

Please check all areas that apply:

- Meriter Hospital
- Meriter Outpatient Clinics
- Meriter Medical Group Clinics
- Meriter Medical Staff
- Department/Unit specific: Birthing Center

Patient Care Policy
POL #34
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TITLE: **Newborn Nursery Hypoglycemia**

CREATED: October, 1990

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Director, Perinatal Services

I. POLICY STATEMENT

Hypoglycemia is common in healthy newborns in the first 1-2 hours of life and is usually transient, asymptomatic and part of the normal transition to postnatal life. 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 asymptomatic infants who are at risk for hypoglycemia require blood sugar screening.

II. GENERAL CARE

a. **Hypoglycemia Protocol Timeframe**

- i. This screening protocol is ONLY intended to be used for infants in the first 24 hours of life.
- ii. Any symptomatic infant who has a blood sugar checked after 24 hours of age must have their blood sugar result discussed with an attending clinician as normal blood sugar ranges change after 24 hours.
- iii. This protocol does not apply to NICU patients. For this population, follow local standard of care/treatment (NICU Standard of Care #5 "Nursing Care of the NICU Patient").

b. **Prevention of Hypoglycemia**

- i. Prevention of hypoglycemia is just as important as its treatment. Prevention methods start at the time of birth, continue during the infant's hospital stay and include the following:
 - 1. Identify infants with hypoglycemia risk factors at time of birth.
 - 2. Avoid cold stress and hypothermia.
 - a. Place infant skin to skin after birth for 60 to 90 minutes and when initiating or continuing treatment for hypoglycemia.
 - b. Maintain a neutral thermal environment. Infants should be wearing a hat and be covered in warmed blankets. Normal infant temperature range is 97.7-99.5 Fahrenheit (36.5-37.5 Celsius).
 - 3. Early and timely feeding support.
 - a. Initiate feed within the first hour of life.
 - b. Feed on demand and at least every 2-3 hours.
 - c. Teach/initiate hand expression for all breastfeeding persons.
 - d. Initiate pumping by 24 hours in addition to hand expression if infant requires supplementation to other clinical indicators our present.

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- e. Frequently observe infant's feeding pattern and overall clinical condition.
4. Review Appendix A: *Initial Management of Newborn Hypoglycemia Birthing Center* tipsheet.

III. SCREENING

a. **Symptomatic Hypoglycemia**

- i. Infants who display symptoms of hypoglycemia should be tested for hypoglycemia. Symptoms of hypoglycemia can include:
 1. Jitteriness
 2. Lethargy
 3. High pitched or weak cry
 4. Irritability
 5. Cyanosis
 6. Pallor
 7. Sweating
 8. Poor feeding
 9. Apnea
 10. Hypotonia
 11. Respiratory distress
 12. Seizures
 13. Temperature of 97.3°Fahrenheit (36.3°Celsius) or less anytime during hospitalization.
 14. Temperature of 97.6°Fahrenheit (36.4°Celsius) or less after a repeat warming attempt.

b. **Asymptomatic Hypoglycemia**

- i. Early recognition and treatment of hypoglycemia is vital to avoid serious complications and improve outcomes. Many infants with hypoglycemia are asymptomatic. Asymptomatic infants at risk for hypoglycemia require screening.
 1. Screen for the 12 hours of life if:
 - a. Infant of a diabetic mother (IDM). This includes gestational diabetes type 1 diabetes, Type 2 diabetes and prediabetes (hemoglobin A1C of 5.7 or above).
 - b. Large for Gestational Age (LGA) – 91st percentile or greater.
 2. Screened for the first 24 hours of life if:
 - a. Small for Gestational Age (SGA) – 9th percentile or less.
 - b. Less than 37 weeks gestation.
 - c. Birth weight less than 2500 grams.
 - d. Fetal growth restriction (FGR) in pregnancy, even if resolved prior to delivery.
 3. One time blood sugar screen if:
 - a. Temperature of 97.3°Fahrenheit (36.3°Celsius) or less anytime during hospitalization.
 - b. Temperature of 97.6°Fahrenheit (36.4°Celsius) or less after a repeat warming attempt.
 - c. Maternal beta blocker uses in pregnancy (e.g., labetalol, metoprolol), whether chronic or newly prescribed/administered during labor to treat hypertension.
 - d. Exposure to systemic steroids within two weeks of delivery.
 - e. Apgar of 3 or less at one minute, 5 or less at 5 minutes.
 - f. Prolonged CPAP after delivery (20 minutes or longer).

c. **Screening Procedure**

- i. Target range blood sugars are:
 1. 40 mg/dl or above from 0-4 hours of life
 2. 45 mg/dl or above from 4-24 hours of life
- ii. How to screen:
 1. First screening blood sugar should be done between 90 to 120 minutes of life (unless symptomatic) with the goal of performing 30 minutes after completion of first feeding.

