Glucose Target Values

- Infants 0 and < 4 hours of age, blood glucose levels should be ≥ 40mg/dL
- Infants ≥ 4 and < 24 hours of age, blood glucose levels should be ≥ 45 mg/dL
- Infants ≥ 24 hours of age, blood glucose levels should be ≥ 50 mg/dL

Screening

Data suggests asymptomatic infants with persistent or recurrent hypoglycemia are at risk for delayed neurodevelopment. Screening high-risk infants combined with appropriate management to meet operational glucose levels is essential in the newborn period.

**All High Risk Infants will be screened by 90 minutes of birth:**
- Infants born to insulin dependent diabetic mothers or mothers with gestational diabetes
- Infants < 2.5 kg
- Infants > 4 kg
- LGA infants (>90% ile as plotted on Fenton curve)
- SGA infants (< 10% ile as plotted on Fenton curve)
- Gestational age < 37 weeks
- Discordant twin (weight 10% below larger twin)
- Newborns suspected of sepsis or born to mother suspected of having chorioamnionitis
- Newborns exposed to any beta-blocker medications

**Newborns with symptoms suggestive of hypoglycemia as follows:**
- Jitteriness, tachypnea, hypotonia, poor feeding, apnea, temperature instability, lethargy,
- Seizures: Neonatal seizures are often subclinical. Infants with seizures may only appear intermittently lethargic and not feed well. Clinical seizures in newborns are typically characterized by rhythmic jerking of an extremity that may also be associated with eye deviation and oxygen desaturation. Neonatal seizures do not typically appear as a tonic-clonic seizure.

Other indications for screening include the following:
- Infants with significant perinatal distress or with five minute APGAR scores < 5
- Infants with mothers on terbutaline or beta-blockers
- Infants with suspected inborn errors of metabolism
- Infants with hepatomegaly, microcephaly, anterior midline defects, gigantism, macroGLOSSIA
- Infants with hemihypertrophy or microphallus

See Algorithm for monitoring and management options

Abnormal glucose values need to be followed by rechecking blood glucose levels after interventions. Remember to follow blood glucose levels anytime there is a change in intervention (i.e. following gel treatment or transitioning from IV glucose and/or supplemental feedings). Infants with a respiratory rate > 60/minute may need nasogastric gavage feedings. Infants that are not responding to your intervention, or those that present with hypoglycemia AFTER 12 hours of age, strongly consider other causes (sepsis, inborn errors of metabolism, or endocrine problems). Consider Neonatology consult to assist with diagnoses.

References

AAP Clinical Report- Postnatal Glucose Hemeostasis in Late-Preterm and Term Infants, Pediatrics, 127 (3), March 2011

Algorithms are not intended to replace providers’ clinical judgment or to create a single protocol. Some clinical problems may not be adequately addressed in this guideline. As always, clinicians are urged to document management strategies. Revised March, 2018 by the Newborn Nursery Committee, Family Birth Center, Maine Medical Center. For questions regarding this guideline, contact the Medical Director of the Newborn Nursery.
### Newborn Nursery ≥ 36 weeks Hypoglycemia Algorithm

#### Symptomatic Infant

**Any Age in Hours**

1. Promote early skin-to-skin contact with mother
2. Initiate breast feeding/colostomy feeds within 30-60 min of age **
3. **Initial glucose check 30 min after 1st feed and no later than 90 mins of age**
   - **If Initial Glucose Screen by 60 mins of Age is:**
     - < 25 mg/dl
       - Give Glucose Gel ***, then feed infant***
     - 25-30 mg/dl
   - 25-30 mg/dl
   - ≥ 40 mg/dl

**IV Glucose Info:**
- D10W- 1 ml/kg over 1-2 min then
- Maintenance IV D10W (80 ml/kg/day)
- Repeat blood glucose 36 minutes after IV glucose initiated

**Length of Glucose Screening is Risk Dependent**
- < 37 wks GA, term SGA infants, and infants < 2.5 kg should have glucose levels monitored at least 24 hrs
- All other infants should have glucose levels monitored at least 12 hrs

