Stabilization of the Critically Ill Baby for Transport

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Neonatal Outreach Educator

Special thanks to Cynthia Jensen RN, MS, CNS
Objectives

▪ Communicate effectively, utilize resources and execute care as a team for the best outcomes
▪ Understand critical steps in the stabilization of a sick neonate
▪ Describe the personnel, special equipment and support needed to prepare for the transport of a neonate with select diagnoses

Goal of Transport

▪ To bring the necessary personnel and equipment to the infant as quickly as possible to begin intensive care
▪ To transport the most well stabilized patient possible in a timely matter
Sick Newborns Have Increased Risk for Morbidity & Mortality during Transport for Several Reasons:

- They are the sickest, least stable, and often smallest infants
- They are usually at the most critical or unstable point in their illness
- Their clinical problems occur at unpredictable times and may necessitate immediate action
- Experienced personnel and appropriate equipment are not always available

Essentials of Transport:

- Transport personnel
- Medications and supplies
- Equipment/monitoring
- Transport vehicle
- Communication
- YOU!

Collaborate and Communicate

- Communication is the key to our success
  - Supporting the family
  - Decision making
  - Plan of care
  - Coordination of teams
  - Critical communication between the sending and receiving facilities

Why so much emphasis on communication?
Evidence Points to Early Definitive Care over Speed of Transfer

- Mindset for critically ill transports has drastically changed over last two decades
- No evidence for “scoop and run”
- Start with implementing early goal-directed therapy in transferring facilities - YOU!!

2008 Pediatric Critical Care Medicine

Sentinel Event Alert #30:
Preventing Infant Death and Injury During Delivery

Teamwork at San Joaquin

- How do you escalate care?
- How do you pull resources in an emergency?
- What can non NICU personnel do for you?
  - ER
  - ICU
  - Med Surg
  - Supervisor
  - Students
  - Pharmacy
How to Communicate with UCSF

▪ For transport requests, consult
  Phone: (877) 822-4453 or (877) UC-CHILD
▪ To see how a baby is doing after sending to UCSF
  • Send Tanya an email without the patient name and ask her to call point person with an update tanya.kamka@ucsf.edu or email valerie.huwe@ucsf.edu for maternal questions
  • Call Tanya (415) 353-3912 and leave a confidential voicemail for a call back

Stabilization of the Infant

▪ NRP → ABCs
  • Respiratory stabilization
  ▪ Adequate vascular access-easily visualized
  ▪ Temperature stabilization
  ▪ Hemodynamic stabilization
  ▪ Treatment of infection
  ▪ Glucose stabilization
  ▪ Special Problems

Respiratory Stabilization

▪ Assessment
▪ Work up
▪ Diagnostics
▪ Appropriate mode of support
Modes of Respiratory Support

▪ Oxygen
  • Nasal cannula
  • High flow nasal cannula
▪ Non invasive positive pressure ventilation
  • CPAP
  • SiPAP
  • Intubation
  • Nitric oxide

Intubation Criteria

▪ Worsening respiratory distress
▪ Increasing O2 requirement
▪ Apnea
▪ Gasping
▪ Specific congenital anomalies
▪ Who can intubate? What are your resources?

Quick Respiratory Reference

<table>
<thead>
<tr>
<th>Wt of baby</th>
<th>ETT Size mm</th>
<th>Blade Size</th>
<th>Sx Cath Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1200</td>
<td>2.5</td>
<td>0</td>
<td>5-6 fr.</td>
</tr>
<tr>
<td>1200 - 2500</td>
<td>3.0</td>
<td>0 or 1</td>
<td>6 – 6 ½ fr.</td>
</tr>
<tr>
<td>2500 - 4000</td>
<td>3.5</td>
<td>1</td>
<td>8 fr</td>
</tr>
<tr>
<td>&gt;4000</td>
<td>4.0</td>
<td>1</td>
<td>8 – 10 fr</td>
</tr>
</tbody>
</table>
Equipment and Preparation for Intubation

- What do we need?
- Who do we need?
- Infant comfort
- Proper position:
  - ETT
  - Head
  - Tubing
  - For X-ray