2. Use POC glucometer.
3. Warm heel prior to screening.
4. Use new heel stick site with each screening.
5. If normal value, continue to screen prior to each feeding (every 2-3 hours) until criteria are met to discontinue.
6. If low blood sugar, initiate treatment for hypoglycemia.

IV. TREATMENT FOR HYPOGLYCEMIA

- a. Treatment bundle for low blood sugar
 - i. Place skin to skin with caregiver and cover with warm blankets
 - ii. Breastfeed if able while assembling treatment feeding
 - iii. Treatment feeding: Minimum 10 to 20 mL of expressed breast milk, donor human milk, or formula
 - iv. Administer glucose gel.
 1. Referred to the MAR and Appendix B for dextrose gel dosing chart.
 2. Thoroughly dry buccal mucosa with gauze.
 3. 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 until the entire dose has been administered.
 - v. Recheck blood sugar 1 hour after administration of gel.
 - vi. Lactation consult as needed.
 - vii. Ensure documentation is completed on the neonatal glycemic and education flow sheets.
 - viii. After hypoglycemia has resolved continue to offer 10-20mL top off for the first 24 hours of life. Continue supplementation based on shared decision making between family, lactation and provider.

V. ESCALATION OF CARE

- a. **1st low blood sugar:** give treatment bundle and continue routine care.
- b. **2nd low blood sugar:** give treatment bundle and start supplementing minimum of 10-20 mL EBM, DHM or formula after **EVERY** feed for first 24 hours of life.
- c. **3rd low blood sugar:** give treatment bundle, continue regular supplementation, increase feeding volume to ad lib with a minimum of 10-20 ml EBM, DHM or formula if able, and **NOTIFY NEWBORN PROVIDER.**
 - i. *Newborn provider can give further guidance on whether they want to be notified if 4th low blood sugar or if they would like NICU notified if 4th low blood sugar.*
- d. **4th low blood sugar:** give treatment bundle and contact newborn provider or NICU. Based on clinical assessment, provider may:
 - i. Consider 22 kcal formula if late preterm, SGA, spitty sleepy feeder, or per clinical judgement and assessment.
 1. *If 22 calorie formula is used: At end of hypoglycemia protocol period transition back to EBM, DHM or standard formula. Continue to offer 10-20 mL top off per provider, lactation and family shared decision making.*
 2. Consider transfer to NICU for IV Dextrose
- e. **5th low blood sugar OR 2 consecutive blood sugars 24 or less** is an automatic transfer to NICU.

VI. NOTIFY NEWBORN PROVIDER IF:

- a. Any blood sugar value 24 or less,
- b. After the third gel is given,
- c. Symptomatic hypoglycemia, or
- d. Blood sugar value 49 or less after 24 hours of life.

VII. DISCONTINUING BLOOD SUGAR MONITORING

- a. Stop protocol when recommended time of screening is met and 2 consecutive pre-prandial blood sugars have been 45 or higher.

VIII. LINKS TO OTHER MERITER POLICIES/PROTOCOL/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*.

IX. REVIEWED/APPROVED BY:

- a. Perinatal Services
- b. Nursery Committee

X. REFERNCES/RESOURCES

- a. Adamkin DH, Committee on Fetus and Newborn. Clinical Report – Postnatal Glucose Homeostasis in Late Preterm and Term Infants. *Pediatrics* 2011;127; 575-579.
- b. Edwards T, et al. Oral Dextrose Gel for the Treatment of Hypoglycaemia in Newborn Infants (Review). *Cochrane Database of Systematic Reviews* 2022:3.
- c. Giouleko S, et al. Diagnosis and Management of Neonatal Hypoglycemia: A Comprehensive Review of Guidelines. *Children (Basel)* 2023;10(7).

