

**North York General Hospital  
MATERNAL, NEWBORN AND PAEDIATRIC PROGRAM  
Neonatal Intensive Care Unit (NICU)  
Policy Manual**

Hypoglycemia Protocol for NICU Patients

NUMBER: H-1

CROSS REFERENCE: Guidelines for the  
Screening and Management of Newborn  
Hypoglycemia

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ORIGINATOR: Clinical Nurse Educator, NICU

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APPROVED BY: *NICU Patient Care and Quality  
Committee*

DATE OF IMPLEMENTATION: May 2020

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**OBJECTIVE**

To provide a protocol for the screening and treatment of hypoglycemia in the high risk infant who is unable to achieve euglycemia with enteral feeding alone.

To provide a step-wise, algorithmic approach to the management of infants with hypoglycemia in the Neonatal Intensive Care Unit (NICU) and to facilitate decision making based on the infant's response to treatment.

Infants at risk for hypoglycemia are:

Infant of diabetic mother (IDM) and infant of gestational diabetic mother (IGDM)

Infants < 37 weeks gestation

Infants ≥ 42 weeks gestation

Small for gestational age (SGA) (birth weight <10<sup>th</sup> percentile)

Large for gestational age (LGA) (birth weight > 90<sup>th</sup> percentile)

Maternal labetalol use

Late preterm exposure to antenatal steroids

Those with neonatal conditions such as perinatal asphyxia, polycythemia, sepsis, shock & hypothermia.

**Common clinical signs of hypoglycemia:**

Jitteriness/tremors/seizures

Apnea

Lethargy/hypotonia

Poor feeding

Cyanosis

Respiratory distress

**DEFINITION**

Hypoglycemia:

For the purpose of this protocol, hypoglycemia is defined as blood glucose < 2.6 mmol/L during the first 72 hours post birth and < 3.3 mmol/L beyond the first 72 hours post birth

Point of Care (POC) Glucose:

Refers to glucose testing using a bedside glucometer

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## PROTOCOL

1. Hypoglycemic infants may not be symptomatic. Therefore, newly born infants admitted to the NICU who are not receiving intravenous fluids, but have risk factors for hypoglycemia will have POC glucose done at 2 hours of age. Subsequent POC glucose will be done every 2-3 hours, prior to feeds, if the infant remains asymptomatic and glucose remains  $\geq 2.6$  mmol/L. For the IDM/IGDM and LGA infant, glucose monitoring may be discontinued at 12 hours of age if the glucose remains  $\geq 2.6$  mmol/L. For the late preterm (34 weeks to 36 weeks + 6 days gestation) or SGA infant, glucose monitoring may be discontinued at 24 hours of age if glucose remains  $\geq 2.6$  mmol/L. **Refer to NICU Hypoglycemia Screening Protocol (Algorithm 1).**
2. At risks infants who do not respond to early interventions for hypoglycemia as per the Maternal Newborn Program's Guidelines for Screening and Management of Newborn Hypoglycemia are admitted to the NICU for further investigation and management. **Refer to NICU Hypoglycemia Treatment Protocol (Algorithms 2 and 3).**
3. Infants admitted to the NICU for hypoglycemia will have a POC glucose done upon admission. **Refer to NICU Hypoglycemia Treatment Protocol (Algorithms 2 and 3).**
4. Infants with persistent hypoglycemia, despite receiving a GIR of 10.4 mg/kg/min will have critical bloodwork drawn and sent to the lab as per physician's order. Consider obtaining critical bloodwork if IV dextrose required beyond 72 hours of life even if GIR is  $< 10$  mg/kg/min. **Refer to Appendix 1.**
5. If the infant's condition allows, enteral feeding should be provided to facilitate transition from parenteral sources of glucose. Ensure that the enteral feed is included in total fluid intake (TFI) which should not exceed 120ml/kg/day on day 1 of life.
6. If mother wishes to breast feed and baby is able, support breast feeding.
7. Infants who require treatment for hypoglycemia beyond the first 72 hours post birth should have a 5-6 hour fast before being discharged from hospital to ensure their safety at home. Maintenance of glucose levels  $\geq 3.3$  mmol/L at 4 and 5 hours post feed should be documented before discharge is considered.

