Newborn Screening ACT Sheet
[Increased Phenylalanine]
Phenylketonuria (PKU)

**Differential Diagnosis:** Phenylketonuria (Classical PKU); non-PKU mild hyperphenylalaninemia; pterin defects; transient hyperphenylalaninemia.

**Condition Description:** In PKU the phenylalanine from ingested protein cannot be metabolized to tyrosine because of deficient liver phenylalanine hydroxylase (PAH). This causes elevated phenylalanine. Pterin defects result from deficiency of tetrahydrobiopterin (BH4), the cofactor for PAH and other hydroxylases. This produces not only increased phenylalanine but also neurotransmitter deficiencies.

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**YOU SHOULD TAKE THE FOLLOWING ACTIONS IMMEDIATELY:**

- Contact family immediately to inform them of the newborn screening result.
- Consult with pediatric metabolic specialist.
- Evaluate the newborn and refer as appropriate.
- Initiate confirmatory/diagnostic tests in consultation with metabolic specialist.
- Provide the family with basic information about PKU and dietary management.
- Report findings to newborn screening program.

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**Diagnostic Evaluation:** Plasma amino acid analysis which shows increased phenylalanine without increased tyrosine (increased phenylalanine:tyrosine ratio). Urine pterin analysis and red blood cell DHPR assay will identify pterin defects. Consider PAH mutation testing.

**Clinical Considerations:** Asymptomatic in the neonate. If untreated PKU will cause irreversible mental retardation, hyperactivity, autistic-like features, and seizures. Treatment will usually prevent these symptoms. Pterin defects cause early severe neurologic disease (developmental delay/seizures) and require specific therapy.

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**Additional Information:**
- [Gene Reviews](#)
- [Genetics Home Reference](#)
- [PKU](#)
- [Tetrahydrobiopterin Deficiency](#)

**Referral (local, state, regional and national):**
- [Testing](#)
- [Clinical Services](#)
- [Find Genetic Services](#)
LOCAL RESOURCES: Insert State newborn screening program web site links

State Resource site (insert state newborn screening program website information)

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Local Resource Site (insert local and regional newborn screening website information)

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APPENDIX: Resources with Full URL Addresses

Additional Information:
Gene Reviews

Genetics Home Reference
PKU

Tetrahydrobiopterin Deficiency
http://ghr.nlm.nih.gov/condition=tetrahydrobiopterindeficiency

Referral (local, state, regional and national):
Testing

Clinical Services

Find Genetic Services
http://www.acmg.net/GIS/Disclaimer.aspx