Disease Name	**Biotinidase Deficiency**
Alternate name(s)	MULTIPLE CARBOXYLASE DEFICIENCY, LATE-ONSET MULTIPLE CARBOXYLASE DEFICIENCY & JUVENILE-ONSET BTD DEFICIENCY
Acronym	BIOT
Disease Classification	Metabolic Disorder
Symptom onset	Prior to 12 months of age
Symptoms	In the untreated state, profound biotinidase deficiency during infancy is usually characterized by neurological and cutaneous findings that include seizures, hypotonia, and rash, often accompanied by hyperventilation, laryngeal stridor, and apnea. Older children may also have alopecia, ataxia, developmental delay, neurosensory hearing loss, optic atrophy, and recurrent infections. Individuals with partial biotinidase deficiency may have hypotonia, skin rash, and hair loss, particularly during times of stress. All symptomatic children improve when treated with 5 to 10 mg of oral biotin per day.
Natural history without treatment	Prolonged symptoms prior to institution of biotin therapy may leave the patient with varying degrees of neurological sequelae, including mental delays, seizures, and coma. Death may result from untreated profound biotinidase deficiency.
Natural history with treatment	If treated promptly, biotinidase deficiency may be asymptomatic.
Treatment	Biotin supplement daily
Inheritance	Autosomal recessive
General population incidence	1:60,000 estimated with either profound or partial deficiency
OMIM Link	
Genetests Link	www.geneclinics.org
Support Group	Biotinidase Family Support Group http://biotinidasedeficiency.20m.com/ Children Living with Inherited Metabolic Diseases http://www.climb.org.uk/

Newborn Screening ACT Sheet
[Absent/ Reduced Biotinidase Activity]
Biotinidase Deficiency

Differential Diagnosis: Biotinidase deficiency (complete and partial); see C5-OH acylcarnitine for non-biotinidase associated conditions.

Condition Description: A multiple carboxylase deficiency resulting from a reduction in available biotin secondary to deficient activity of the biotinidase enzyme.

YOU SHOULD TAKE THE FOLLOWING ACTIONS:

- Contact family to inform them of the newborn screening result and ascertain clinical status.
- Evaluate infant if poor feeding, lethargy, or hypotonia are present.
- Consultation/referral to a metabolic specialist to determine appropriate follow-up.
- Undertake confirmatory testing in consultation with a metabolic specialist.
- Emergency treatment if symptomatic.
- Report findings to newborn screening program

Diagnostic Evaluation: Enzyme assay for biotinidase in serum or plasma reveals low activity. False positive findings are usually a processing/shipping problem. Urine organic acid analysis may show normal or increased 3-hydroxyisovaleric acid and 3-methylcrotonylglycine. Plasma acylcarnitine analysis may show normal or increased C5-OH acylcarnitine.

Clinical Considerations: 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. Biotin treatment is available and highly effective.

Additional Information:

Gene Reviews
OMIM
Genetics Home Reference

Referral (local, state, regional and national):

Testing
Clinical Services