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## Appendix 1

### Critical Bloodwork for Persistent Hypoglycemia in the Neonate

Priority of Blood Testing		Special instructions
<b>1</b>	Glucose	<p>POC glucose must be &lt;2.6 mmol/L at time of sample collection for infants within the first 72 hours post birth and &lt; 2.8 mmol/L for infants beyond the first 72 hours post birth</p> <p><b>Before</b> obtaining blood samples consult the laboratory web space for the most current information regarding minimum volumes and appropriate specimen containers by clicking on the link: <a href="#">NICU Minimum Bloodwork Requirements</a></p>
<b>2</b>	Insulin	
<b>3</b>	Beta-hydroxybutyrate	
<b>4</b>	Free Fatty Acid	
<b>5</b>	Blood Gas (venous or arterial)	
<b>6</b>	Cortisol	
<b>7</b>	Lactate (Pyruvate)	
<b>8</b>	Growth Hormone	
<b>9</b>	Ammonia	
<b>10</b>	Carnitine/Acylcarnitine	
<b>11</b>	Electrolytes	
<b>Other Sample</b>		
Urine for ketones		

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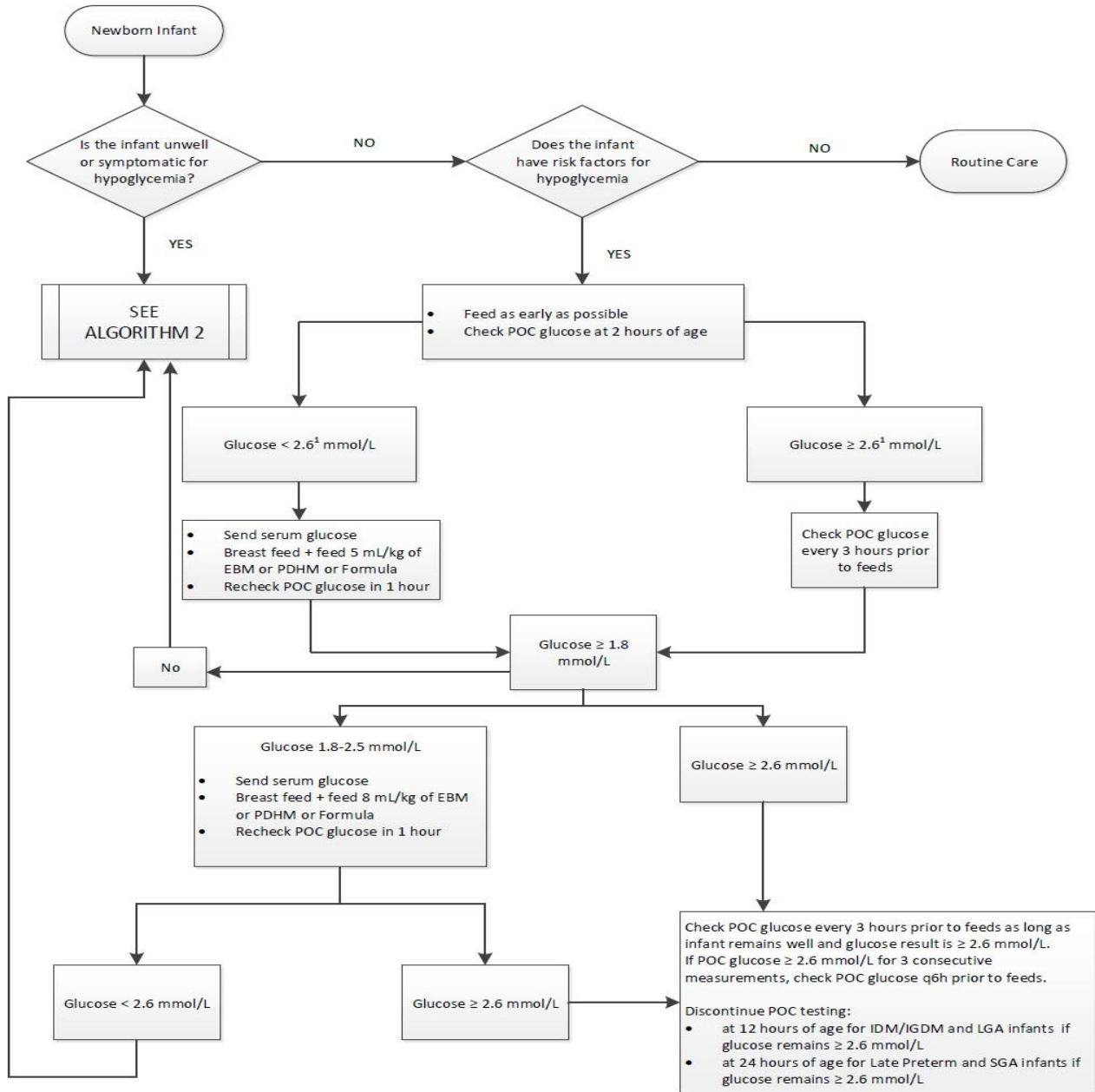
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## Appendix 2 NICU Hypoglycemia Screening Protocol : Algorithm 1



<sup>1</sup> Low glucose threshold is 3.3 mmol/L after 72 hours of age

POC: Point of Care

IDM: Infant of Diabetic Mother

IGDM: Infant of Gestational Diabetic Mother

LGA: Large for Gestational Age

SGA: Small for Gestational Age

NOTES: The interventions in the algorithm must be accompanied by a physician order or medical directive

