss, physical activity and dietary modification can result in behavior change that, if sustained over time, can reduce morbidity and mortality associated with CVD.<sup>11</sup> However, because such practices take time to develop and adhere to, some patients may still require the use of medications and treatments, which family physicians can prescribe and monitor, to control risk factors (such as gender, age, family history and race/ethnicity) that cannot be controlled, or in cases in which hypertension is present with comorbidities such as hyperlipidemia and diabetes.

Most patients with hypertension have no clear etiology and are classified as having essential hypertension; however, 5 to 10 percent have secondary hypertension and may require specific imaging modalities to identify the secondary cause.<sup>12</sup> The most common cause of secondary hypertension is renal vascular hypertension, and is potentially curable if identified and treated properly.<sup>13</sup> Data from the 2012 AAFP CME Needs Assessment Survey indicates that family physicians require additional education and training in the selection and use of imaging modalities.<sup>9</sup> Additionally, some patients are diagnosed with “resistant hypertension,” in which high blood pressure persists despite patient adherence to medications, and other patients are at increased risk of cardiovascular diseases due to chronic conditions – such as diabetes – for which blood pressure control is a critical component of their care.<sup>12</sup> As a result, family physicians must be prepared to treat all different forms of hypertension in multiple types of patient encounters. According to the ACCF/AHA/PCPI Hypertension Performance Measurement Set, only 65% of patients with hypertension receive the recommended quality care outlined in current evidence-based guidelines.<sup>14</sup> This PCPI measurement set outlines the desired hypertension outcomes as a reduction in mortality, the reduction in cardiovascular and renal morbidity, the reduction of hospitalization, improved adoption of lifestyle modifications, the reduction in patient harm, and improved patient understanding of/adherence to the prescribed treatment plan. Family physicians integrate the AMA PCPI Hypertension Measures into practice to improve overall patient care for patients with hypertension. Adherence to evidence-based guidelines alone is insufficient in providing optimal patient care. In addition to being up to date on current evidence-based guidelines, family physicians also require tools and resources for evaluating hypertension.<sup>15</sup>

Physicians are often faced with conflicting guidelines. The National Heart, Lung, and Blood Institute (NHLBI) Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents (“the 4th Report”) recommends measuring BP in all



children over age 3 during every health care visit.<sup>12</sup>; while those under age 3 should have their BP checked in certain circumstances, including preterm delivery, congenital heart disease, recurrent urinary tract infections, renal/urologic disease, organ transplantation, malignancy, and systemic illnesses associated with hypertension.<sup>16-18</sup> The 4th Report is endorsed by the American Academy of Pediatrics (AAP); however, the American Academy of Family Physicians and the US Preventive Services Task Force have concluded that the evidence is insufficient to recommend for or against routine screening for hypertension in children and adolescents to reduce the risk of cardiovascular disease (CVD).<sup>19,20</sup> In fact, children and adolescents are at risk for developing renal scarring.<sup>21</sup>

Physicians may improve their care of pediatric patients with, or at risk for, hypertension by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:<sup>22,23</sup>

- Beginning at three years of age, children should have their blood pressure measured at every office visit.
- Ambulatory blood pressure monitoring can be used to rule out white coat hypertension or to monitor the effects of antihypertensive treatment.
- After prehypertension or hypertension is diagnosed in children, a thorough history and physical examination should be performed to look for underlying causes of secondary hypertension.
- All children with confirmed hypertension should be screened for underlying renal disease via blood urea nitrogen and creatinine levels, complete blood count, electrolyte levels, urinalysis, urine culture, and renal ultrasonography.
- All children with confirmed hypertension and overweight children with prehypertension should be evaluated for additional risk factors for cardiovascular disease, including screening for diabetes mellitus and hyperlipidemia.
- All children with diabetes or renal disease, prehypertension, or confirmed hypertension should be screened for target organ damage via echocardiography and retinal examination.
- All children with prehypertension or hypertension should make therapeutic lifestyle changes to lower blood pressure, including losing weight if overweight, consuming a healthy diet low in sodium, getting regular physical activity, and avoiding tobacco and alcohol use.
- Children with symptomatic hypertension, secondary hypertension, target organ damage, diabetes, or persistent hypertension despite nonpharmacologic measures should be treated with antihypertensive medications.
- A diet that emphasizes vegetables, fruits, and whole grains is recommended to lower blood pressure.
- Limiting sodium intake to 2,400 mg per day is recommended to lower blood pressure. Additional benefit occurs with a limit of 1,500 mg per day.
- To lower blood pressure, patients should engage in moderate to vigorous aerobic physical activity three or four times per week for an average of 40 minutes per session.
- To lower blood pressure, alcohol consumption should be limited to no more than two drinks per day for most men and one drink per day for women.



- Self-measured blood pressure monitoring, with or without additional support (e.g., education, counseling, telemedicine, home visits, Web-based logging), lowers blood pressure compared with usual care, although the benefits beyond 12 months are not clear.
- Patients with hypertension and obstructive sleep apnea should use continuous positive airway pressure to lower blood pressure.

