Site Applicability
Testing for hypoglycemia in the newborn occurs in the Maternal Newborn Program and the Neonatal Program.

Practice Level/Competencies
Basic Skill – To identify newborns at risk for hypoglycemia, obtain a rapid estimation of blood glucose level and manage hypoglycemia in the late preterm and term newborn

Policy Statement(s)
Screening of risk factors for hypoglycemia for all newborns is a standard of care. Management of hypoglycemia should be standardized to correct hypoglycemia and to prevent as much as possible the separation of the newborn from the mother associated with a Neonatal Intensive Care Unit (NICU) admission. This management should also promote breastfeeding as much as possible as long as the health of the newborn affected by hypoglycemia is not compromised. The newborn’s blood glucose levels are tested for hypoglycemia as outlined below.

Equipment & Supplies
- Point of care blood glucose meter
- Test strips
- Alcohol wipe
- 2 x 2 Gauze and paper tape
- Lancet

Procedure
Management of newborns 35 weeks gestation and greater at risk or affected by hypoglycemia in the first 24 hours of life.

Assessment

1.1 The most responsible provider reviews all newborns at birth for the presence of risk factors for hypoglycemia
- Weight less than 10th percentile SGA – Small for gestational age
- Intrauterine growth restriction
- Weight over the 90th percentile LGA – Large for gestational age
- Infants of mothers with diabetes
- Pre-term infants - less than 37 weeks gestational age
- UA pH ≤7.0/ Perinatal asphyxia/Post-Resuscitation (defined as)
  - IPPV for 30 seconds or longer
  - CPAP for 5 minutes or longer
  - Oxygen supplementation for 10 minutes or longer
  - Apgar less than 7 at five minutes
- Infants of mothers who are taking Beta-Blockers (eg. Metoprolol, Labetalol)
- Metabolic conditions (eg. CPT-1 deficiency)
- Syndromes associated with hypoglycaemia (eg. Beckwith-Wiedemann)

If any of the above risk factors are present, the most responsible provider completes the Maternal Newborn Program Newborn Admission Order set to prescribe the Management of Newborn Hypoglycemia Algorithm (35 weeks and Greater) located on the back side of the Orders.
1.2 Assess all newborns with or without risk factors for the presence of clinical signs of hypoglycemia which include:

- Temperature < 36.5 degrees (persistent) x 2 (30 minutes apart)
- Jitteriness/ Tremors
- Cyanotic episodes
- Convulsions
- Apnea and periodic breathing
- Tachypnea (greater than 60 breaths per minute at rest)
- Weak or high pitched cry
- Hypotonia (limpness) or lethargy
- Difficulty feeding/ weak suck
- Eye rolling
- Sweating
- Sudden pallor

If any of the above clinical signs of hypoglycaemia are present

- Check the blood glucose immediately.
- If the blood glucose is < 2.6, feed the newborn 5 mL/kg of donor milk/ human milk substitute
- Contact the most responsible provider for further management

NOTE: If no response from the most responsible provider, contact the Pediatrician on call for further management.

Intervention

1.3 Newborn Blood Glucose Testing
Registered Nurse (RN)

- Test the blood glucose level of the newborn using the point of care meter: For Newborns with Risk Factors for Hypoglycemia, assess blood glucose as per the Management of Newborn Hypoglycemia Algorithm (35 weeks and Greater)

OR

- At any time when clinical signs of hypoglycaemia are present

1.4 Point of Care Blood Glucose Meter

- Test the newborns blood glucose using a point of care blood glucose meter.
- Obtain a blood sample by heel prick (See AccuChek Inform II Glucose Meter Newborn Heel Puncture Blood Glucose Poster –December 2016)
- Coordinate with the lab collector to obtain blood sample when other blood work is ordered at the same time

1.5 Blood Glucose Level Results

- Follow the Management of Newborn Hypoglycemia Algorithm (Appendix A). This is located on the back of the Newborn Admission Orders

  a) When the initial blood glucose level is below (<) 1.7 millimoles per litre (mmol/L):
  - For first supplement, Feed 5 mL/ kg of Donor Milk or Breast milk substitute and then breastfeed the newborn.
  - Notify the physician/midwife immediately.
Consider IV treatment.
Reassess blood sugar at 30 mins from the finish of the feed.

<table>
<thead>
<tr>
<th>Blood sugar above 2.6 mmol/L</th>
<th>Blood sugar is below 2.6 mmol/L at any assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess blood sugar <strong>ac feeds</strong> every three hours Feed ad lib</td>
<td>feed 5 mL/kg of Donor Milk or Breast milk substitute and then breastfeed the newborn Notify physician/midwife</td>
</tr>
<tr>
<td>Continue testing blood sugar <strong>ac feeds</strong> until a total of 3 blood sugar results are above 2.6 mmol/L</td>
<td>If blood glucose is &lt; 1.7 at any assessment, notify physician/midwife ASAP and consider IV treatment</td>
</tr>
</tbody>
</table>

- **b)** When the initial blood glucose level is **between 1.8-2.5 mmol/L** supplement with 5 mL/kg of donor milk/ breast-milk substitute and then breastfeed the newborn. Notify the physician/midwife of the results as soon as possible.
  Reassess blood sugar **pc feed** at 30 mins from the finish of the feed.