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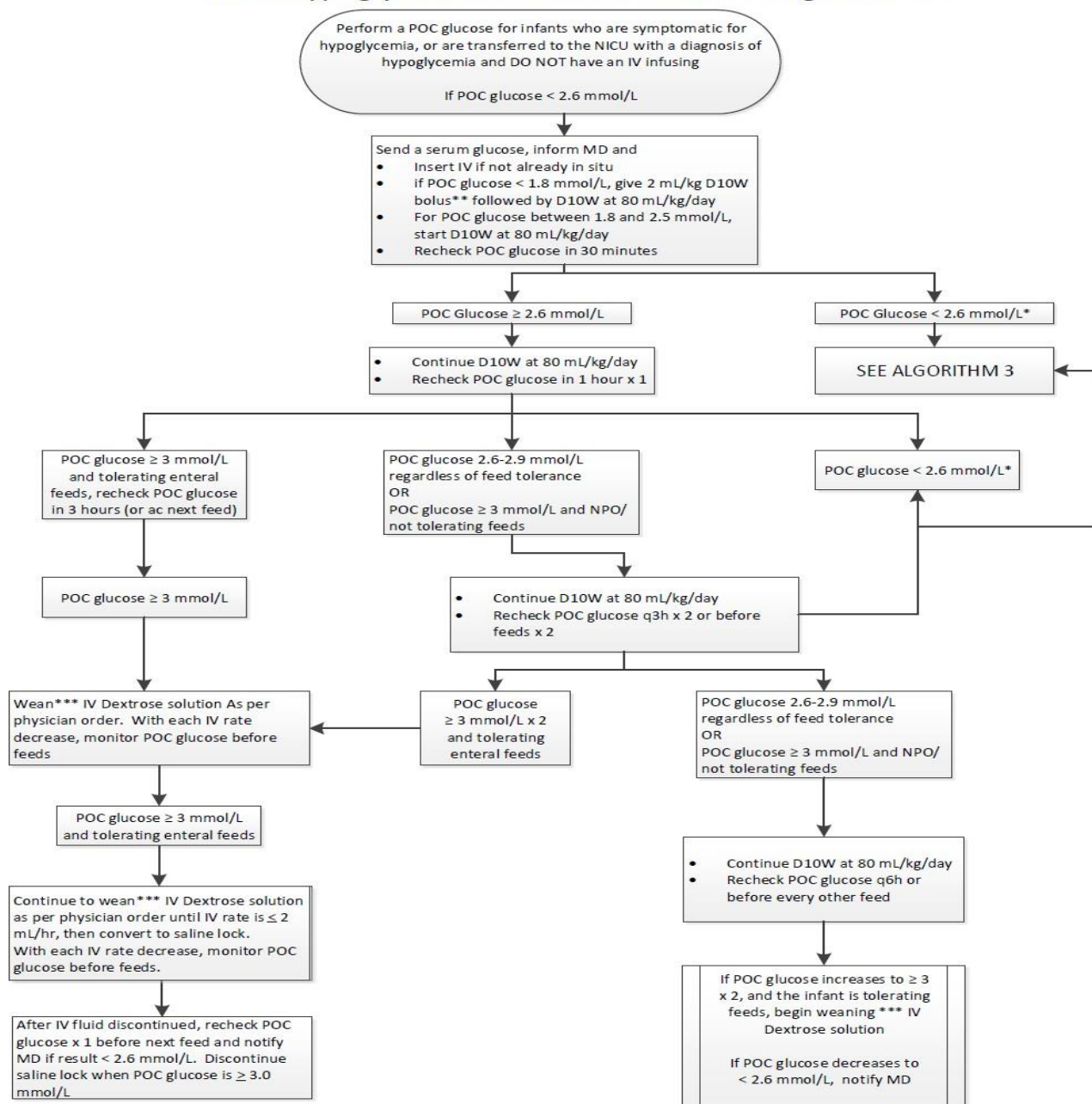
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## NICU Hypoglycemia Treatment Protocol: Algorithm 2



\* Any POC Glucose Result < 2.6 mmol/L must be confirmed with a serum glucose

\*\* Consider 2 mL/kg D10W bolus whenever glucose result is < 1.8 mmol/L

\*\*\* If glucose result during weaning is < 3 mmol/L, return IV Dextrose solution to previously tolerated rate

### NOTES:

- The interventions in the algorithm must be accompanied by a physician order or medical directive
- If the infant's condition allows, enteral feeding should be provided to facilitate transition from parenteral sources of glucose. Ensure that the enteral feed is included in the TFI which should not exceed 120 mL/kg/day on Day 1 of life.
- All glucose values in this algorithm apply to infants who are within the first 72 hours post-birth. For infant who are beyond the first 72 hours post-birth, values of 2.6 mmol/L should be replaced with 3.3 mmol/L and values of 3 mmol/L should be replaced with 3.5 mmol/L.