Correct Placement of ETT

- 1 cm above the carina, usually T₁-₃
- 1-2-3 = 7-8-9 rule

Documentation After Intubation

- Size of ETT
- Number of attempts
- Tolerance of procedure
- Centimeter mark at the lip
**Infasurf**  
* (Calfactant)  
- Bovine lung surfactant  
- Dose: 3 ml/kg via ETT  
  May repeat Q 12 hrs X 3 as needed

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**Curosurf**  
* (Poractant Alfa)  
- Porcine lung surfactant  
- Dose: 2.5 ml/kg via ETT  
  May repeat 1.25 ml/kg/dose Q 12 hrs X 2 as needed  

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**Pneumothorax**  
- What other signs do we see with a pneumothorax?
Pneumothorax: Potential Causes

- Vigorous resuscitation
- Over ventilation (pressures)
- Meconium aspiration
- Respiratory distress syndrome
- Pulmonary hypoplasia

Pneumothorax: Nursing Implications

- Verify by transillumination and or Chest Xray
- Assist with evacuation of air
- Assist with chest tube placement as necessary
- Remember pain and sedation as needed

Transillumination

- https://www.youtube.com/watch?v=kEy9WvOJuH4
Stabilization of the Infant

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▪ Temperature stabilization
▪ Glucose stabilization

▪ Hemodynamic stabilization
▪ Treatment of infection
▪ Special Problems

Adequate Vascular Access

Most infants require some type of vascular access for transport:

▪ Peripheral IV
▪ Umbilical Arterial Catheter
▪ Umbilical Venous Catheter
▪ Central Venous Line
▪ Intraosseous Line

Peripheral IVs

▪ Resources
▪ Equipment
▪ Insertion
▪ Securement
▪ Monitoring
▪ Maintenance
### Umbilical Lines

<table>
<thead>
<tr>
<th>Type of Line</th>
<th>UAC</th>
<th>UVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sizes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1500 gms</td>
<td>3.5 Fr</td>
<td>3.5 Fr</td>
</tr>
<tr>
<td>&gt;1500 gms</td>
<td>3.5 Fr</td>
<td>3.5 Fr</td>
</tr>
<tr>
<td>Number of Lumens</td>
<td>Single only</td>
<td>Single or Double</td>
</tr>
<tr>
<td>Best for:</td>
<td>Arterial Blood Gases</td>
<td>May give all medications and fluids if in good placement</td>
</tr>
<tr>
<td>Ideal location on X Ray:</td>
<td>High Line: T6-T9</td>
<td>Deep line: Junction of SVC and Right Atrium</td>
</tr>
<tr>
<td>Special Considerations</td>
<td>Should be transduced</td>
<td>Shallow emergency placement:</td>
</tr>
<tr>
<td></td>
<td>Not ideal for medications unless emergent needs</td>
<td>• 3-4 cm until blood return noted</td>
</tr>
<tr>
<td></td>
<td>Ensure all connections are tight</td>
<td>• Must remove after emergency use</td>
</tr>
<tr>
<td></td>
<td>Always pull back before pushing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VERIFY placement before using</td>
<td></td>
</tr>
</tbody>
</table>

### Correct UAC/UVC Placement

**Waveforms and Monitoring**

UVC shown at T9-T10, can be a deep line in further at junction of SVC and RA
Stabilization of the Infant

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Temperature Stabilization

- 36.5 – 37.5°C axillary
- Who is at greatest risk?
- Incubator or radiant warmer
- Polyethylene wrap
- Chemical warming mattress
- Double hat or poly lined hats

Stabilization of the Infant

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Glucose Stabilization

- Ideal Glucose 50 – 110 mg/dL for sick babies
- 60 mg/dL for babies with asphyxia
- Initial infusion rates: 4 – 8 mg/kg/min.
  (60 – 80 cc/kg/day of D10W)
- Fluids D10W, no electrolytes
- May need to be adjusted based on diagnosis