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

In order for family physicians to understand what treatment options are available – and be able to refer patients to a specialist, if necessary – they must have knowledge and understanding of the various elements associated with cardiovascular conditions (not just hypertension), their comorbidities and their risks. Consistency in treatment, follow-up and adherence to guidelines offered by a family physician may be a patient's best opportunity to decrease the incidence of cardiovascular conditions and improve his or her quality of life. Providing family physicians with appropriate education and training on how to screen, diagnose, assess and treat patients with various cardiovascular diseases will help to decrease or eliminate practice gaps and lead to improved patient care.

Physicians can improve blood pressure control by using medical assistants and health education specialists in a team-based approach to patient care; however, roles, responsibilities, evaluation and communication plans should be carefully planned and established to ensure optimal effectiveness and buy-in.<sup>24-27</sup> Additionally, physicians can improve patient satisfaction with the referral process by using readily available strategies and tools such as, improving internal office communication, engaging patients in scheduling, facilitating the appointment, tracking referral results, analyzing data for improvement opportunities, and gathering patient feedback.<sup>28,29</sup>

#### Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- AHA Ambulatory Blood Pressure Monitoring in Children and Adolescents<sup>30</sup>
- Nonpharmacologic management of hypertension: what works?<sup>22</sup>
- High blood pressure in children and adolescents<sup>23</sup>
- A tool for evaluating hypertension<sup>15</sup>
- Evaluation and management of the patient with difficult-to-control or resistant hypertension<sup>12</sup>
- Radiologic evaluation of suspected renovascular hypertension<sup>13</sup>
- AAFP/U.S. Preventive Services Task Force. Screening for High Blood Pressure: Reaffirmation Recommendation Statement.<sup>31</sup>



- AMA/ACCF/AHA PCPI Hypertension Performance Measurement Set<sup>14</sup>
- AAFP/USPSTF Clinical Preventive Service Recommendations: Hypertension, Children & Adolescents<sup>19</sup>
- How to document and code for hypertensive diseases in ICD-10<sup>32</sup>
- Health coaching for patients with chronic illness<sup>33</sup>
- Engaging Patients in Collaborative Care Plans<sup>34</sup>
- Encouraging patients to change unhealthy behaviors with motivational interviewing<sup>35</sup>
- Medication adherence: we didn't ask and they didn't tell<sup>36</sup>
- Adding health education specialists to your practice<sup>27</sup>
- Simple tools to increase patient satisfaction with the referral process<sup>28</sup>
- FamilyDoctor.org. High Blood Pressure | Overview (patient resource)<sup>37</sup>

### References

1. Centers for Disease Control and Prevention. National Hospital Ambulatory Medical Care Survey: Factsheet. 2011.  
[http://www.cdc.gov/nchs/data/ahcd/NHAMCS\\_2011\\_opd\\_factsheet.pdf](http://www.cdc.gov/nchs/data/ahcd/NHAMCS_2011_opd_factsheet.pdf).
2. Dasgupta K, O'Loughlin J, Chen S, et al. Emergence of sex differences in prevalence of high systolic blood pressure: analysis of a longitudinal adolescent cohort. *Circulation*. Dec 12 2006;114(24):2663-2670.
3. Din-Dzietham R, Liu Y, Bielo MV, Shamsa F. High blood pressure trends in children and adolescents in national surveys, 1963 to 2002. *Circulation*. Sep 25 2007;116(13):1488-1496.
4. Rosner B, Cook NR, Daniels S, Falkner B. Childhood blood pressure trends and risk factors for high blood pressure: the NHANES experience 1988-2008. *Hypertension*. Aug 2013;62(2):247-254.
5. Centers for Disease Control and Prevention. Childhood Overweight and Obesity. 2012; <http://www.cdc.gov/obesity/childhood/index.html>. Accessed Apr, 2015.
6. Fiscella K, Holt K. Racial Disparity in Hypertension Control: Tallying the Death Toll. *The Annals of Family Medicine*. November 1, 2008 2008;6(6):497-502.
7. Morenoff JD, House JS, Hansen BB, Williams DR, Kaplan GA, Hunte HE. Understanding social disparities in hypertension prevalence, awareness, treatment, and control: The role of neighborhood context. *Social Science & Medicine*. 2007;65(9):1853-1866.
8. Blair IV, Steiner JF, Fairclough DL, et al. Clinicians' Implicit Ethnic/Racial Bias and Perceptions of Care Among Black and Latino Patients. *The Annals of Family Medicine*. January 1, 2013 2013;11(1):43-52.
9. AAFP. 2012 CME Needs Assessment: Clinical Topics. American Academy of Family Physicians; 2012.
10. American Academy of Family Physicians (AAFP). 2013 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2013.
11. Artinian NT, Fletcher GF, Mozaffarian D, et al. Interventions to promote physical activity and dietary lifestyle changes for cardiovascular risk factor reduction in adults: a scientific statement from the American Heart Association. *Circulation*. Jul 27 2010;122(4):406-441.



