SIMULATION OSCE (FACEM) – DOUBLE STATION

You are the consultant in a paediatric tertiary emergency department. A mother has brought in her 7-day old baby boy Joshua due to difficulty breathing and complaints of poor feeding.

The mother tells you that the pregnancy was uncomplicated with normal vaginal delivery of a term baby weighing 3.2kg.

Her child was feeding well on discharge but over the last 2 days has not been able to feed for longer than 5 mins and appears to be struggling to breathe. He has only had 2 wet nappies today.

- The child has been brought directly into the resuscitation bay as the nursing staff were concerned that he looked cyanotic.

You are to:

1) Team lead the resuscitation and manage the child accordingly
2) Hand over to inpatient admitting team

There will be a registrar and 2 nurses in the room who are competent with clear instructions.

Domains:

Leadership and prioritisation

Communication

Medical expertise
DUCT DEPENDANT CONGENITAL CARDIAC DISEASE

PROGRESS OF THE SCENARIO

W: 3kg
E: 12J
T: size 3.5/4 ETT
F: 60mL NS
M: 0.5mg midazolam
A: 0.3mL 1: 10,000 Adrenaline
G: 6mL 10% dextrose

0-2min: Assign roles
Brief discussion with mother
PPE
Monitoring: RR 50, sats 75%RA (post ductal), sats 95% (pre ductal), HR 160, SBP 70, alert, 36 deg
Achieve IV/IO access

2-7min: A-E assessment

A: patent, not protected. No stridor or signs of obstruction. Position should be neutral
B: laboured breathing, tachypneic, accessory muscle use, cyanotic
Apply high flow oxygen therapy and plan for intubation but acknowledging high risk
If CXR performed (attached) – lung fields are clear, cardiomegaly
C: tachycardic, borderline hypotensive, cap refill 6s, cool to touch, peripherally shut down
Cardiac murmur present
IV access and bloods collected. VBG (attached)
IVF bolus with nil improvement of haemodynamics
If ongoing IVF bolus given, patient will get increasingly breathless / APO
ECG shows sinus tachycardia and RBBB (attached)
D: alert but appears tired, PEARL 3mm, BSL 6
E: afebrile, nil evidence of rash
Recap: Unwell baby with undifferentiated shock – consideration for sepsis, cardiogenic, metabolic causes.

IV antibiotics – cefotaxime 50mg/kg + ampicillin 50mg/kg + gentamycin 7mg/kg

7-12min: If nil consideration for prostaglandin infusion child will continue to deteriorate

- PGE1 infusion: 0.05mcg/kg/min. Maintenance dose may be as low as 0.01mcg/kg/min
- Limit oxygen therapy
- Cautious use of IVF as can worse cardiac failure

**Prompt from faculty if nil consideration for congenital cardiac disease**

- Can call NICU for advice

- Consideration of adrenal insufficiency (high K, low Na, low BSL) and empirical steroids

12-15min: **If progressing well then:**

- Child continues to deteriorate despite above if initiated – will need to prepare to intubate
- High risk – call for anaesthetics support who are not available
- Atropine premedication
- Plan A, B, C
- Size 1 blade, size 4 ETT, insert 12cm

15-17min: Hand over to cardiology / NICU
### SIMULOMETER SBL900 FLIX

**Patient Report**

<table>
<thead>
<tr>
<th>Identification</th>
<th>Value</th>
<th>Unit</th>
<th>Normal Range</th>
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<tbody>
<tr>
<td>Patient ID</td>
<td>12345</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Name</td>
<td>Smith</td>
<td></td>
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</tr>
<tr>
<td>First Name</td>
<td>Jason</td>
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<tr>
<td>D.O.B.</td>
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<tr>
<td>Sample Type</td>
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<tr>
<td>FiO2</td>
<td>100%</td>
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</tbody>
</table>

#### Blood Gas Values

- **pH**: 7.20 mmHg (7.35-7.45)
- **pCO2**: 25 mmHg (35.0-45.0)
- **pO2**: 60 mmHg (75.0-100)

#### Acid Base Balance

- **cHCO3**: 16 mmol/L
- **cBase(B)c**: -7 mmol/L (-3.0-3.0)

#### Electrolyte Value

- **cK**: 6.2 mmol/L (3.4-5.5)
- **cNa**: 130 mmol/L (136-146)
- **cCa**: 1.15 mmol/L (1.15-1.30)
- **cCa (7.4)c**: mmol/L
- **cCl**: 95 mmol/L (94-107)

#### Metabolite Values

- **Glu**: 6.0 mmol/L (3.9-5.8)
- **Lac**: 5.0 mmol/L (0.5-2.0)

#### Oxygen Status

- **cHb**: 160 g/L (130-180)
- **O2**: 90 % (95.0-100)
- **P50e**: mmHg
- **pO2a/Ae**: %
- **FMetHb**: 1.0 % (0.0-1.5)
- **FCOHb**: 1.0 % (0.0-1.5)
- **P50(st)/a**: mmHg
- **FSHunte**: %
- **FO2Mb**: %
- **Hctc**: %

#### Notes
DUCT DEPENDENT LESIONS

- Tetralogy of Fallot

- Tricuspid atresia

- Pulmonary atresia or stenosis

HYPEROXIA TEST

If the cause of cyanosis is non-cardiac the arterial PaO$_2$ will increase to >100mmHg on exposure to 100% oxygen. If there is a cardiac cause for cyanosis, the PaO$_2$ will remain below 100mmHg.
DUCT INDEPENDENT LESIONS

- Truncus arteriosus

- Transposition of the great arteries

- Total anomalous pulmonary venous return

- Hypoplastic left heart syndrome