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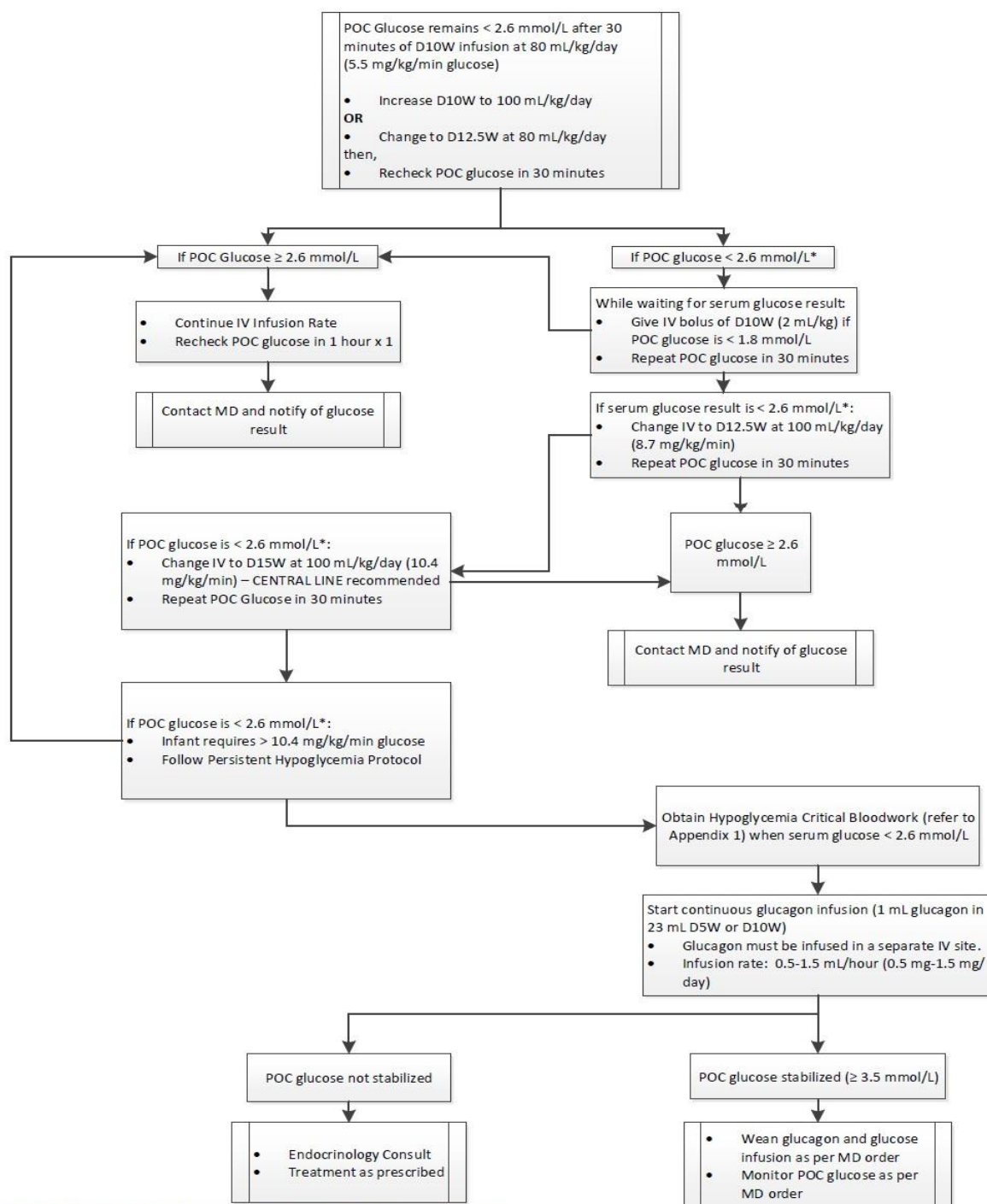
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## NICU Hypoglycemia Treatment Protocol: Algorithm 3



\* Any POC Glucose Result < 2.6 mmol/L must be confirmed with a serum glucose

\*\* Consider 2 mL/kg D10W bolus whenever glucose result is < 1.8 mmol/L

\*\*\* If glucose result during weaning is < 3 mmol/L, return IV Dextrose solution to previously tolerated rate

**NOTES:**

The interventions in the algorithm must be accompanied by a physician order or medical directive

All glucose values in this algorithm apply to infants who are within the first 72 hours post-birth. For infant who are beyond the first 72 hours post-birth, values of 2.6 mmol/L should be replaced with 3.3 mmol/L and values of 3 mmol/L should be replaced with 3.5 mmol/L.