Appendix A: Initial Management of Newborn Hypoglycemia Birthing Center

Initial Management of Newborn Hypoglycemia Birthing Center			
Screening Criteria: Check blood sugars (BS); if less than target range, initiate Hypoglycemia Treatment (HG Tx) Bundle			
<p>Symptomatic: jitteriness, lethargy, high-pitched or weak cry, irritability, cyanosis, poor feeding, apnea, hypotonia, respiratory distress, seizures</p>	<p>Screen for 12 hours if:</p> <ul style="list-style-type: none"> LGA Infant of diabetic mother (GDM, T1DM, T2DM, & prediabetes [Hgb A1c of 5.7 or above]) 	<p>Screen for 24 hours if:</p> <ul style="list-style-type: none"> SGA < 37 weeks gestation Birth weight <2500 grams Fetal growth restriction (FGR) in pregnancy, even if resolved prior to delivery 	<p>One-time BS screen if:</p> <ul style="list-style-type: none"> Temp 97.3° or less at any time Repeat temp of 97.6° F or less after a re-warming attempt Maternal beta blockers Prenatal steroids w/in 2wks of delivery Prolonged CPAP after delivery (20 minutes or longer). Apgars 3 or less @ 1 min or 5 or less @ 5 mins
0-4 hours of life		4-24 hours of life	
<ul style="list-style-type: none"> Place infant skin to skin (STS) for 60-90 min Feed by 1 hour of life First BS between 90-120 min of life (unless symptomatic); goal is 30 min after feeding completed Normal infant temperature range is 97.7° F-99.5° F 		<ul style="list-style-type: none"> Encourage STS. Feed on demand (at least every 2-3 hours) Check BS before feeding Normal infant temperature range is 97.7° F-99.5° F 	
<p>BS=39 or less (HG Tx Bundle)</p> <ol style="list-style-type: none"> STS & cover with warm blanket(s) Feed minimum 10-20 mL of EBM, DHM, FM* Administer glucose gel Recheck BS 1 hr after gel 	<p>Target BS is 40 or more</p> <ul style="list-style-type: none"> Feed at least every 2-3 hours Check BS prior to feeding infant 	<p>**BS=44 or less (HG Tx Bundle)</p> <ol style="list-style-type: none"> STS & cover with warm blanket(s) Feed minimum 10-20 mL of EBM, DHM, FM* Administer glucose gel Recheck BS 1 hr after gel 	<p>Target BS is 45 or more</p> <ul style="list-style-type: none"> Feed at least every 2-3 hours Check BS prior to feeding infant
<p>Notify provider: of any value less than 25, after the third glucose gel is given, symptomatic hypoglycemia, blood sugar value less than 50 after 24 hours of life.</p>			
<p>Treatment Bundle (Symptomatic & A symptomatic): *Feed EBM, DHM, FM per parental choice. RN actively assists with feeding (e.g., spoon, tube at breast, finger feeding, paced bottle feeding). Feeding time to not exceed 20 min. Give glucose gel immediately after. For dosing weight, round up to the nearest 500 grams.</p>			
<p>***E SCALATION OF CARE</p> <p>1st low blood sugar: give treatment bundle and continue routine care.</p> <p>2nd low blood sugar: give treatment bundle and start supplementing <u>minimum</u> of 10-20 mL EBM, DHM or formula after EVERY feed for first 24 hours of life.</p> <p>3rd low blood sugar: give treatment bundle, continue regular supplementation, increase feeding volume to ad lib with a minimum of 10-20 mL EBM, DHM or formula if able, and NOTIFY NEWBORN PROVIDER. Newborn provider can give further guidance on whether they want to be notified if 4th low blood sugar or if they would like NICU notified if 4th low blood sugar.</p> <p>4th low blood sugar: give treatment bundle and contact newborn provider or NICU. Based on clinical assessment, provider may:</p> <ul style="list-style-type: none"> Consider 22 kcal formula if late preterm, SGA, spitty sleepy feeder, or per clinical judgement and assessment. <ul style="list-style-type: none"> If 22 calorie formula is used: At end of hypoglycemia protocol period transition back to EBM, DHM or standard formula. Continue to offer 10ML top off per provider, lactation and family shared decision making. Consider transfer to NICU for IV Dextrose. <p>5th low blood sugar OR 2 consecutive blood sugars less than 25 is an automatic transfer to NICU.</p>			
<p>Discontinuing POC BS: Stop protocol when recommended time of screening is met and 2 consecutive pre-prandial blood sugars have been 45 or higher.</p>			<p>Revised: 10/2025 (ZM)</p>

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Appendix B: Dextrose Gel Dosing Chart

Weight	Dose
2000 g	1.0 ml
2001 g – 2500 g	1.25 ml
2501 g – 3000 g	1.5 ml
3001 g – 3500 g	1.75 ml
3501 g – 4000 g	2.0 ml
4001 g – 4500 g	2.25 ml
4501g and above	2.5 ml

(Round weight up to the nearest 500 grams (0.5 kg))

- ✓ Stop protocol when recommended time of screening is met and 2 consecutive pre-feed blood sugars have been 45 mg/dl or greater
- ✓ Dextrose gel is not indicated after 24 hours of age
- ✓ After 24 hours of life, ideally the infant’s blood sugar will be ≥ 50 mg/dl
- ✓ If you get a reading lower than 50 mg/dl after 24 hours, please notify the provider for further guidance

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