# Infant With Suspected Hypoglycemia

| Suggestive history and physical findings | Initial laboratory and/or radiologic work-up can include: | When to refer | Items useful for consultation | Additional information |
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| **Symptoms/signs:**<br>Jitteriness, tremor, cyanosis, seizures, apnea, tachypnea, weak or high pitched cry, limp, lethargy, poor feeding, sweating, hypothermia, pallor, cardiac arrest or failure<br>Risk factors:<br>• IUGR/SGA (<10%ile)<br>• LGA (>90%ile)<br>• Infant of diabetic mother<br>• Prematurity<br>• Maternal labetalol<br>• Late preterm exposure to antenatal steroids<br>• Asphyxia, fetal distress<br>• Maternal hypertension<br>• Family history of genetic hypoglycemia<br>• Congenital syndrome (e.g. Beckwith Wiedmann)<br>• Midline anomalies suggestive of hypopituitarism<br><br>Differential Diagnosis | **Blood tests:**<br>Point of care testing is appropriate screening but hypoglycemia should be confirmed by plasma sample in the lab.<br><br>Concerning for hypoglycemia:<br>• In first 48-72 hours of age – glucose <50 mg/dl (<2.8 mmol/L).<br>• After 48-72 hours of age - glucose <60 mg/dl (<3.3 mmol/L)<br><br>*Persistent hypoglycemia beyond 48-72 hours of age requires investigation. | **Urgent**<br>• Persistent hypoglycemia beyond 72 hours of age.<br><br>Find a Pediatric Endocrinologist | Pertinent medical records (birth and maternal history)<br><br>Recent laboratory studies | Additional Information<br><br>References |

## Differential diagnosis of neonatal hypoglycemia:

- Sepsis
- Transient (transitional) neonatal hypoglycemia
- Infant of diabetic mother
- Decreased glycogen stores (e.g. IUGR)
- Perinatal stress hyperinsulinism
- Genetic hyperinsulinism
- Hypopituitarism i.e. adrenal insufficiency, growth hormone deficiency
- Fatty Acid Oxidation defects
- Gluconeogenesis defect
- Glycogen storage disease

## Additional Information:

- In the first 48-72 hours of age (transitional period) glucose levels drop to their lowest. Although controversial, glucose <50 mg/dl (<2.8 mmol/L) can be considered as hypoglycemia.
- After 48-72 hours of age, glucose <3.3 mmol/L (60 mg/dL) is hypoglycemia.
- A "critical sample" at the time of hypoglycemia (best collected at <50 mg/dl (2.8 mmol/L) is invaluable in diagnosing the cause of hypoglycemia, and should include: plasma glucose, beta-hydoxybutyrate (ketones), insulin, c-peptide, growth hormone, cortisol, free fatty acids, lactate and bicarbonate. Can also consider checking carnitine, acyl-carnitine profile and serum ammonia after consultation with a Pediatric Endocrinologist.
- Further work up for persistent hypoglycemia should be in collaboration with endocrinology or metabolics specialist.
- Persistent hypoglycemia can have significant short and long term sequelae if not treated.
- Initial treatment to maintain euglycemia, until further diagnosis is available, is very important and includes providing adequate sources of glucose enterally or intravenously (the needed glucose infusion rate (GIR) in mg/kg/min should be calculated)

## Suggested References and Additional Reading:

Stanley CA, Rozance PJ, Thornton PS, De Leon DD, Harris D, Haymond MW, et al. Re-evaluating “transitional neonatal hypoglycemia”: mechanism and implications for management. J Pediatr 2015;166:1520-5.

Thornton PS, Stanley CA, De Leon DD, Harris D, Haymond MW, et al. Recommendations from the Pediatric Endocrine Society for Evaluation and Management of Persistent Hypoglycemia in Neonates, Infants,
and Children. J Pediatr 2015;167:238-45.

Narvey MR, Marks SD. The screening and management of newborns at risk for low blood glucose. Paediatr Child Health 2019;24:536-44.

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