Hypoglycemia in the UCSF ICN

<table>
<thead>
<tr>
<th>Patient population</th>
<th>Blood glucose mg/dL</th>
<th>Symptomatic</th>
<th>Asymptomatic</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>All (Including NICN)</td>
<td>&lt;25 mg/dL</td>
<td>✓</td>
<td>✓</td>
<td>Notify MD/NPN&lt;br&gt;Place IV&lt;br&gt;Obtain order for:&lt;br&gt;· 2ml/kg D10W bolus&lt;br&gt;· D10W@80ml/kg/day</td>
</tr>
<tr>
<td>NICN Patients with&lt;br&gt;Encephalopathy&lt;br&gt;HIE&lt;br&gt;Perinatal stroke symptoms</td>
<td>&lt;60 mg/dL</td>
<td>✓</td>
<td>✓</td>
<td>Notify MD/NPN&lt;br&gt;Place IV&lt;br&gt;Obtain order for:&lt;br&gt;· 2ml/kg D10W bolus&lt;br&gt;· D10W@80ml/kg/day</td>
</tr>
<tr>
<td>All Infants Identified as “at Risk” (Except NICN)</td>
<td>&lt;50 mg/dL</td>
<td>✓</td>
<td></td>
<td>Notify MD/NPN&lt;br&gt;IV Dextrose per order&lt;br&gt;AND/OR&lt;br&gt;Feeding per order</td>
</tr>
<tr>
<td>All Infants Identified as “at Risk” (Except NICN)</td>
<td>&lt;50 mg/dL</td>
<td>✓</td>
<td></td>
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- Treatment of infection
- Special Problems
What is Shock?

- Shock occurs when, for any reason, systemic oxygen and nutrient supply become inadequate to meet metabolic demand

Types of Shock and Examples

- Pump isn’t working (cardiogenic): cardiomyopathy, rhythm disturbances, heart failure or ischemia
- Abnormalities within the vascular beds (distributive): sepsis, vasodilators, endothelial injury
- Flow restriction (obstructive): tamponade, tension pneumo, CHD
- Inadequate oxygen-releasing capacity (dissociative): profound anemia
- **TANK IS EMPTY (HYPOVOLEMIC): ACUTE BLOOD LOSS, FLUID AND ELECTROLYTE LOSSES**

Recognition of Shock/Hypovolemia

- Infant remains pale despite adequate oxygenation
- Heart rate may be elevated
- Normo or hypotensive
- Respiratory distress/tachypnea
- Weak peripheral pulses with adequate heart rate
- Exhibits poor response to resuscitation
- Degree of compromise related to the speed of the bleed
What Does Hypovolemia Look Like?

- Physical Exam
  - Appearance
  - Color
  - CFT
  - Pulses
  - Urine output

Volume Expanders Used to Treat Neonatal Hypovolemia

<table>
<thead>
<tr>
<th>Agent</th>
<th>Initial Dosage</th>
<th>Additional Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isotonic sodium chloride solution</td>
<td>10-20 mL/kg IV</td>
<td>Inexpensive, available</td>
</tr>
<tr>
<td>Plasma</td>
<td>10-20 mL/kg IV</td>
<td>Expensive</td>
</tr>
<tr>
<td>Reconstituted blood products</td>
<td>10-20 mL/kg IV</td>
<td>Use type O negative</td>
</tr>
</tbody>
</table>

Getting Blood in Your Facility

**Remember to draw NBS if possible**

- What is the process?
- Do you need an order?
- How long does it take to get it to the bedside?
- Administration:
  - Routes?
  - How much?
  - How fast can it infuse?
  - How long does it take to see a difference in lab values?
Dopamine

- **Indications:**
  - Hypotension
  - Shock
  - Increase Renal Perfusion

- **Dose:** 5 – 20 mcg/kg/min, continuous IV infusion

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Dopamine

- **Note:**
  - Must have adequate intravascular blood volume before starting
  - Do not infuse into an arterial line
  - Must run in a line that will not be bolused
  - Concentration and mixing

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Stabilization of the Infant

- **NRP → ABCs**
- **Respiratory stabilization**
- **Adequate vascular access**
- **Temperature stabilization**
- **Glucose stabilization**

- **Hemodynamic stabilization**
- **Treatment of infection**
- **Special Problems**
Sepsis and the Newborn: Signs and Symptoms

Clinical Presentation

▪ Central Nervous System
  ▪ Temperature instability
  ▪ Lethargy/irritability
  ▪ Hypo or hypertonia
  ▪ Seizures

Clinical Presentation

▪ Respiratory System
  ▪ Cyanosis
  ▪ Grunting, flaring, retracting
  ▪ Tachypnea
  ▪ Apnea
  ▪ Increased oxygen requirement
Clinical Presentation

