



Please check all areas that apply:

- UnityPoint Health-Meriter-Hospital/HOD
- UnityPoint Health-Meriter-Clinics
- UnityPoint Health-Meriter-Medical Staff
- Department/Unit specific: Birthing Center

TITLE: Hypoglycemia in Birthing Center Infants

CREATED: October, 1990

APPROVED: _____

Carla Griffin, Director
Perinatal Services

I. POLICY STATEMENT

Hypoglycemia is common in healthy newborns 1-2 hours after birth and is usually transient, asymptomatic and considered to be part of the normal transition to postnatal age. Because there is no single concentration or range of plasma glucose concentration that is associated with clinical signs of hypoglycemia, infants who have symptoms of hypoglycemia and infants who are at risk for hypoglycemia require blood sugar (BS) screening.

II. GENERAL CARE:

- A. Place infant skin to skin after birth for 60-90 minutes and when initiating/continuing treatment for hypoglycemia.
- B. Maintain a neutral thermal environment. Infant should be wearing a hat and be covered in warmed blankets. Avoid temperatures < 98°F.
- C. Target range blood sugars are:
 - i. ≥ 40 mg/dL during 0-4 hours of age
 - ii. ≥ 45 mg/dL when greater than 4 hours of age

III. SCREENING

- A. Screen with POC Glucometer.
- B. Warm heel prior to screening.
- C. Use a fresh heelstick with each screening.

IV. FEEDING:

- A. Initiate feeding within the first hour of life.
- B. Feed on demand at least every 2-3 hours.
- C. First (and subsequent) feedings when not treating an infant for hypoglycemia are inclusive of standard supplementation as required by Birthing Center Patient Care Policy #22, *Breastfeeding – Indications for Supplementation of Infants*.
- D. Initiate hand expression for all mothers of breastfeeding infants requiring supplementation.
- E. Initiate pumping by 24 hours in addition to hand expression if infant requires supplementation or other clinical indicators are present (refer to Birthing Center Patient Care Policy/Procedure #4, *Breastfeeding*).
- F. For the breastfeeding infant, alternate routes of supplementation (e.g., spoon, tube at breast, finger feeding) are preferred. If unable to complete a feeding in this manner, paced bottle/nipple feeding may be considered (refer to Birthing Center Patient Care Policy/Procedure #2, *Breastfeeding - Alternative Infant Feeding Methods*).

V. BASICS OF TREATMENT FOR ALL HYPOGLYCEMIC INFANTS (SYMPTOMATIC AND ASYMPTOMATIC)

- A. Maintain goal temperature of > 98°F (warm blankets, hat).
- B. Feed minimum of 10-15 mL expressed breastmilk (EBM), donor human milk (DHM), or formula. Refer to Birthing Center Patient Care Policy/Procedure #2, *Breastfeeding - Alternative Infant Feeding Methods* and Birthing Center Patient Care Policy #22, *Breastfeeding – Indications for Supplementation of Infants* for guidance on feeding methods.

REVIEWED									
REVISED	11/2021								

- i. Hypoglycemia treatment feedings supersede supplementation feeding guidelines used with normoglycemic infants.
- C. RN actively assists with feeding.
- D. Feeding time not to exceed 20 minutes.
- E. Administer glucose gel directly after feeding.
- F. Place infant skin to skin.
- G. Recheck POC BS one hour after glucose gel administered.
- H. Notify provider if POC BS is less than 25 mg/dL or if two BS in a row are less than 40 mg/dL (whether screening due to symptoms or to presence of risk factors).
- I. Transfer to intermediate care in the NICU if BS still low after 4 treatment bundles (feeding + glucose gel + Skin to Skin/warm per bundle).

VI. GLUCOSE GEL ADMINISTRATION

- a. Refer to MAR for dosing.
- b. Thoroughly dry buccal mucosa with gauze.
- c. Apply 0.5 mL of gel to right buccal cavity, massage for a few seconds, then apply 0.5 mL of gel to left buccal cavity and massage. Repeat procedure until entire dose has been administered.
- d. No more than 4 doses total in a 24-hour period.

VII. SYMPTOMATIC HYPOGLYCEMIA

Symptoms of Hypoglycemia		
Lethargy	Vital sign instability (e.g., temp < 97.4°F)	Apnea
High pitched cry	Cyanosis /Pallor	Seizures
Irritability	Sweating	Hypotonia
Jitteriness	Poor feeding	Respiratory distress

- a. Screen infants with symptoms of hypoglycemia at any time during the birth hospitalization
- b. If POC glucose is less than target range – follow care outlined in sections V. and VI. above
- a. If repeat screen is at or above target range continue to monitor pre-prandial blood sugars until 2 additional consecutive BS > 45 mg/dL.
- c. If POC BS is at or above target range, consider other reasons for symptoms.

