Critical neonatal hypoglycaemia in first 48 hours

**Urgent**
- Do not delay treatment
- Urgent medical consultation
- Admit to neonatal unit—contact RSQ as required
- Validate* screening BGL
- Collect diagnostic samples
- If able, give glucose gel and feed while establishing other treatments

**IV glucose therapy initiation**
- Establish IV (PVL/UVC) access
- Commence 10% glucose IV infusion at 60 mL/kg/day
  - If symptomatic or BGL not improving, commence at 80 mL/kg/day
- Give 10% glucose 1 mL/kg IV bolus
  - May repeat 1 mL/kg if BGL remains low
  - Initial 2 mL/kg IV bolus may be indicated in some clinical circumstances
- If IV access delayed > 15 minutes give glucagon 200 microgram/kg IM or subcut
- Recheck BGL no later than 30 minutes after IV bolus

**Glucagon**
- If after 10% glucose IV bolus (as indicated) BGL not improved, or baby symptomatic, urgently give glucagon 200 microgram/kg IV/IM/subcut stat

**Other treatment principles**
- To achieve immediate increase in glucose delivery, increment IV glucose rate before glucose concentration
- Monitor risk of fluid overload
  - Fluids not exceeding 100 mL/kg/day on day 1
  - Monitor serum sodium
- Increase IV glucose concentration to 12% or step-wise to higher concentration
  - If concentration > 12% glucose give via UVC/CVL
- If GIR > 8 mg/kg/minute in 1st 24 hours or baby hyponatraemic consider glucagon infusion
- Feeds—continue if not contraindicated
- Medications - refer to NeoMedQ

**Validate* any BGL < 2.6 mmol/L**

**Diagnostic samples**
- Venous or arterial blood only
- During hypoglycaemic episode
- Before treatment

**Blood gas** including electrolytes, glucose, haemoglobin, haematocrit and lactate

<table>
<thead>
<tr>
<th>Priority 1</th>
<th>Insulin</th>
<th>Cortisol</th>
<th>Acyl-carnitine profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 2</td>
<td>Growth hormone</td>
<td></td>
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<tr>
<td>Priority 3</td>
<td>Plasma amino acids</td>
<td>Ammonium</td>
<td>Pyruvate</td>
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</tbody>
</table>

**Urine (post hypoglycaemic episode)**
- Metabolic screen

**Ceasing BGL monitoring**
- (All BGL measurements in mmol/L)
- If complex glycaemic support required, then at neonatologist discretion

**Recommended criteria**
- Baby is well and feeding effectively.
- Other treatments ceased
- BGL target achieved pre-feed (every 3-6 hours) for 24 hours after treatments ceased

**BGL targets**
- Within first 48 hours of life BGL ≥ 2.6
- 48–96 hours of life BGL ≥ 3.0
- > 96 hours of life BGL ≥ 3.5
- If known hypoglycaemic disorder BGL ≥ 4.0

*Validated BGL is obtained via:
- Enzymatic PoC device (e.g. iSTAT®, StatStrip®)
- Blood gas analyser (if short sample to analysis interval possible)
- Laboratory method in fluoride oxalate tube

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**BGL**: blood glucose level, **CVL**: central venous line, **GIR**: glucose infusion rate, **IM**: intramuscular, **IV**: intravenous, **NNP**: neonatal nurse practitioner, **PoC**: point of care, **PVL**: peripheral venous line, **RSQ**: Retrieval Services Queensland, **subcut**: subcutaneous, **UVC**: umbilical venous catheter, > greater than, < less than, ≥ greater than or equal to