ACMG
American College of Medical Genetics and Genomics
Translating Genes Into Health®

ACT Sheet

Newborn Screening ACT Sheet

[Absent/ Reduced Biotinidase Activity]

Biotinidase Deficiency

Differential Diagnosis: Biotinidase deficiency (profound or partial).

Condition Description: Biotinidase deficiency is caused by decreased levels of the enzyme biotinidase, which is responsible for recycling the vitamin biotin. This deficiency leads to decreased biotin levels and disrupts the activity of several biotin-requiring enzymes (carboxylases). Presentation in the neonatal period is rare.

You Should Take the Following Actions:

- Inform family of the newborn screening result.
- Ascertain clinical status (typically asymptomatic; rarely poor feeding, lethargy, hypotonia).
- Consult with pediatric metabolic specialist.
- Evaluate the newborn (poor feeding, lethargy, hypotonia).
- Initiate confirmatory/diagnostic testing and management, as recommended by the specialist.
- Provide family with basic information about biotinidase deficiency and its management.

- Report final diagnostic outcome to newborn screening program.

Diagnostic Evaluation: Serum biotinidase activity: Biotinidase activity is markedly reduced or absent in profound biotinindase deficiency, and partially reduced in partial biotinidase deficiency. Urine organic acids: may demonstrate increased 3-hydroxyisovaleric acid and 3-methylcrotonylglycine with profound deficiency. Molecular genetic testing may be required to confirm the diagnosis.

Clinical Considerations: The neonate is usually asymptomatic but episodic hypoglycemia, lethargy, hypotonia, can occur at any time from the neonatal period through childhood. Untreated profound biotinidase deficiency leads to developmental delay, seizures, alopecia, and hearing deficits. Patients with partial biotinidase deficiency are typically asymptomatic. Biotin treatment is highly effective.

Additional Information:

How to Communicate Newborn Screening Results
Gene Reviews
Medline Plus
Condition Information for Families- HRSA Newborn Screening Clearinghouse
ClinGen Actionability Report

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

Find a Genetics Clinic Directory
Genetic Testing Registry

Local Resources *(Insert Local Website Links)*

State Resource Site (Insert Website Information)

Name	
URL	
Comments	

Local Resource Site (Insert Website Information)

Name	
URL	
Comments	

Appendix *(Resources with Full URL Addresses)*

Additional Information

How to Communicate Newborn Screening Results
- https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/heritable-disorders/Resources/achdnc-communication-guide-newborn.pdf

Gene Reviews
- https://www.ncbi.nlm.nih.gov/books/NBK1322/

Medline Plus
- https://medlineplus.gov/genetics/condition/biotinidase-deficiency/

Condition Information for Families-HRSA Newborn Screening Clearinghouse
- https://newbornscreening.hrsa.gov/conditions/biotinidase-deficiency

ClinGen Actionability Report
- https://actionability.clinicalgenome.org/ac/Adult/ui/stg2SummaryRpt?doc=AC098

Referral (local, state, regional and national)

Find a Genetics Clinic Directory
- https://clinics.acmg.net

Genetic Testing Registry
- https://www.ncbi.nlm.nih.gov/gtr/