VIII. SCREENING AND TREATMENT FOR ASYMPTOMATIC HYPOGLYCEMIA

A. Infants with the following hypoglycemia risk factors require screening:

- i. Screen for the first 12 hours of age if:
 - 1. Infant of a Diabetic Mother (IDM)
 - 2. Large for Gestational Age (LGA)
- ii. Screen for the first 24 hours of age if:
 - 1. Small for Gestational Age (SGA)
 - 2. Less than 37 weeks gestation
 - 3. Less than 2500 grams
- iii. One-time POC BS screen if:
 - 1. Apgars ≤ 3 at 1 minute or ≤ 6 at 5 minutes
 - 2. Temperature < 97.4 (at any time during the initial recovery period)
 - 3. Maternal beta blocker use (e.g., labetalol, metoprolol)
 - 4. Prenatal diagnosis of IUGR
 - 5. Exposure to prenatal steroids within two weeks of delivery

B. When to screen:

- i. First blood sugar between 90-120 minutes of life (unless symptomatic); goal is 30 minutes after feeding completed.
- ii. Screen 1 hour after treatment with glucose gel.
- iii. Screen prior to feeding (every 2–3 hours) if BS are in target range.

C. Screening and Treatment Protocol 0-4 HOURS OF LIFE

- i. Initiate feeding (breast, EBM, DHM or formula) within first hour of life.
- ii. POC BS between 90-120 minutes of life; goal is 30 minutes after feeding completed.

1. If ≥ 40 mg/dL, continue to feed infant every 2 -3 hours and repeat POC BS prior to feeds.
2. If < 40 mg/dL, follow care outlined in sections V. and VI. above.
 - a. If ≥ 40 mg/dL, continue to feed infant every 2 -3 hours and repeat POC BS prior to feeds.
 - b. If < 40 mg/dL, follow care outlined in sections V. and VI. above.
 - c. Notify provider if 2 low BS in a row < 40 mg/dL in the first 4 hours of life.

D. Screening and Treatment Protocol > 4 HOURS OF LIFE

- i. POC BS prior to feeds
 1. If ≥ 45 mg/dL, continue to feed infant every 2-3 hours and repeat POC glucose prior to feeds.
 2. If < 45 mg/dL, follow care outlined in sections V. and VI. above.
 - a. If repeat is ≥ 45 mg/dL, continue to monitor with POC BS checks prior to feeds.
 - b. If repeat < 45 mg/dL, continue to follow care outlined in sections V. and VI. above.
 3. If POC BS < 45 after 4 treatment bundles (feeding + glucose gel + Skin to Skin/warm per bundle), notify provider and transfer to NICU.

E. DISCONTINUING POC BS CHECKS

1. Discontinue POC BS checks at 24 hours of age if last two BS are ≥ 45 mg/dL and temperature is stable at 97.4-100.4 degrees Fahrenheit (goal ≥ 98 degrees Fahrenheit).

F. NICU Management of Hypoglycemia

- i. Standard NICU Care.
- ii. Recommended feeding is EBM, DHM or 20 calorie formula.
- iii. Criteria for transfer back to the Birthing Center: stable BS x 3 with normal feeding volume for day of life with EBM, DHM or 20 calorie formula. Stable temperature.

IX. LINKS TO OTHER MERITER POLICIES/PROTOCOLS/STANDARDS/GUIDELINES

- A. Birthing Center Patient Care Policy/Procedure #2, *Breastfeeding - Alternative Infant Feeding Methods*
- B. Birthing Center Patient Care Policy/Procedure #4, *Breastfeeding*
- C. Birthing Center Patient Care Policy #22, *Breastfeeding – Indications for Supplementation of Infants*

