APLS: Illness Scenario 5

This is a Teaching Scenario. Some flexibility in how it progresses is possible according to individual learner needs.

History {initial candidate briefing prior to arrival of child}
A 4 month old boy is brought to ED by his parents with increasing respiratory distress. He has had a cough and cold for 2 days and had a "*blue*" episode whilst being fed this evening. He was born at 28 weeks gestation and was in NICU for 10 weeks with lung disease.
Guide weight 4 kg.

Initial impression {provide information as candidate assesses child and applies monitoring}

Infant held in instructor parent's arms beside a bed. His eyes are open, but lethargic and cry is feeble. He is breathing very fast, RR 70, tracheal tug, nasal flaring subcostal recession. The parent states: *"he's really short of breath & hasn't fed well last couple of feeds"*.

Clinical Course {to be given to candidate as they progress}

SpO_2 is 86% (room air), HR 170, pulses palpable, CRT < 2, chest: bilateral wheezes & fine crepitation. "V" on AVPU. Temp 36.5°C, BGL 5.3 $mmolL^{-1}$.

Supplemental oxygen via face mask is required, and the child is more alert and RR improves a little. IV or NG maintenance fluids are indicated.

However, during (IV or NG) insertion the child suffers another apnoeic episode. SpO_2 falls to 80% and the child becomes unresponsive and floppy. Bag ventilation is required, and the SpO_2 recovers to 95%, after which spontaneous respirations recommence. Initial Na^+ is 132 mmol/L.

INSTRUCTORS INFORMATION
Key Treatment Points ☑

Airway	Monitor airway patency High flow O_2 via face mask commenced early Titrate O_2 therapy to SpO_2 94-98% when stable	
Breathing	BVM ventilation with 100% O_2 Consider need for CPAP / heated, humidified, high flow nasal oxygen therapy (HHFNO)	
Circulation	IV access Maintenance fluids - consider 66% of normal rate	
Specific Therapy	Requires medical transfer to tertiary PICU / HDU	

Diagnosis; Apnoeic episodes due to severe bronchiolitis, at risk SIADH

Learning objectives

At the end of this session participants should be able to:

- Apply the structured approach to assessment, management and diagnosis of hypoxemia and respiratory distress
- Recall and apply the management of severe bronchiolitis in their own practice

Potential Issues to be Discussed, instructor resources

- Management of severe bronchiolitis
- Minimal stimulation, supplemental oxygenation, maintenance hydration and supportive ventilation
- Role of heated, humidified high flow nasal oxygen (HHFNO)
    - Heated, humidified HFNO has been shown to improve oxygenation, decrease the work of breathing and possibly decrease PICU admissions in bronchiolitis
    - Its use outside management of bronchiolitis is not well investigated. Concerns include delays in initiating resuscitation, hypotension and air leak. It's advantages over conventional low flow nasal cannula before/during intubation is unclear
- Consider reduced maintenance fluids to minimise risk of hyponatraemia due to SIADH - seek advice.
- Indications (or not) for antibiotic therapy
- Efficacy of steroids, bronchodilators and nebulised adrenaline for bronchiolitis (no evidence of efficacy)
- PREDICT Bronchiolitis Guidelines Australasia

APLS: Illness Scenario 6

This is a Teaching Scenario. Some flexibility in how it progresses is possible according to individual learner needs.

History {initial candidate briefing prior to arrival of child}
A 5 day old infant is brought to the emergency department by his parents.
He was born at full term, normal delivery, weighing 3 kg. He was sent home at 48 hrs of age after a normal neonatal examination. Initially he was well, but over the last 24 hours he has become increasingly lethargic and has not fed for 8 hours.
Estimated weight 3 kg.

Initial impression {provide information as candidate assesses child and applies monitoring}

His colour is pale and greyish with decreased GCS, responding to pain. RR 75 with some recession, HR 195 and pulses are difficult to feel. CRT 7.

Additional History & Observations
Mum was well through the delivery. There are no risk factors for sepsis.
No O_2 sat trace in lower limbs, low perfusion with O_2 sat 89% in upper limbs.
BP 40/31 in upper limbs.

Clinical Course {to be given to candidate as they progress}

Access is only possible via the intraosseous route.
The infant becomes more tachypnoeic after the fluid bolus and femoral pulses are still absent. When the candidate listens to the chest, state that a gallop rhythm and systolic murmur is heard. This is a duct dependant lesion and requires treatment with IV alprostadil (prostaglandin E1).
This condition can be difficult to differentiate from sepsis in the neonate so intravenous antibiotics should be considered. Blood sugar should be checked.

INSTRUCTORS INFORMATION

Key Treatment Points ☑

Airway	Airway opening manoeuvres High flow O2 via face mask commenced early Titrate O2 therapy to SpO2 94-98% when stable	
Breathing	Arrange for intubation (alprostadil and apnoea risk)	
Circulation	IV/IO access 1 x fluid bolus	
Specific Therapy	IV alprostadil (prostaglandin E1) Contact paediatric cardiac centre	

Diagnosis: Shock secondary to coarctation of the aorta

Learning objectives. At the end of this session participants should be able to:

- Apply the structured approach to assessment and management of shock
- Recall, classify and apply the differential diagnosis of shock in a neonate
- Recall and apply the principles of management of shock in a neonate with reference to sepsis and duct dependent lesions in their own practice

Potential Issues to be Discussed

- Presentation of duct closure in first two weeks of life in duct-dependent systemic or pulmonary circulations
- use of alprostadil (prostaglandin E1), inotropes, fluids and role of intubation (pg 76-77)
- discuss differentiation of respiratory problems v sepsis v congenital heart disease
- discuss apnoea as a possible complication of prostaglandin in non-intubated transfers

Resources

Fifteen minute consultation How to spot serious heart disease in the newborn Menahem Sehgal Link

Diagram courtesy of Dr John Gavranich