Maryland
DEPARTMENT OF HEALTH

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Laboratories Administration
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MEMORANDUM

Date: July 1, 2025

To: All providers of Newborn Screening specimens

From: M. Christine Dorley Ph.D. MCD
Chief Newborn Screening Division, Laboratories Administration

Through: Robert A. Myers, Ph.D. R.A.M.
Director, Laboratories Administration

Subject: Newborn Screening for Infantile Krabbe Disease (IKD)

We are pleased to announce that on July 1, 2025, the Maryland Department of Health (MDH) Newborn Screening (NBS) Laboratory will begin screening all babies born in Maryland for IKD as part of the routine NBS panel. Though there is a late onset form of Krabbe Disease, our screen targets the detection of the infantile form. We will be screening for IKD using liquid chromatography tandem mass spectrometry (LC-MS/MS). We will migrate our screening for MPS I, MPS II, Fabry Disease and Pompe Disease onto the LC-MS/MS to consolidate lysosomal disorder testing onto a single platform.

Enzyme results will be normalized to the sample median derived from the samples analyzed each day. Results will be reported as a percentage of the daily median (%DM). Here are the preliminary enzyme cutoffs which will be evaluated periodically and changed as necessary.

Disorder	Enzyme	Abnormal Cutoff	Normal Cutoff
Krabbe	GALC	≤10% DM	>10% DM
MPS I	IDUA	≤9% DM	>9% DM
MPS II	I2S	≤15% DM	>15% DM
Fabry Disease	GLA	≤13% DM	>13% DM
Pompe Disease	GAA	≤15% DM	>15% DM

For questions or inquiries regarding IKD screening, please contact the MDH NBS Laboratory at 443-681-3900 or by email at mdphl.nbs@maryland.gov . For inquiries about the interpretation of results please contact the MDH NBS Follow-up Unit at 443-681-3916 or by email at: mdh.newbornscreeningfollowup@maryland.gov . Attached is a brief description of the disorder.

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Krabbe Disease

What is Krabbe Disease? Krabbe disease is caused by pathogenic variants in the galactosylceramidase (GALC) gene. The GALC gene encodes an enzyme called galactosylceramidase (GALC) that breaks down galactosylceramide into galactose and ceramide. The GALC enzyme also breaks down psychosine so GALC enzyme deficiency results in psychosine accumulation and subsequent death of the cells that maintain myelin in the central and peripheral nervous systems.

What are the signs and symptoms of Infantile Krabbe disease (IKD)? The severity of Krabbe disease differs based on the age of onset and the signs and symptoms. Babies born with IKD, the most severe form, develop normally for the first few months then exhibit symptoms like extreme irritability, feeding difficulties, unusual muscle stiffness, and failure to thrive between two and 12 months of age.

How does IKD progress? Affected babies rapidly lose milestones as the disease progresses. Untreated children with IKD rarely survive beyond two years of age and treatment is effective only if it is provided before the onset of symptoms. Since neurological damage occurs rapidly in IKD and treatment is needed within 30 days of life, IKD is a time-critical disease.

What is the epidemiology of IKD? An estimated 1:100,000 newborns have Krabbe disease with 85-90% of these patients diagnosed with the infantile form.

Can IKD be treated? Yes. Hematopoietic stem cell transplantation is the gold standard for treatment of IKD and is most effective when administered before day 30 of life.

What is the testing strategy at MDH NBS Laboratory for IKD? MDH NBS Laboratory will screen dried blood spot specimens for GALC enzyme activity. Specimens exhibiting enzyme activity below the laboratory's established cutoff will be sent to a reference laboratory for psychosine testing. Rapid follow-up for diagnosis of IKD is required for infants with psychosine >/= 10 ng/mL to allow for treatment before the onset of symptoms. It is crucial that specimens be of good quality and sufficient quantity to effectively meet turnaround times for treatment of an affected infant.

Where can more information be found about IKD? See the following links:

1. Association of Public Health Laboratories (2025, May). Krabbe Disease: Newborn Screening Implementation resources and toolkit. https://www.newsteps.org/sites/default/files/resources/download/NBS-NewSTEPs-Krabbe-Toolkit_4.pdf
2. National Organization of Rare Disease (NORD) (2024 March 13). Krabbe disease. https://rarediseases.org/rare-diseases/leukodystrophy-krabbes/National Institutes of Health: https://rarediseases.info.nih.gov/diseases/2578/guanidinoacetate-methyltransferase-deficiency
3. Health Resources and Services Administration (HRSA) (2024 February 1). Newborn Screening for Infantile Krabbe Disease A Summary of the Evidence and Advisory Committee Decision Expedited Review. https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/heritable-disorders/rusp/infantile-krabbe-disease-brief-report.pdf