Newborn Screening ACT Sheet

Mucopolysaccharidosis Type 2/ MPS II (Hunter Syndrome)

Condition Description: Mucopolysaccharidosis Type II (MPS II, also known as Hunter syndrome) and multiple sulfatase deficiency (MSD) are lysosomal diseases. MPS II is caused by an isolated deficiency of iduronate 2-sulfatase (I2S), an enzyme required to break down mucopolysaccharides known as glycosaminoglycans (GAGs), which accumulate in muscle and tissues. Infants with MPS II are asymptomatic, and males are predominantly affected. Symptoms can include umbilical and/or inguinal hernia, macrocephaly, macroglossia, hepatosplenomegaly, coarse facial features, cardiac abnormalities, respiratory abnormalities, and stiff joints.

Please Take the Following Immediate Actions:

- ☐ **Consult with pediatric metabolic specialist.** (See attached list).
- ☐ **Contact family to inform them of the newborn screening result.** We provide a resource for this conversation: **Next steps after a positive Newborn Screening for MPS II** (see attached)
- ☐ **Obtain initial labs: Leukocyte I2S and arylsulfatase A (ARSA) enzyme activity and measurement of urine GAGs and sulfatides (does not need to be sterile collection, clean catch sample is okay).**
- ☐ **Collect repeat screen** (between 7-14 days of life) if the second screen has not been done.
- ☐ **Fax** lab results to {SGUserFax}

Diagnostic Evaluation: Lab evaluation examines leukocyte I2S and arylsulfatase A (ARSA) enzyme activity and measurement of urine GAGs and sulfatides: Decreased I2S activity and normal ARSA activity are suggestive of MPS II, but these results do not exclude I2S pseudodeficiency, which causes decreased enzyme activity without disease. Reduced I2S activity in isolation with elevated GAGs is consistent with MPS II. Reduced I2S and ARSA activities with elevated urine GAGs and sulfatides are consistent with MSD, as mentioned under Differential Diagnosis. Molecular genetic testing can confirm and differentiate these diagnoses.

Clinical Considerations: Although asymptomatic at birth, children with MPS II typically demonstrate progressive signs and symptoms beginning in the first year of life. These can include short stature, coarse facial features, decreased joint mobility, macroglossia, inguinal hernias, hepatosplenomegaly, frequent upper respiratory tract infections; intellectual disability may present in childhood. Disease severity and progression are variable. Therapy could include Enzyme Replacement Therapy and symptomatic support.

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
MedlinePlus
https://medlineplus.gov/genetics/condition/mucopolysaccharidosis-type-ii/
American College of Medical Genetics and Genomics Knowledge Nuggets
https://nccrcg.org/knowledge-nugget-series/
National Organization for Rare Diseases www.rarediseases.org/rare-diseases/mucopolysaccharidoses