Methionine Screening - Homocystinuria

Differential Diagnosis: Classical Homocystinuria (cystathionine beta synthase (CBS) deficiency; Hypermethioninemia; GNMT deficiency; Adenosylhomocysteine hydrolase deficiency; Liver disease; Hyperalimentation

Oklahoma State Department of Health Newborn Screening Program

Methionine Screen NICU on TPN
Out-of-Range (abnormal)

NO → Not consistent with disorder of methionine metabolism
No further action needed.

YES

Primary Analyte

Methionine ≥ 100μmol/L & < 160μmol/L

[1] For reference ranges and list of other analytes that will be reported, see Table 1.

Assess infant's clinical status.
Repeat Filter Paper after TPN discontinued Or as scheduled time to recollect per NICU policy

In-Range

Not consistent with.
No further follow-up indicated.

Out-of-Range

Primary Analyte

Methionine ≥ 160μmol/L

1. Assess infant's clinical status-Repeat filter paper after TPN is discontinued or as scheduled time to recollect per NICU policy.(10-14days)
2. If repeat is elevated –Consult/Refer for evaluation and diagnostic work-up by the metabolic specialist. Evaluation by the metabolic specialist must occur within 2 weeks of notification of two out of range results.

Appointment with metabolic specialist for diagnostic testing (testing must be coordinated by the specialist or newborn screening program):

1. Plasma amino acids
2. Total homocysteine
3. Urine Organic Acids
4. Other lab and/or DNA may be indicated

Diagnostic Testing Inconclusive: Monitoring and medical management as advised by metabolic specialist.

Diagnostic Testing Consistent with: Refer to metabolic specialist for medical management.

Diagnostic Testing Within Normal Limits: Not consistent with disorder of methionine metabolism. No further follow-up indicated.

Table 1. In-range Methionine Screen Results[1]:

Primary Analyte:
Methionine < 100 μmol/L

Secondary Analyte[2]:
Methionine/Phenylalanine ratio <1.2

[1]These values are utilized for newborns less than 60 days old.
[2] Elevations of the secondary analytes are reported as "not consistent with a disorder of Methionine metabolism" if methionine is in-range.

From the time the screen is reported to the provider, the Metabolic Nurse Specialist will monitor follow-up by:

1. Confirming the provider contacts family by COB.
2. Facilitating and confirming a clinical evaluation by a provider or metabolic specialist is achieved before COB.
3. Facilitating and confirming infant presents for a diagnostic workup with a metabolic specialist within 24 hours.
4. Coordinating collection and processing of diagnostic tests and communicating test results to provider and short-term follow-up program (STFU).
5. Communicating with STFU if the above timelines are not met.

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Meth- 1.5.7