<table>
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<tr>
<th>Blood sugar is above 2.6 mmol/L</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Assess blood sugar <strong>ac feeds</strong> every three hours</td>
<td>Feed 8 mL/kg for subsequent supplements of Donor Milk or Breast milk substitute and then breastfeed the newborn Notify physician/midwife Consider consult to Pediatrics</td>
</tr>
<tr>
<td>Continue testing blood sugar <strong>ac feeds</strong> until a total of 3 blood sugar results are above 2.6 mmol/L</td>
<td>If blood glucose is &lt; 1.7 at any assessment, notify physician/midwife ASAP and consider IV treatment</td>
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</tbody>
</table>

- **c)** When the initial blood glucose level is **above 2.6 millimoles per litre (mmol/L):**
  Feed the newborn ad lib.
  Repeat blood sugar testing **ac next** feed (usually between 5-7 hours).
  Continue testing until a total of 3 consecutive blood sugar results are above 2.6 mmol/L taken **ac feeds**.

- **d)** Newborns who are Preterm (< 37 weeks), Small for Gestational Age, or infant of mother who takes Beta-Blockers.
  Following testing of two initial blood glucose tests, continue testing blood glucose **ac feeds** at 12 hours, 18 hours, and 24 hours.
  If blood sugar is < 2.6 at any assessment, feed 5 mL/kg of Donor Milk/ Breast milk substitute for first supplement and 8 mL/kg for all next supplements and then breastfeed newborn.
  Notify the physician/midwife.

1.6 **Indications to consider** transfer newborn to the NICU to receive intravenous (IV) fluid therapy:

1. Any blood sugar < 2.6 mmol/L in an infant with clinical signs of hypoglycemia .
2. Any newborn whose blood sugar remains < 2.6 despite breastfeeding and supplementation with donor milk/breastmilk substitute

1.7 **Documentation**

1.0 Document all results and blood glucose management on the Newborns At-Risk For Hypoglycemia Flowsheet
### Additional information & Rationale

<table>
<thead>
<tr>
<th>Additional Information</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>1. Transient hypoglycemia in the first hours after birth is common and is part of adaptation to post-natal life.</td>
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</tbody>
</table>
  a. Persistent or prolonged periods of hypoglycemia, particularly when symptoms are present, may lead to neurological impairment of the newborn. 
  b. Transient, single, brief periods of hypoglycemia are unlikely to cause permanent neurological damage. |
| 2. Breastfeeding is protected by avoiding unnecessary supplementation with pasteurized human donor milk (PHDM) or Breast-milk substitute | 
  a. Exclusive breastfeeding and skin to skin (STS) care maximize healthy outcomes and enhance energy mobilization. 
  b. If the blood sugar fails to stabilize with optimal breastfeeding, and STS care, temporary supplementation with PHDM or EBM or Breastmilk substitute in addition to breast milk may be indicated for a limited period. 
  c. Should temporary supplementation be required all efforts should be made to protect the breastfeeding relationship and exclusive breastfeeding be resumed immediately once glucose has normalized. |
| 3. If a mother or newborn has no risk factors identified, proceed with post-partum care as per standard of care. | Continue to assess for symptoms of hypoglycemia |

### Documentation

- Hematology/Chemistry Requisition
- Newborns At-Risk For Hypoglycemia Flowsheet
- Interprofessional Progress Notes
- Newborn Clinical Path
- Prescriber’s Orders – Newborn Admission

### Patient & Family Engagement/Education

- Pamphlet: Low Blood Glucose in Newborn Babies

### References

- Accu-Chek Inform II: Newborn Care Glucose Meter Protocol—Dec 2016
- AccuChek Inform II Glucose MeterNewborn Heel Puncture Blood Glucose Poster –December 2016
- BC Women’s - Prescriber’s Orders – Newborn Admission
- L Michael R. Narvey, Seth D. Marks; Canadian Paediatric Society, Fetus and Newborn Committee
NEWBORN HYPOGLYCEMIA SCREENING AND MANAGEMENT

DOCUMENT TYPE: PROTOCOL

Solimano A.; Kwan E.; Osovich H.; Dyer R.; Elango R.; Dextrose gels for neonatal transitional hypoglycemia: What are we giving our babies? Paediatrics & Child Health, 2019, 1–4

Definitions

LEGEND:

1. BG = Blood glucose
2. SGA = Small for gestational age
3. LGA = Large for gestational age
4. IDM = Infant of a diabetic mother
5. MRP= Most Responsible Provider
6. PHDM = Pasteurized Human Donor Milk
7. Breastmilk Substitute = Formula

Related Documents

Management of Newborn Hypoglycemia Algorithm

Developed By
Maternal Newborn Program – Senior Practice Leader

Version History

<table>
<thead>
<tr>
<th>DATE</th>
<th>DOCUMENT NUMBER and TITLE</th>
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<tr>
<td>23-Apr-2019</td>
<td>C-06-13-60192 Newborn Hypoglycemia Screening And Management</td>
<td>Approved at: Perinatal Best Practice</td>
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<tr>
<td>20-Nov-2020</td>
<td>*</td>
<td>Approved at: Perinatal Best Practice</td>
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<tr>
<td>11-Feb-2021</td>
<td>*</td>
<td>Update to definition of post-resuscitation</td>
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