

# **Online Supplementary Material**

US Preventive Services Task Force. Screening for phenylketonuria (PKU): US Preventive Services Task Force reaffirmation recommendation statement. *Ann Fam Med.* 2008;6(2):166.

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# Screening for Phenylketonuria (PKU): US Preventive Services Task Force Reaffirmation Recommendation Statement

US Preventive Services Task Force

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The US Preventive Services Task Force (USPSTF) makes recommendations about preventive care services for patients without recognized signs or symptoms of the target condition.

Recommendations are based on a systematic review of the evidence of the benefits and harms and an assessment of the net benefit of the service.

The USPSTF recognizes that clinical or policy decisions involve more considerations than this body of evidence alone. Clinicians and policy-makers should understand the evidence but individualize decision-making to the specific patient or situation.

# SUMMARY OF RECOMMENDATION & EVIDENCE

The United States Preventive Services Task Force (USPSTF) recommends screening for phenylketonuria (PKU) in newborns. (This is a grade "A" recommendation).

# RATIONALE

### Importance

PKU is an inborn error of phenylalanine metabolism that occurs in from 1 per 13,500 to 1 per 19,000 newborns in the United States. In the absence of treatment during infancy, most persons with this disorder will develop severe mental retardation.<sup>1,2</sup>

### Detection

Two approaches, fluorometry and tandem mass spectrometry, are in common use. The sensitivity and specificity of fluorometry are 100% and 51%, respectively, and of tandem mass spectrometry,100% and 98%, respectively.<sup>3</sup>

### Benefits of Detection and Early Intervention

There is good evidence that detection by neonatal screening and early treatment of PKU substantially improve neurodevelopmental outcomes for affected persons.

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# Harms of Detection and Early Treatment

False-positive tests could generate considerable parental anxiety.

## **USPSTF** Assessment

The USPSTF concludes that there is high certainty that the net benefit is substantial for screening for PKU in newborns.

# **CLINICAL CONSIDERATIONS**

### **Patient Population**

This recommendation applies to newborns.

### Screening Tests

Screening for PKU is mandated in all 50 states, though methods of screening vary. There are three prin.cipal methods used for PKU screening in the United States: the Guthrie Bacterial Inhibition Assay (BIA), automated fluorometric assay, and tandem mass spectrometry. Screening tests are most accurate if performed after 24 hours of life but before the infant is 7 days old.

## Treatment

It is essential that phenylalanine restrictions be instituted shortly after birth to prevent the neurodevelopmental effects of PKU.

## Timing of Screening

Infants who are tested within the first 24 hours after birth should receive a repeat screening test by 2 weeks of age. Premature infants and those with illnesses should be tested at or near 7 days of age, but in all cases before newborn nursery discharge.

# DISCUSSION

In 1996 the USPSTF reviewed the evidence for screening for PKU in newborns and found that the benefits substantially outweighed the harms of screening. The benefits of screening for PKU continue to be well established. This update focused on a search for new and substantial evidence on the benefits and harms of screening.<sup>4</sup> The USPSTF found no new substantial evidence on the benefits and harms of screening for PKU and therefore, reaffirms that clinicians should screen for PKU in newborns. The 1996 recommendation statement, the 1996 evidence report, and the summary of the updated literature search can be found at http://www.preventiveservices.ahrq.gov.

# **RECOMMENDATIONS OF OTHERS**

According to the American Academy of Pediatrics, PKU screening should occur in newborns older than 24 hours and younger than 7 days. Infants screened before 24 hours of life should be re-screened by 2 weeks of age to detect possible missed cases. All infants should be screened at the time of nursery discharge or transfer regardless of age. Sick infants and premature infants should be screened by 7 days of age, regardless of feeding history or antibiotic treatment.<sup>5</sup> The American Academy of Family Physicians strongly recommends that physicians screen neonates for phenylketonuria.<sup>6</sup> The American College of Medical Genetics recommends that PKU screening be mandated as part of state newborn screening programs.<sup>7</sup>

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