12. Viera AJ, Hinderliter AL. Evaluation and management of the patient with difficult-to-control or resistant hypertension. *American family physician*. May 15 2009;79(10):863-869.
13. Hartman RP, Kawashima A. Radiologic evaluation of suspected renovascular hypertension. *American family physician*. Aug 1 2009;80(3):273-279.
14. Association AM, Cardiology ACo, Association AH. Hypertension Performance Measurement Set. *PCPI Approved Quality Measures 2011*; <http://www.ama-assn.org/apps/listserv/x-check/qmeasure.cgi?submit=PCPI>. Accessed May, 2013.
15. Ebell MH. A tool for evaluating hypertension. *Family practice management*. Mar 2004;11(3):79-81.
16. Kit BK, Kuklina E, Carroll MD, Ostchega Y, Freedman DS, Ogden CL. Prevalence of and Trends in Dyslipidemia and Blood Pressure Among US Children and Adolescents, 1999-2012. *JAMA pediatrics*. Mar 1 2015;169(3):272-279.
17. Gauer R, Belprez M, Rerucha C. Pediatric hypertension: often missed and mismanaged. *The Journal of family practice*. Mar 2014;63(3):129-136.
18. National High Blood Pressure Education Program Working Group on High Blood Pressure in C, Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. *Pediatrics*. Aug 2004;114(2 Suppl 4th Report):555-576.
19. American Academy of Family Physicians (AAFP). Hypertension, Children and Adolescents. *Clinical Preventive Service Recommendations 2013*; <http://www.aafp.org/patient-care/clinical-recommendations/all/hypertension.html>. Accessed Apr, 2015.
20. Expert Panel on Integrated Guidelines for Cardiovascular H, Risk Reduction in C, Adolescents, National Heart L, Blood I. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics*. Dec 2011;128 Suppl 5:S213-256.
21. Shaikh N, Craig JC, Rovers MM, et al. Identification of children and adolescents at risk for renal scarring after a first urinary tract infection: a meta-analysis with individual patient data. *JAMA pediatrics*. Oct 2014;168(10):893-900.
22. Oza R, Garcellano M. Nonpharmacologic management of hypertension: what works? *American family physician*. Jun 1 2015;91(11):772-776.
23. Riley M, Bluhm B. High blood pressure in children and adolescents. *American family physician*. Apr 1 2012;85(7):693-700.
24. Margolius D, Wong J, Goldman ML, Rouse-Iniguez J, Bodenheimer T. Delegating responsibility from clinicians to nonprofessional personnel: the example of hypertension control. *Journal of the American Board of Family Medicine : JABFM*. Mar-Apr 2012;25(2):209-215.
25. Martinez M, Bigney J, Jernigan J. A feedback tool to improve physician-medical assistant communication. *Family practice management*. May-Jun 2014;21(3):5-9.
26. Naughton D, Adelman AM, Bricker P, Miller-Day M, Gabbay R. Envisioning new roles for medical assistants: strategies from patient-centered medical homes. *Family practice management*. Mar-Apr 2013;20(2):7-12.
27. Chambliss ML, Lineberry S, Evans WM, Bibeau DL. Adding health education specialists to your practice. *Family practice management*. Mar-Apr 2014;21(2):10-15.



28. Jarve RK, Dool DW. Simple tools to increase patient satisfaction with the referral process. *Family practice management*. Nov-Dec 2011;18(6):9-14.
29. American Academy of Family Physicians (AAFP). FPM Toolbox: Referral Management. 2013; <http://www.aafp.org/fpm/toolBox/viewToolType.htm?toolTypeId=26>. Accessed July, 2014.
30. Flynn JT, Daniels SR, Hayman LL, et al. Update: Ambulatory Blood Pressure Monitoring in Children and Adolescents: A Scientific Statement From the American Heart Association. *Hypertension*. May 1, 2014 2014;63(5):1116-1135.
31. American Academy of Family Physicians (AAFP). Clinical Preventive Services Recommendations. 2012; <http://www.aafp.org/online/en/home/clinical/exam.html>. Accessed May, 2013.
32. Beckman KD. How to document and code for hypertensive diseases in ICD-10. *Family practice management*. Mar-Apr 2014;21(2):5-9.
33. Bennett HD, Coleman EA, Parry C, Bodenheimer T, Chen EH. Health coaching for patients with chronic illness. *Family practice management*. Sep-Oct 2010;17(5):24-29.
34. Mauksch L, Safford B. Engaging Patients in Collaborative Care Plans. *Family practice management*. 2013;20(3):35-39.
35. Stewart EE, Fox CH. Encouraging patients to change unhealthy behaviors with motivational interviewing. *Family practice management*. May-Jun 2011;18(3):21-25.
36. Brown M, Sinsky CA. Medication adherence: we didn't ask and they didn't tell. *Family practice management*. Mar-Apr 2013;20(2):25-30.
37. FamilyDoctor.org. High Blood Pressure | Overview. 1996; <http://familydoctor.org/familydoctor/en/diseases-conditions/high-blood-pressure.html>. Accessed August, 2013.