

# Neonatal stabilisation for retrieval

Clinical Guideline Presentation



45 minutes

Towards CPD Hours

**References:**

Queensland Clinical Guideline: Neonatal stabilisation for retrieval is the primary reference for this package.

**Recommended citation:**

Queensland Clinical Guidelines. Neonatal stabilisation for retrieval clinical guideline education presentation E18.18-1-V5-R23. Queensland Health. 2018.

**Disclaimer:**

This presentation is an implementation tool and should be used in conjunction with the published guideline. This information does not supersede or replace the guideline. Consult the guideline for further information and references.

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# Objectives

- Describe the indications for transfer/retrieval
- Identify principles of resuscitation and stabilisation
- Outline deterioration prevention
- Outline parental support requirements

# Indications for retrieval

## **Antenatal**

- Congenital abnormality, multiple birth, fetal growth restriction, preterm labour, prolonged rupture of membranes

## **Postnatal**

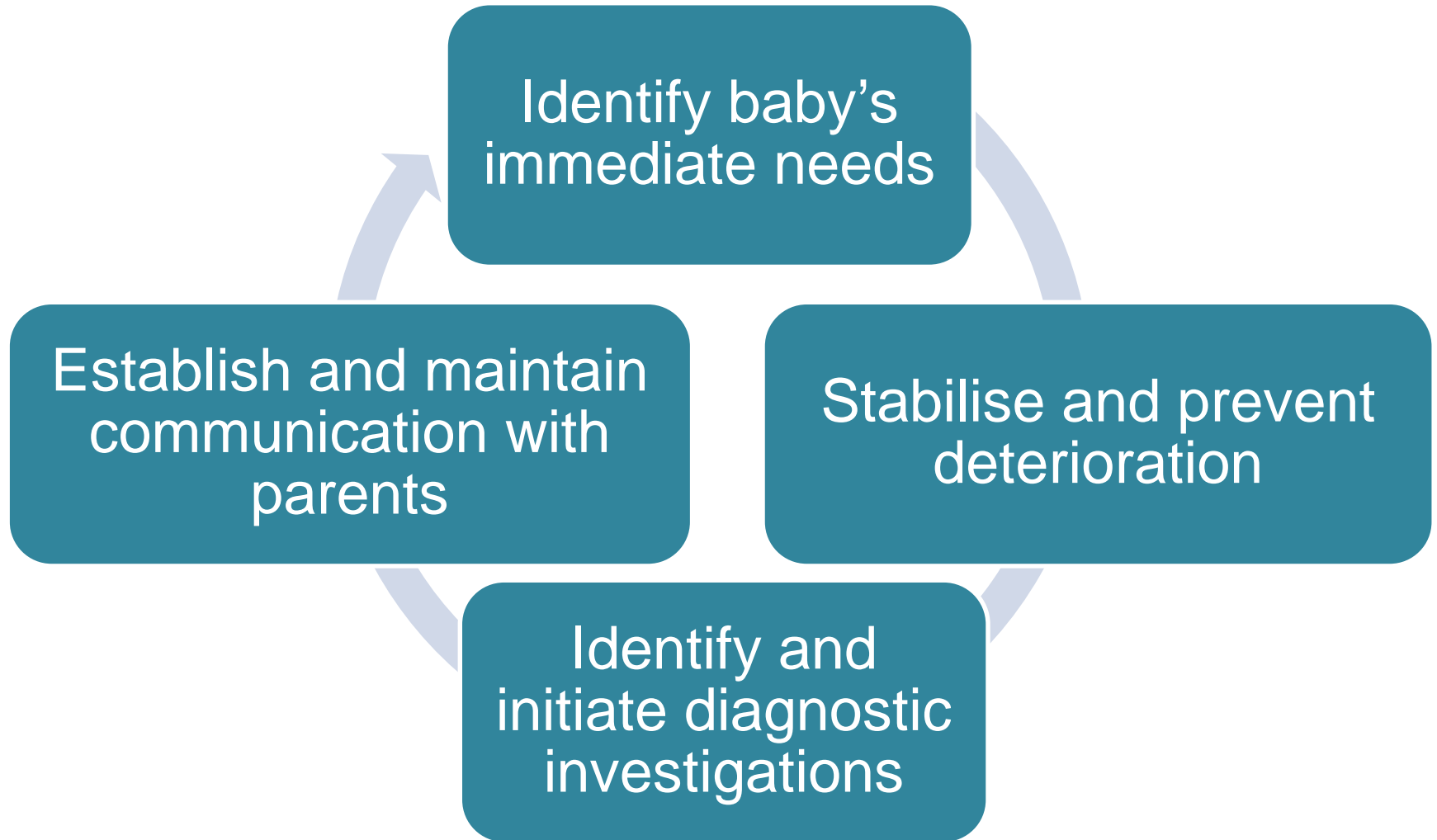
- Low birth weight, respiratory conditions, seizures, HIE, hypoglycaemia, sepsis, conditions requiring specialty management

