Newborn Transition
Denise Cole, MS, RNC-NIC
Denise-Cole@ouhsc.edu

Fetal Circulation: Placenta is source of exchange of oxygen, waste products, and nutrients

- Lower PaO2
  ⇒ Enters at 30-35 mmHg (80% saturated)
  ⇐ Leaves at 25 mmHg (45% saturated)
- Fetal Hemoglobin – HbF (I ♥ oxygen)
- Presence of 3 ducts:

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<thead>
<tr>
<th></th>
<th>Functional Closure</th>
<th>Anatomical Closure</th>
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<tbody>
<tr>
<td>Ductus Venosus</td>
<td>Minutes; after clamping of cord</td>
<td>7-14 days</td>
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<tr>
<td>Foramen Ovale</td>
<td>Minutes; after right atrial pressure increases from clamping of cord</td>
<td>1 month</td>
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<tr>
<td>Ductus Arteriosus</td>
<td>12-14 hours; Flow reverses d/t ↑ SVR</td>
<td>2-3 months</td>
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Transition of the Cardiovascular System:

- Loss of placental circulation (when cord is clamped)
- Rise in blood oxygen content w/adequate ventilation
- PVR ↓, SVR ↑
- Flow through DA dramatically decreases

When should the umbilical cord be clamped for vigorous newborns?

Label the heart:
1. Right Common Carotid
2. Left Common Carotid
3. Right Subclavian
4. Left Subclavian
5. Ductus Arteriosus
Onset of Ventilation:

- First breath is crucial!
- Must occur within seconds of placental separation (even better if before)
- Interdependent with cardiovascular events
- Lungs begin absorbing fluid as opposed to secreting fluid
- Expedited by increased pulmonary blood flow

Oxygen Exposure

- Partial pressure of oxygen in maternal mixed venous blood: ____________________
- Partial pressure of oxygen in fetal blood entering the umbilical vein: ______________
- Partial pressure of oxygen in room air: ____________________

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<thead>
<tr>
<th>Source of oxygen:</th>
<th>PaO2:</th>
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<tbody>
<tr>
<td>FETUS</td>
<td>NEWBORN</td>
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<table>
<thead>
<tr>
<th>Minute of Life</th>
<th>SPO2</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
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<tr>
<td>3</td>
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<td>5</td>
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<td>10</td>
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Where should the oximeter probe be placed?

_____________________________________

What did the videos of the rabbit kittens teach us?

What is the most important intervention to assist a newborn with transition? ____________________

(hint: the blinking word)