- Gastrointestinal
  - Poor feeding
  - Emesis (may be bile-stained)
  - Increased residuals (may be bile-stained)
  - Abdominal distention
  - Edema/erythema of abdominal wall
  - Diarrhea/decreased stools
  - Hepatomegaly, jaundice

Clinical Presentation

- Cardiovascular
  - Pallor, cyanosis, or mottling
  - Bradycardia/tachycardia
  - Hypotension
  - Decreased perfusion (weak pulses, cool hands & feet)
  - Edema

Clinical Presentation

- Skin
  - Rashes
  - Pustules
  - Erythema
  - Omphalitis
  - Edema
Clinical Presentation

▪ Hematopoietic
  ▪ Jaundice
  ▪ Bleeding
  ▪ Purpura/ecchymosis
  ▪ Splenomegaly
  ▪ Thrombocytopenia

Clinical Presentation

▪ Metabolic
  ▪ Glucose instability
  ▪ Metabolic acidosis

Work Up and Treatment of Infection

▪ Work up
  ▪ Blood Culture
  ▪ CBC with Differential and Platelets
  ▪ CXR
▪ Ampicillin 100 mg/kg/day divided Q 12 hours
▪ Gentamicin 3.5 - 5 mg/kg/dose or
▪ Cefotaxime 50 mg/kg/dose q 8 – 12 hrs
Treatment of Infection

- Gentamicin dosing: birth to 1 month

<table>
<thead>
<tr>
<th>GA</th>
<th>Dose</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 28</td>
<td>3.5 mg/kg/dose</td>
<td>Q 36 hrs</td>
</tr>
<tr>
<td>29-34</td>
<td>3.5 mg/kg/dose</td>
<td>Q 24 hrs</td>
</tr>
<tr>
<td>≥35</td>
<td>5 mg/kg/dose</td>
<td>Q 24 hrs (q 36 hrs for HIE &amp; significant asphyxia)</td>
</tr>
</tbody>
</table>

Stabilization of the Infant

- NRP → ABCs
- Respiratory stabilization
- Adequate vascular access
- Temperature stabilization
- Glucose stabilization
- Hemodynamic stabilization
- Treatment of infection
- Special Circumstances

Special Circumstances

- The Very Low Birth Weight Infant (VLBW)
- Intestinal Obstruction
- Esophageal Atresia and TEF
- Diaphragmatic Hernia
- Abdominal wall defect
- Myelomeningocele (Spina Bifida)
- Birth Asphyxia / HIE
- Cardiac Disease
Unique Needs of the VLBW Baby: It’s All About Protection

- What we do during those first minutes, to hours can affect outcomes
- All systems immature and vulnerable
- General appearance
- Transition challenges

Protecting the Preemie Brain

- Before the birth
  - Antenatal corticosteroids
  - Magnesium sulfate
- During and After the birth
  - Gentle handling
  - Head position
  - Maintaining BP in normal range
  - Avoiding things that may change cerebral blood flow
  - Delayed cord clamping
Protecting the Lungs

- Antenatal corticosteroids
- Gentle ventilation
- The role of surfactant
- Prevention of infection (early and late onset)
- Avoidance of:
  - Barotrauma
  - Volutrauma
  - Hyperoxia

CPQCC Delivery Room Management Change
Package: Optimize Initial Respiratory Support

- Ventilatory strategies
  - Early use of CPAP
  - Avoid intubation (if possible)
  - Avoid prophylactic administration of surfactant in the delivery room

Effect of Prematurity on Systems:
Temperature Control

CPQCC Delivery Room Management Change
Package: Maintain Normal Temperature (36.5-37.5°C)

- Physiologic challenges
- Iatrogenic challenges
- Emphasis on normothermia as critical to stabilization of the VLBW
- Example of warming techniques
Gastrointestinal Obstructions

- Mechanical versus functional obstruction
- Intrinsic obstruction
  - Atresias
  - Stenoses
  - Anorectal malformations
- Extrinsic obstruction
  - Volvulus
  - Cysts and tumors
  - Incarcerated hernias
Gastrointestinal Obstructions:
Cardinal Signs and Symptoms

- Polyhydramnios
- Abdominal distention
- Bilious emesis
- Failure to pass meconium in the first 48 hours of life