X. REFERENCES/RESOURCES

1. Adamkin DH, Committee on Fetus and Newborn. Clinical Report – Postnatal Glucose Homeostasis in Late Preterm and Term Infants. *Pediatrics* 2011;127; 575-579.
2. Cornblath M, Hawdon JM, Williams AF, Aynsley-Green A, Ward-Platt MP, Schwartz R, et al. Controversies regarding definition of neonatal hypoglycemia: suggested operational thresholds. *Pediatrics* 2000;105; 1141-1145.
3. Alkalay AL, Sarnat HB, Flores-Sarnat L, Elashoff JD, Farber SJ, Simmons CF. Population meta-analysis of low plasma glucose thresholds in full-term normal newborns. *Am J Perinatol.* 2006; 23; 115-119.
4. Care of the Newborn. A handbook for primary care. (2005) Hertz, D editor. Lippincott, Williams and Wilkins. Philadelphia, PA.
5. Avery, G., Fletcher, M., MacDonald, M. (2005) Neonatology Pathophysiology Management of the Newborn. 6th Edition. Lippincott. Philadelphia, PA.
6. International Lactation Consultant Association (ILCA). (2005) Clinical guideline for the establishment of exclusive breastfeeding. Raleigh, NC: International Lactation Consultant Association (ILCA)
7. Kliegman R, Behrman R, Jensen H, Stanton B. (2007) Nelson Textbook of Pediatrics. 18th Edition. Saunders Elsevier. Philadelphia PA.

Appendix A

Initial Management of Newborn Hypoglycemia			
Birthing Center			
<p>Screening Criteria: Symptomatic (e.g., jittery, Temp < 97.4°F any time, low tone) – check blood sugar (BS); if less than target range for age, initiate Hypoglycemia Treatment (HG Tx) Bundle Asymptomatic:</p> <ul style="list-style-type: none"> • Check for 12 hours if LGA, IDM (infant of diabetic mother) • Check for 24 hours if SGA, late preterm or <2500 gms • Check once if: Apgar < 3 @ 1 min or < 6 @ 5 min; prenatal dx IUGR; maternal beta blockers; prenatal steroids w/in 2wks of delivery 			
Birth to 4 hours of life		After 4 hours of life	
<ul style="list-style-type: none"> • Place infant skin to skin • Feed by 1 hour of life • First blood sugar between 90-120 min of life (unless symptomatic); goal is 30 min after feeding completed • Goal temperature $\geq 98^{\circ}\text{F}$ 		<ul style="list-style-type: none"> • Feed on demand (at least every 2-3hrs) • Check blood sugar before feeding • Goal temperature $\geq 98^{\circ}\text{F}$ 	
<p>Blood Sugar <40 (HG Tx Bundle)</p> <ol style="list-style-type: none"> 1. Warm blanket 2. Feed minimum 10-15ml* 3. Glucose gel 4. Skin to skin (STS) 5. Recheck 1 hour after gel 	<p>Target Blood Sugar ≥ 40</p> <ul style="list-style-type: none"> • Feed at least every 2-3 hours • Check blood sugar before feeding • Goal temp $\geq 98^{\circ}\text{F}$ 	<p>Blood Sugar <45 (HG Tx Bundle)</p> <ol style="list-style-type: none"> 1. Warm blanket 2. Feed minimum 10-15ml* 3. Glucose gel 4. Skin to skin (STS) 5. Recheck 1 hour after gel 	<p>Target Blood Sugar ≥ 45</p> <ul style="list-style-type: none"> • Feed at least every 2-3 hours • Check blood sugar before feeding • Goal temp $\geq 98^{\circ}\text{F}$
<p>Notify provider when: POC BS < 25 mg/dL or if 2 BS in a row < 40mg/dL (whether screening due to symptoms or to presence of risk factors)</p>			
<p>Feeding, then Glucose Gel (Symptomatic and Asymptomatic): *Feed EBM, DHM or Formula per parental choice. RN actively assists with feeding (e.g., spoon, tube at breast, finger feeding, paced bottle feeding). Feeding time not to exceed 20 minutes. Give glucose gel directly after.</p>			
<p>Transfer to NICU for intermediate care when: BS still low after 4 Treatment Bundles (feeding + glucose gel + STS/warm per bundle)</p>			
NICU			
<p>Standard NICU Care. Recheck blood sugar on admission to NICU. Recommended feeding is EBM, DHM, or 20 calorie formula. <u>Criteria for transfer back to the Birthing Center:</u> Stable blood sugars x 3. Transition Feeding Plan/Lactation Consult. Normal feeding volume for day of life with EBM, DHM or 20 cal formula. Stable temperature.</p>			

Last revised: 9-9-21; 9-13-21; 9-16-21; 10-7-21; 11-9-21; 11-11-21

U:\NUSWORK\Michele Schroeder\Perinatal Services\Newborn Clinical Consortium\Hypoglycemia\Hypoglycemia in Birthing Center Infants P&P34_111121.docx