# Contact

- Retrieval Services early for:
  - Advice and/or
  - Retrieval
- Retrieval team may be activated prior to the baby's birth



# Stabilisation principles



# Anticipate and plan



Identify risks



Assess clinical service capabilities



Contact RSQ early



Prepare for possible arrival of preterm delivery

# Initial resuscitation and stabilisation

Critical for preterm baby's long term outcomes

Risk of mortality and morbidity:

- Increases with decreasing gestational age
- Higher amongst babies born outside of a perinatal tertiary centre





# Resuscitation

Be prepared for all births

- Staff-skilled in neonatal resuscitation, familiar with equipment
- Equipment—complete, operational and available for all births
- Environment—increased room temperature if preterm, preheated overhead radiant warmer, blankets and hat, plastic wrap

# Thermoregulation

Normal temperature 36.5 to 37.5°C

Preterm babies (especially < 28weeks) require additional measures to prevent heat loss

- Prewarm environment and equipment:
  - Birth room (26°C)
  - Radiant warmer in draft free position
  - Hat and sheets/blankets
  - Use polyethylene bag/plastic wrap



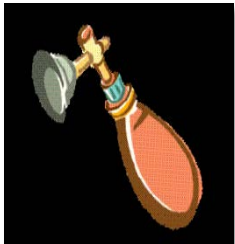
# Signs of respiratory distress

- Tachypnoea
- Chest recession
  - Sternal, intercostal or subcostal
- Nasal flaring
- Audible expiratory grunt
- Oxygen requirement  $> 30\%$



# Respiratory support

Delivered by



Bag and mask

T-piece device

Self-inflating bag

Flow-inflating bag with manometer

Bubble

Ventilator



# Continuous positive airway pressure (CPAP)

## Indications to commence:

- Spontaneous respirations
- Signs of respiratory distress
- Oxygen requirement  $> 30\%$



# When CPAP is commenced

- Commence at 6–8 cm H<sub>2</sub>O
- Set flow at lowest level to achieve pressure
- Deliver warm humidified air/oxygen mix (37°C)
- Deliver oxygen to maintain target oxygen saturations



# Intermittent positive pressure ventilation

## Signs of requiring IPPV

- No or sustained spontaneous respirations
- Signs of respiratory distress increasing
- Requiring CPAP of 8 cm H<sub>2</sub>O
- Oxygen requirement > 50%
- Gas exchange poor
- Blood gas
  - pH < 7.25 and
  - PaCO<sub>2</sub> > 60 mmHg

## Intubate baby and commence IPPV

- Pressures
  - PIP 18–20 cm H<sub>2</sub>O
  - PEEP 6–8 cm H<sub>2</sub>O
- Inspiratory time 0.3–0.4 seconds
- Rate 40–60 breaths per minute
- Oxygen concentration to maintain target oxygen saturations
- Settings may require adjustment
  - To achieve physiological chest

## Surfactant

- Consider if baby has:
  - Respiratory distress requiring IPPV in first 24 hours of life
  - ≤ 32 weeks gestation
  - Has hyaline membrane disease
- Warm to room temperature prior to administration via ETT
- Continue to provide IPPV until retrieval team arrives

# Clinical support

## All babies requiring transfer/retrieval require:

- Intravascular access
  - Commence glucose 10% IV maintenance fluids
  - $\leq 28$  weeks skin preparation—**aqueous chlorhexidine 0.1%**
- Nil by mouth
  - Gastric tube—free drainage and aspirate 4 hourly