Signs and Symptoms of Intestinal Obstruction
Tracheoesophageal Fistula (TEF)

**Signs and Symptoms**
- History of polyhydramnios
- Excessive mucus, “spitty”
- Cyanosis, especially with feeding
- Emesis/choking with feeds
- Inability to pass oral gastric tube

**Tracheo-esophageal Malformation: Initial Management**
- Airway
- Replogle to suction
- IV access
- Careful intubation
- NPO
- HOB up
- Prone
Intestinal Obstruction Stabilization

- NPO
- Abdominal exam
- KUB
- HOB elevated
- Replogle (OG) to low intermittent suction

Abdominal Wall Defects

Gastroschisis

- Herniation of bowel through a small opening to the right of the umbilicus
- Abdominal wall muscles are normal
**Gastroschisis: Stabilization**

- Do Not Manipulate Bowel
- Place in Vi-drape (sterile bowel or limb bag, also called a turkey bag) immediately along with some warmed normal saline, pull draw string and keep it closed
- Infant stays in Vi-drape until surgery
**Omphalocele**

- Failure of intestines to return from the umbilical cord into the abdominal cavity
- Male predominance
- Defects range between 2cm and 15cm
- Defect covered by transparent membrane of amnion and peritoneum

**Omphalocele: Immediate Neonatal Management**

- Inspect sac
- IVF, antibiotics
- Gastric decompression
- Examine for other congenital anomalies
Associated Conditions with Omphalocele

- Congenital Heart Disease
- Chromosomal abnormalities
- Beckwith-Wiedemann Syndrome
- Pentalogy of Cantrell
- Prune Belly Syndrome

Abdominal Wall Defects: Stabilization

- Assess condition of bowel, perfusion
- Place infant inside sterile bag to mid chest
- Minimize heat loss
- Hydrate: Fluids at 100 – 150 cc/kg/day
- Replogle tube to LIS
- Obtain cultures and begin antibiotics

Neural Tube Defects

- Types:
  - Anencephaly
  - Meningocele
  - Myelomeningocele
  - Encephalocele
Meningocele

- Herniation of the meninges into the subcutaneous tissue of the back with overlying intact skin

Myelomeningocele

- Initial exam
Myelomeningocele: Stabilization

- Resuscitation side lying (preferred) or supine in donut (only if necessary)
- Visually examine myelomeningocele for cerebrospinal fluid leak, general appearance
- Maintain normothermia (36.5-37.5°C)
- Gather supplies

- Keep infant on abdomen with head of bed flat
- Avoid contamination of meningocele/dressing from stool/urine
- Make sure antibiotics are ordered and given
- Keep infant NPO, per physician order
Hypoxic Ischemic Encephalopathy

▪ What is it?
▪ What causes it?
▪ How do we recognize it?
▪ How do we treat it?

Birth Asphyxia / HIE

▪ Identify patients that might benefit from cooling within 6 hours of birth
▪ After initial resuscitation and stabilization, consider if patient is appropriate candidate.

MUST BE: a ≥ 36 wk GA and ≤ 6 hrs of life
WITH: b. One or more of the following:
   1. Low Apgar scores: < 5 at 10 minutes
   2. Prolonged Resuscitation: eg, chest comp, ETT/BMV at 10 min of life
   3. Severe acidosis: pH < 7.00 from cord or 1st patient gas
   4. Severe Base Excess: < -12 from cord or 1st patient gas
AND: c. Moderate to severe encephalopathy
Birth Asphyxia / HIE

- **Moderate to severe encephalopathy** (one or more anytime within 6 hours of birth)
  - Lethargy
  - Stupor or coma
  - Hypotonia
  - Abnormal reflexes, including oculomotor or pupillary abnormalities
  - Absent or weak suck
  - Clinical seizures
  - Hyper-alert state (as a stage in the progression of encephalopathy)
  - Abnormal aEEG background and/or seizures

Birth Asphyxia / HIE

- **Contact UCSF Access Center (877-822-4453)**
  - Discuss if patient is appropriate for cooling
  - Contact early, contact often

- **Turn down/off external heat sources and avoid hyperthermia**
  - Document time and do not actively cool patients

