NETS WA

NEWBORN EMERGENCY TRANSPORT SERVICE MEDICAL GUIDELINES

CLINICAL GUIDELINES

Surgical problems
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Newborn Emergency Transport Service Medical Guidelines
King Edward Memorial/Princess Margaret Hospitals
Perth Western Australia
Authorisation and review by NETS WA

Surgical problems

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Key Points:

- For all suspected surgical patients, bring a sample of hand-labelled maternal blood and a form signed by the staff taking the sample (in order to cross-match the baby.)
- Gastrointestinal conditions may cause significant fluid shifts into third spaces .

1. Bowel Obstruction, Perforation or Peritonitis

- Ventilation may be compromised by abdominal distension.
  - If perforated bowel with respiratory distress, will require intubation.
  - If on CPAP, review the need for intubation.
- Fluid resuscitation is likely to be required (normal saline.)
- "Drip and suck"
  - Keep NBM
  - Drainage of the stomach with large-bore NGT (size 8F or 10F.)
  - If retrieving by air, any free air will be exacerbated by lower cabin pressures, so a sea-level cabin or drainage of free air prior to transport may be required.
  - Start maintenance fluid (dextrose or dextrose/saline solution.)
  - If NGT losses are high (>10ml/kg/12 hours), consider replacement with normal saline.

- IV antibiotics Amoxicillin, Gentamicin and Metronidazole (or Tazocin monotherapy.)

2. Oesophageal Atresia

Key points:

- Consider in any baby with antenatal history of polyhydramnios who is particularly mucousy, choking with feeds or difficulty in passing a NGT.
- Confirm by passing NGT and confirming position on chest X-Ray
  - When passing NGT if resistance is felt (usually around 10cm) stop advancing: X-Ray will show tip at 10cm around level of thoracic inlet.
  - If NGT passes easily to 20cm: X-ray will show the NGT curling up in the proximal oesophagus.

Management:

- Nurse in flat position
- Airway management:
    - Always discuss with the on-call neonatologist
    - Intubation & ventilation should be avoided wherever possible as massive abdominal distension can occur if a distal fistula is present, resulting in stomach perforation
    - Regular suctioning with replogle tube will assist with oral secretions
    - Upper airways suctioning is commonly required as there is build up of secretions
- Insert a replogle tube:
    - Use a 10F replogle tube
    - Insert until resistance is felt then pull back ~ 1cm and secure:
    - During transport, manual suction of replogle tube is required using a 50mL syringe. **DO NOT use the portable suction device, as the pressure is too high, & can result in tissue necrosis.**
    - Every 15 minutes: flush infusion port with 0.5mL of normal saline then suction gently with a 50mL syringe
    - Losses from the replogle tube should be recorded and replaced if excessive

3. Congenital Diaphragmatic Hernia

Key points:

- Often the sickest/ most complex-to-transport patients. Always discuss with the on-call neonatologist.
- Suspect if respiratory distress, a scaphoid abdomen and poor unilateral air entry.
- Confirm with CXR (if available.)
- Pulmonary hypoplasia & pulmonary hypertension (PPHN) common.

Management:

- Airway and ventilation:
    - Almost always require intubation & ventilation.
    - Bag and mask ventilation should be avoided to prevent bowel distension.
    - Surfactant is not routinely given, as this can exacerbate matters.
    - The aim of a **lung protective strategy** is to minimise barotrauma and decrease mortality. This is achieved by allowing for permissive hypercapnia ($PaCO_2$ 45-55 mmHg & pH > 7.28) and relative preductal hypoxaemia (preductal SaO_2 >85%.)
    - The Stephan transport ventilator cannot deliver HFOV.
    - Aim for PIP< 25cmH_2O.
    - Rate ~ 45-60/min.
    - Ti ~0.4seconds.

Manage PPHN (see section 8):

- Use of pulmonary vasodilators: Nitric oxide, milrinone or PGE_1.
- Sedate well with morphine infusion (10-20mcg/kg/hr); may require midazolam infusion.
- Muscle relax (intermittent boluses of vecuronium) if still active and struggling against ventilator.
- Inotropic support &/or volume may be required.

Insert large-bore nasogastric tube (8F or 10F) to decompress the stomach and small bowel
UAC & UVC are desirable.

4. Gastroschisis

Key Points:
- The major acute problem is heat & fluid losses from exposed viscera
    - Minimise by using impermeable plastic bag up to armpits (or cling film).
    - Do not cover with moist packs or cotton wool as these can become cold and exacerbate the problem.
- Observe the circulation to the viscera, but do not handle the bowel excessively
    - Repositioning may improve this if compromised.
    - Lie the baby on its right side for transport

Management:
- Place in impermeable plastic bag
- If requiring respiratory support for pulmonary disease consider humidified high flow oxygen, otherwise consider intubation. Try to avoid CPAP.
- Fluid resuscitation:
    - May require fluid bolus (normal saline)
    - Start **10/kg/hr** normal saline to cover fluid losses. Once a silo has been applied, the normal saline replacements can be ceased.
    - In addition, start maintenance fluids at **80-100mls/kg/day**
- Insert size 8F or 10F NGT and leave on free drainage. Replace NG losses with normal saline if >10ml/kg/12 hrs.
- Give IV antibiotics Amoxicillin, Gentamicin and Metronidazole (or Tazocin monotherapy.)
- Observe thermoregulation carefully

5. Exomphalus

- This is not an urgent transport as the protective membrane prevents heat and fluid loss
- If protective membrane ruptures then should be transported urgently, treat as for Gastroschisis

6. Myelomeningocoele

- Contact and inform neurosurgeon on-call and discuss timing of transport (usually this is not a middle of the night emergency.)
    - Surgical closure is recommended within the 1st 24 hours in order to prevent infection and trauma to the exposed tissues.
- Nurse prone.
- Avoid using latex
- The back should be covered by a protective dressing (Mepilex non-adhesive dressing.)
    - Pre-made dressing packs are available in 6B compactus.
- If it is an open defect (CSF leakage,) start amoxicillin and gentamicin.

7. Transport of neonates following surgical procedure

Babies who require transportation to another hospital < 24hrs post surgery:
- Are transported in the NETS transport cot.
- Are continuously monitored with SPO_2 & ECG monitoring.
- Require suction, oxygen and an appropriate sized bag and mask available at all times during transportation.