

Disease Name	
2-METHYLBUTYRYL-CoA DEHYDROGENASE DEFICIENCY (2MBCD)	
<i>(SHORT/BRANCHED CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY; 2-METHYLBUTYRYLGLYCINURIA)</i>	
Classification:	Organic aciduria and fatty acid oxidation defect.
Genetic Information	
Inheritance:	Autosomal recessive.
Population Incidence:	Rare, <20 patients identified.
Ethnic Incidence:	Increased in the Hmong population with frequency about 1/500 live births.
Gene & Location:	10q25-q26; SBCAD
Common Mutation:	Common mutation in the Hmong population.
OMIM #	*600301
Disease Information	
Symptom Onset:	Infancy and childhood, but several asymptomatic individuals have been identified.
Symptoms:	Symptoms noted in one enzyme-confirmed patient included neonatal onset of hypotonia, lethargy and apnea, and hypoglycemia. At age four there was mental retardation, choreoathetoid cerebral palsy and visual deficits. Another patient presented in the second year of life with motor delay, muscular atrophy and strabismus. A sibling identified prenatally and eight Hmong patients identified prospectively by newborn screening, have remained asymptomatic on treatment. At least four asymptomatic relatives of these patients have been described with identical gene mutations and/or elevated excretion of 2-methylbutyrylglycine.
Physical Findings:	No particular dysmorphisms.
Treatment:	Protein restriction, carnitine supplement and avoid fasting.
Natural History without treatment:	Ranges from asymptomatic to acute neonatal decompensation with neurological deficits. The limited number of patients makes it difficult to accurately determine natural history of the disorder. It is not thought to be benign, in that the asymptomatic individuals may have symptoms if exposed to environmental stressors, i.e. fasting.
Natural History with treatment:	Treatment in a symptomatic patient resolved episodic hypoglycemia but not the neurological dysfunction. Others treated from birth are asymptomatic, but the efficacy of treatment remains to be established.
Metabolic Information	
Missing Enzyme & Location:	2-METHYLBUTYRYL-CoA DEHYDROGENASE-second step in isoleucine metabolism- enzyme irreversibly dehydrogenates 2-methylbutyryl-CoA to tiglyl CoA.
MS/MS profile:	C5 (isovaleryl or 2-methylbutyryl carnitine)- elevated.
Prenatal testing:	Possible via enzyme analysis of amniocytes or CVS cultures.
Miscellaneous Information:	Needs to be differentiated from IVA- will not have isovaleryl glycine on urine organic analysis, and will have elevated 2-methylbutyryl glycine on urine organic acids.
Credit:	<i>Prepared by the North West Regional Newborn Screening Program Judith Tuerck, RN, MS, and Lorinda Paradise at Oregon Health Services University in Portland, Oregon and by Sara Copeland MD, Iowa Neonatal Metabolic</i>

	<i>Screening Program.</i>	
Sites of Reference:	<u>OMIM - 2-Methylbutyryl-CoA Dehydrogenase Deficiency</u>	
Support Groups:	<u>Organic Acidemia Association</u> www.oaaneews.org/ 13210 35th Avenue Plymouth, MN 55441 Contact: Kathy Stagni (763) 559-1797 OAANews@aol.com	