Birth Asphyxia / HIE

- **Monitor core (rectal) temperature** – continuously if equipped or often
  - Target rectal temp = 33.5 C (92.3F)
  - Check temp frequently and record q 15 minutes
  - Core temp may still fall < 33.5 C with passive cooling. Be prepared to restart low heat if needed.
Birth Asphyxia / HIE

- **Secure vascular access** – Before peripheral vasoconstriction occurs with cooling
  - UAC and UVC if possible
  - Peripheral IV at a minimum
- **Maintain adequate sedation** – Keep patient comfortable. Avoid shivering and minimize cold stress
  - Be hypervigilant about checking and maintaining blood glucose in high normal range (≥ 60mg/dL)

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Birth Asphyxia / HIE

- **Treat only clinical seizures** – no prophylactic dosing
  - Lorazepam (Ativan): 0.1mg/kg/dose IV, repeat X 1 pm for suspected seizures.
  - Phenobarbital: 20 mg/kg IV load, repeat X 1 pm for confirmed seizures
  - Please note and communicate neuro exam to transport team before antiepileptic given

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Pop Quiz!

- What is the most common type of congenital anomaly?
  - A. Orofacial clefting
  - B. Neural tube defects
  - C. Chromosomal defects
  - D. Congenital heart defects
  - E. Abdominal wall defects
Congenital Heart Disease

• Most common congenital defect
• Affects about 1 in 440 live births
• 40,000 babies born with CHD in the USA each year
  • One third of these infants have critical heart disease that will require immediate intervention

Congenital Heart Disease

• Recognition of the infant with CHD
• Maternal factors:
  • Chromosomal abnormalities
  • Underlying disease
  • Infection
  • Medications
  • Drug use

Congenital Heart Disease: Danger Signs

• Severe hypoxemia (PaO₂ may be < 30)
• Central cyanosis
• Decreased peripheral pulses
• Pale, mottled, cool extremities
• Prolonged CFT > 3 secs
• Murmur (depends on the defect)
• BP gradient upper vs. lower extremities
• Increased respiratory rate with or without increased WOB
What is a Murmur?

CHD General Guidelines

• Not all newborns with murmurs have CHD
• Not all newborns with CHD have murmurs
• Not all CHD presents in the newborn period
• It is often difficult to differentiate CHD from respiratory disease or sepsis

  • UCSF Housestaff Manual

Rule-Out Cardiac Disease

CXR

• Size and shape of the heart
• Pulmonary vasculature
• Condition of the lungs
Rule-Out Cardiac Disease

Normal Heart

Cardiac Assessment

- Vital Signs
  - Temperature
  - Heart rate
  - Respiratory status
  - Blood pressure
  - O2 Sats*

Beyond Screening:
Symptoms of Serious CHD

- Central cyanosis
- Respiratory distress
- Decreased pulses or unequal pulses
- Bounding pulses
- Unexplained metabolic acidosis
- Poor perfusion
- Shock
Acyanotic Lesions

- Generally produce a left to right shunt
- Enough oxygenated blood in the circulation
- Increases workload on the heart over time
- Types:
  - ASD
  - VSD
  - PDA
  - AV Canal

Cyanotic Heart Disease

- Right to left shunt may be present
- May have decreased pulmonary blood flow
Cyanotic Heart Disease

- Presentation
  - Central Cyanosis
  - Feeding issues
  - Murmurs?
  - CHF
  - Pulmonary Hypertension
  - Decreased blood pressure lower limbs
  - CXR Left ventricular hypertrophy

Hypoplastic Left Heart Syndrome

- Rule-Out Cardiac Disease
  - ABG
  - CXR & ECG
  - 4 Extremity blood pressures
  - Pre & Post-ductal gases
  - 100% Oxygen challenge
  - Evaluate the need for PGE₁
Cyanotic Heart Disease: Stabilization

• Consult with Neonatologist/ Cardiology
• PGE1
• Correct acidosis
• Support all systems

PGE1 Side Effects

• Apnea
• Fever & WBC changes – consider CBC, blood culture, & starting antibiotics.
• Jitteriness and Irritability
• Hypotension
• Normal starting dose:
  • 0.05-0.1 mcg/kg/min

We Are Here for You!

• Resources
  • Tanya Kamka, Neonatal Outreach Educator
    – tanya.kamka@ucsf.edu, 415-353-3912
  • Pediatric access center
  • UCSF ICN
    (415) 353-1565
References

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