Putting Prevention into Practice
An Evidence-Based Approach

Screening for Primary Hypertension in Children and Adolescents

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▶ **See related U.S. Preventive Services Task Force Recommendation Statement at http://www.aafp.org/afp/2015/0215/od1.html.**

This PPIP quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and the supporting documents on the USPSTF website (http://www.uspreventiveservicestaskforce.org). The practice recommendations in this activity are available at http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/blood-pressure-in-children-and-adolescents-hypertension-screening.

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CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 230.

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Case Study

L.S. is a 14-year-old black adolescent who presents for a routine school physical examination. Her mother tells you that she and her husband have hypertension, and they worry about their daughter's blood pressure. She asks you whether L.S. should be periodically checked for high blood pressure.

Case Study Questions

1. Based on the recommendations of the U.S. Preventive Services Task Force (USPSTF), which one of the following is an appropriate response?

- ❑ A. Screen L.S. for high blood pressure.
- ❑ B. Do not screen L.S. for high blood pressure.
- ❑ C. Tell L.S. and her mother that there is not enough evidence to know whether screening for high blood pressure will be of benefit.
- ❑ D. Refer L.S. to a subspecialist because of her family history of hypertension.
- ❑ E. Order blood work to determine the need for screening.

2. Which one of the following risk factors, if present, is considered the strongest for primary hypertension in children and adolescents?

- ❑ A. Family history of hypertension.
- ❑ B. Male sex.
- ❑ C. Low birth weight.
- ❑ D. Ethnicity.
- ❑ E. Elevated body mass index (BMI).

3. According to the USPSTF, which of the following statements are correct?

- ❑ A. Secondary hypertension becomes less of a concern as children age.
- ❑ B. Hypertension in childhood and adolescence is a strong predictor of hypertension in adulthood.
- ❑ C. False-positive results may occur with blood pressure measurements.
- ❑ D. Antihypertension medication has been proven to be safe for long-term use in children and adolescents.

Answers appear on the following page.

Answers

1. The correct answer is C. The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for primary hypertension in asymptomatic children and adolescents to prevent subsequent cardiovascular disease in childhood or adulthood. Clinicians should recognize that there is an increasing prevalence of hypertension in children and adolescents. However, screening with sphygmomanometry can be associated with false-positive results, in which elevated blood pressure normalizes in subsequent measurements. Further, evidence on the association between pediatric hypertension and subsequent adult hypertension is limited. The limited data on the treatment of pediatric hypertension do not include longer-term follow-up to demonstrate reductions in surrogate, subclinical, or clinical measures of cardiovascular disease.

2. The correct answer is E. Although family history of hypertension, male sex, elevated BMI, low birth weight, and ethnicity are considered risk factors for pediatric primary hypertension, elevated BMI is the strongest risk factor. The increasing prevalence of primary hypertension in children and adolescents may be linked to the increasing prevalence of elevated BMI. The prevalence of hypertension in children who are obese in the United States is estimated at 11%, which is more than twice that in the general pediatric population (1% to 5%).

3. The correct answers are A and C. Secondary hypertension (elevated blood pressure resulting from an underlying cause) is significantly more common in children younger than six years; 85% to 95% of all adolescent hypertension diagnoses are considered primary. Children and adolescents with hypertension are more likely to have hypertension as adults; however, the predictive values supporting this association are at best modest and vary widely (19% to 65%). Blood pressure screening with sphygmomanometry in the clinical setting may be reasonably sensitive for identifying children and adolescents with hypertension; however, false-positive results may occur with normalization of subsequent measurements. The National High Blood Pressure Education Program provides guidance on optimal blood pressure measurement techniques to help ensure that blood pressure values are truly elevated, rather than falsely elevated because of measurement error or anxiety and discomfort in the child ("white coat hypertension"). For this reason, various organizations recommend confirming an elevated blood pressure measurement with at least two subsequent measures before diagnosing hypertension. Short-term pharmacologic treatments for primary hypertension in children seem to be well tolerated. However, studies of the harms associated with medications are limited by quality and generalizability, and provide no information about long-term harms.

The views expressed in this work are those of the authors, and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, the Department of Defense, or the U.S. government.

SOURCES

U.S. Preventive Services Task Force. Screening for primary hypertension in children and adolescents: U.S. Preventive Services Task Force recommendation statement. *Pediatrics*. 2013;132(5):907-914.

Thompson M, Dana T, Bougatos C, Blazina I, Norris SL. Screening for hypertension in children and adolescents to prevent cardiovascular disease. *Pediatrics*. 2013;131(3):490-525. ■