#### Birth to 4 hours of Age

1. Continue breast milk feeding/colostomy feeds q2-3hrs or feed at parental choice (3-10 ml/kg) **
2. Target glucose levels should be ≥ 45 mg/dl - Consult NICU if unable to maintain or for recurrent hypoglycemia

**Check glucose every 3 hours, if results:**
- < 35 mg/dl
  1. Send lab glucose & Give Glucose Gel ***
  2. Call Neonatology (662-0069); alert PCP
  3. Repeat glucose 30 min
  4. Initiate IV GLUCOSE if < 35 mg/dl
- 35-44 mg/dl
- ≥ 45 mg/dl
  1. Feed Infant ** q2-3 hours
  2. Check glucose q6hrs

#### Asymptomatic Infant

**4-24 hours of Age**

1. 1. Continue breast milk feeding/colostomy feeds q2-3hrs or feed per parental choice (3-10 ml/kg) **
2. Target glucose levels should be ≥ 45 mg/dl - Consult NICU if unable to maintain or for recurrent hypoglycemia

**Check glucose every 3 hours, if results:**
- < 35 mg/dl
  1. Send lab glucose & Give Glucose Gel ***
  2. Call Neonatology (662-0069); alert PCP
  3. Repeat glucose 30 min
  4. Initiate IV GLUCOSE if < 35 mg/dl
- 35-44 mg/dl
- ≥ 45 mg/dl
  1. Feed Infant ** q2-3 hours
  2. Check glucose q6hrs

#### Infants that present with hypoglycemia AFTER 12 hours of age

- Strongly consider other causes (sepsis, inborn errors of metabolism, or endocrine problems).

**MAX GLUCOSE GEL = 2 DOSES TOTAL**

**FEED INFANT = Breastmilk, Colostrum, Donor Milk, OR Formula based on maternal choice**

**ATTENTION: Do not wait for lab glucose result to provide recommended intervention in an asymptomatic infant**

### Dosing Guidelines for Glucose Gel

<table>
<thead>
<tr>
<th>Weight</th>
<th>Glucose Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 kg</td>
<td>1 ml</td>
</tr>
<tr>
<td>2.5 kg</td>
<td>1.25 ml</td>
</tr>
<tr>
<td>3 kg</td>
<td>1.5 ml</td>
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<tr>
<td>3.5 kg</td>
<td>1.75 ml</td>
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<tr>
<td>4 kg</td>
<td>2 ml</td>
</tr>
<tr>
<td>4.5 kg</td>
<td>2.25 ml</td>
</tr>
<tr>
<td>5 kg</td>
<td>2.5 ml</td>
</tr>
</tbody>
</table>
Newborn Hypoglycemia
IV Glucose Weaning Algorithm

Criteria for stability
AC glucose > 50 mg/dL without IV glucose bolus
Without increase in IV glucose infusion
Maintaining thermoregulation, RR<60

Bottle feeding minimum of 10 mls / kg q 3 hrs
and/or breastfeeding with lactation consulting

- Wean IV rate by 25% of original rate q 3-6 hrs
- Maintain and assess feeding q 3 hrs
- Assess criteria for stability and notify physician if not maintaining **

Blood Glucose q 3 hrs ac while weaning
Notify Physician if any blood glucose <50**

**Consider Neonatology Consult at any point for difficult to wean babies

Newborn Hypoglycemia
Feeding Algorithm

Supplemental Feeds

Yes

Wean

No

Supplement

Yes

No

Blood Glucose q 3 hrs ac while weaning
Notify Physician if any blood glucose < 45 on day 1 or < 50 on day 2 or beyond

Home feeding plan established

Yes

No

Blood Glucose q 3 hrs ac x 2 over 6 hrs
On home feeding regimen

Notify physician for further treatment and testing

Glucose

>45 day 1

>50 day 2

Yes

No

Notify physician for further treatment and testing

Produce to Normal Newborn Pathway

This algorithm is intended to be a reference for clinicians caring for Newborns with Neonatal Hypoglycemia and is a part of the Newborn Hypoglycemia Clinical Guideline. Algorithms are not intended to replace providers' clinical judgment or to create a single protocol. Some clinical problems may not be adequately addressed in this guideline. As always, clinicians are urged to document management strategies. (revised March, 2018. For questions regarding this guideline, please contact the Medical Director of the Newborn Nursery.)