



Newborn Screening ACT Sheet

Absent/Reduced Biotinidase Activity Biotinidase Deficiency

Differential Diagnosis: Biotinidase deficiency; see C5-OH for non-biotinidase associated conditions.

Metabolic Description: Biotinidase deficiency results from defective activity of the biotinidase enzyme. When identified (possibly) through elevated C5-OH, 3-hydroxyisovaleric acid and 3-methylcrotonylglycine are elevated, and holocarboxylase synthase deficiency must be considered.

You Should Take the Following Immediate Actions

- **Contact family to inform them of the newborn screening result and ascertain clinical status (poor feeding, lethargy, hypotonia).**
- **See and evaluate infant.**
- **Consultation/referral to a metabolic specialist to determine appropriate follow-up. (See attached list.)**
- **If infant cannot be seen immediately by a metabolic specialist, undertake confirmatory testing in consultation with a metabolic specialist.**
- **Initial testing: enzyme assay for biotinidase.**
- **Repeat newborn screen if second screen has not been done.**
- **Begin Biotin treatment if symptomatic.**
- **Report findings to newborn screening program.**

Confirmation of Diagnosis: Enzyme assay for biotinidase reveals low activity. Plasma acylcarnitine analysis may show normal or increased 3-hydroxyisovaleric acid and 3-methylcrotonylglycine. C5-OH acylcarnitine may be high, but lack of an abnormal acylcarnitine profile does not rule out biotinidase deficiency.

Clinical Expectations: The neonate is usually asymptomatic, but episodic hypoglycemia, lethargy, hypotonia, and mild developmental delay can occur at any time from the neonatal period through childhood. Untreated biotinidase deficiency leads to developmental delay, seizures, alopecia, and hearing deficits.

Biotinidase may normalize on the second screen on affected babies, therefore an infant with an out of range first newborn screen and normal second newborn screen will still need an enzyme assay. Biotin treatment is available and highly effective.

Reporting: Report diagnostic result to family and NBS program.

Additional Information:

Gene Tests

<http://www.genetests.org/servlet/access?db=geneclinics&site=gt&id=8888891&key=EJ4Gy2VAan2GT&gry=&fcn=y&fw=xn8V&filaname=/profiles/biotin/index.html>

OMIM

<http://www.ncbi.nlm.nih.gov/entrez/dispomim.cgi?id=253260>

Genetics Home Reference

<http://ghr.nlm.nih.gov/condition=biotinidasedeficiency>



Newborn Screening FACT Sheet

Biotinidase Deficiency (BIOT)

What is BIOT?

BIOT is an inherited disorder. BIOT happens when the body can't use a vitamin called biotin. People with BIOT do not have enough Biotinidase activity. This condition is treatable.

What Causes BIOT?

Low biotinidase activity keeps carboxylases from using biotin. The body collects harmful matter when carboxylases can't break down nutrients in the right way. Children with BIOT need extra biotin, or health problems usually result.

What Symptoms or Problems Occur with BIOT?

[Symptoms are something out of the ordinary that a parent notices.]

Early symptoms of untreated BIOT are:

- seizures
- poor muscle tone
- vision problems
- poor coordination
- delay in development
- hearing loss
- skin abnormalities such as:
 - hair loss
 - rash
 - infection

Problems that can occur with age are:

- motor limb weakness
- loss of body control and/or feeling
- poor vision

What is the Treatment for BIOT?

Medication – Newborns with BIOT rarely have symptoms if they are treated right away. Children with symptoms improve when they take biotin every day. People with severe BIOT should take biotin all of their lives.

Diet – Avoid raw eggs. Well-cooked eggs are safe to eat.

Things to Remember

Some infants with BIOT don't have symptoms. They often don't have problems if they get early treatment. They just need to take biotin every day. They also need to get regular medical checkups.

Children usually get better right away when treated soon after they show symptoms. Some children might continue to have problems. These include hearing loss, trouble seeing, or developmental problems.

Your doctor can explain more about your child's biotin treatment.