# Fluid requirements

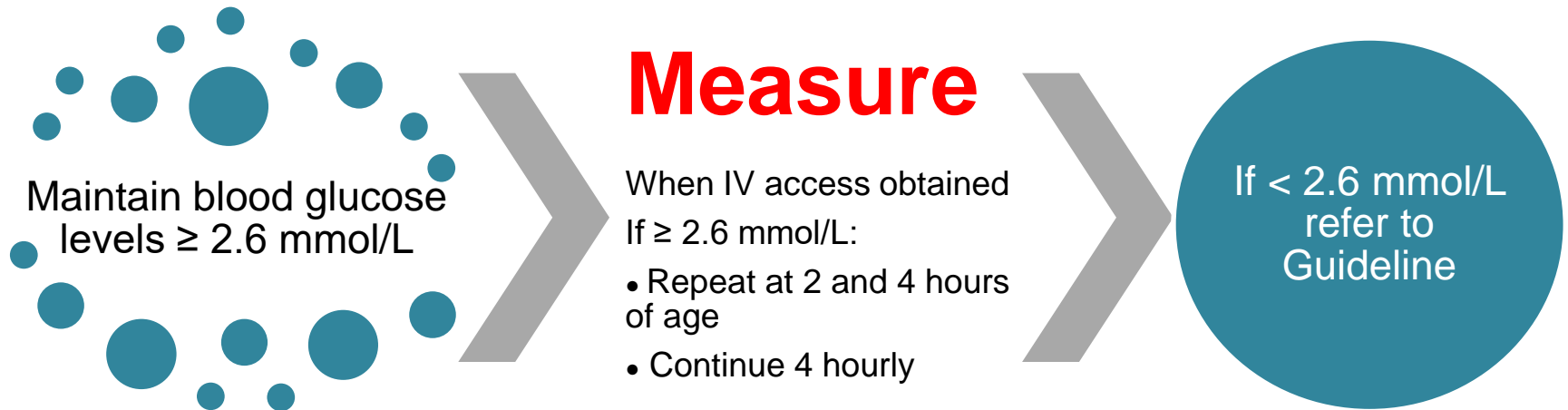


## Infusion:

- Glucose 10% IV
- Include all fluids infused (maintenance and support medicines)

	Day 1	Day 2	Day 3	Day 4	>Day 5
<b>Preterm</b> mL/kg/day	80	100	120	120	120 maximum
<b>Term</b> mL/kg/day	60	80	100	120	120 maximum

# Glucose monitoring



# Investigations

Suspect sepsis in all unwell babies

- Collect
  - Full blood count
  - Blood cultures
- Commence antibiotics
- Chest X-ray
- Other investigations as indicated
  - Blood gas analysis if requiring respiratory support



# Observations and monitoring

- Monitor continuously—heart rate, respirations and oxygen saturations
- Document vital signs hourly—increase if abnormal
- Blood pressure—hourly
- Temperature
  - Skin—continuous (if available)
  - Per axilla—4 hourly if within normal limits



# Oxygen saturations

- Position oxygen saturation sensor preductal—right hand or arm
- Target oxygen saturations
  - Term: 92–98%
  - Preterm: 90–95%



# Cardiovascular compromise

Management will vary according to underlying pathophysiology

## Clinical signs

- Hypotension
- mean arterial blood pressure is < gestational age in weeks
- Pallor/mottled skin
- Tachycardia
- Capillary refill prolonged (> 2 seconds)—measure on sternum or head
- Metabolic acidosis
- Blood loss

## Treatment

- Volume expander—0.9% sodium chloride 10 mL/kg IV or UVC
- May be repeated—discuss with retrieval medical coordinator

## Blood loss

### If known

- Use CMV negative, irradiated and cross matched blood
- If unavailable use emergency O Rh negative blood

If hypotension persists  
**Consider**  
inotropic support

### Caution

Avoid rapid infusion

# Hypoxic-ischemic encephalopathy

Improved outcome if treatment includes therapeutic hypothermia

Contact RSQ for advice when baby:

- Has abnormal neurological assessment
- $\geq 35$  weeks
- $\geq 1800$  grams
- $< 6$  hours of age
- Full care is planned

# Pain management



**Aim:** To minimise pain during procedures and to assist baby to cope and recover

## Administer

Analgesia, sedation and comfort measures appropriate to the intervention

and/or

## Nonpharmacological

Breast milk, skin to skin contact, non-nutritive suck, swaddling/containment, noise and light reduction

## Pharmacological

Oral sucrose, paracetamol, morphine, midazolam, local anaesthetic



# While waiting for the retrieval team

## Clinical

- IV access
- Commence IV fluids
- NBM
- Gastric tube
  - Free drainage
  - Aspirate 4 to 6 hourly

## Developmental

- Position baby to provide:
  - Flexion
  - Containment
  - Midline alignment
- Reduce noise and light
- Encourage parental contact

## Hygiene and comfort

- Perform 4 to 6 hourly:
  - Nappy change
  - Mouth care
  - Position change
  - Oxygen saturation sensor repositioning

# Retrieval team

**On arrival the retrieval team will require:**

- Clinical handover
- Space and power points for retrieval cot
- Air and oxygen supply
- Procedure trolley
- Assistance until departure
- 2 copies of documentation
- Expressed breast milk-labelled and packed in esky



# Parents

- Encourage early contact with baby
- Communication—keep informed, provide brochures
- Photographs
- Accommodation—assist with arrangements
- Refer to Social Worker

