NEONATAL RESUSCITATION

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Historical Background

- First Official Guidelines Developed in United States 1979
- Various Committees Meet and Revise Guidelines Every 2-3 Years
- All Nursery Staff Required to Be Formally Certified Every 2 Years
- Significant improvement in perinatal outcome in past 20 years
Core Knowledge and Skills

- **Airway** - Establish Clear Airway
- **Breathing** - Ventilation & Oxygenation
- **Circulation** - Adequate Cardiac Output
- Reduce Heat Loss
Phases of Resuscitation

- Preparation
- Evaluation
- Resuscitation
- Post-resuscitation Evaluation
Resuscitation Priorities

Drying, Warming, Positioning, Suctioning, Stimulation

- BVM Vent
- Oxygen
- Chest Compressions
- Intubation
- Medications
Preparation

- Staff (physicians, nurses) – Assigned in Advance
- Communication between Obstetric team and Pediatric team
- Equipments
Resuscitation Assignments

- **Team Leader- Airway**
- **Second Rescuer-**
  - Pulse Check
  - Chest Compression
- **Third Rescuer-**
  - Medications
  - Equipment
Resuscitation Equipment

- Organized
- Readily Accessible
- Easy to Assemble
Resuscitation Equipment

- Intubation
- Bag & Mask
- Suction
- Warming Devices
Resuscitation-Oriented History

- Multiple Gestation (twins, triplets)
- Meconium Stained Amniotic Fluid
- Prematurity
- Narcotics Use in Previous 4 Hours
Antepartum Risk Factors

- Maternal Age >35 Yrs. Or <16 Yrs.
- Maternal Diabetes
- Maternal Hemorrhage
- Maternal Hypertension
- Drug Therapy
- Substance Abuse
Antepartum Risk Factors

- Anemia or Isoimmunization
- Previous Fetal/Neonatal Death
- Lack of Prenatal Care
- Multiple Fetuses
- Pre-term /Post-term Fetus (before 37 weeks or after 42 weeks)
- Small for Gestational Age
- Large for Gestational Age
- Premature Rupture of Membrane (ROM)
Intra-partum Risk Factors

- Prolonged Labor
- Prolonged ROM
- Prolapsed Cord
- Maternal Infection
- Foul Smelling Amniotic Fluid
- Meconium Stained Amniotic Fluid
Intra-partum Risk Factors

- Abnormal Presentation (breech)
- Abnormal Fetal Heart Rate
- Precipitous Delivery
- Profuse Bleeding
Resuscitation Priorities

- Drying, Warming, Positioning, Suctioning, Stimulation
- BVM Vent
- Oxygen
- Chest
- Compressions
- Intubation
- Medications
Preventing Heat Loss

- Overhead Warmer
- Heat Lamps
- Incubator
- Warm Towels & Blankets
- Gloves Filled with Warm Water
Tactile Stimulation

- Hitting the Sole of the Foot
- Flicking the Heel of the Foot
- Rubbing the Newborn’s Back
- When Drying Newborn with Warm Blanket
- When Suctioning Mouth or Nose
- Avoid Harmful Actions
Resuscitation Priorities

Drying, Warming, Positioning, Suctioning, Stimulation

BVM Vent

Oxygen

Chest

Compressions

Intubation

Medications
Bag-Valve-Mask Ventilation (BVM)

Indications:

- Apnea or Gasping Respiration
- Heart Rate <100 bpm
- Persistent Cyanosis Despite O₂ Therapy
Bag-Valve-Mask Ventilation - Technique

- Neutral Position of Head
- Secure Mask Seal
- Avoid Excessive Pressure on Nose or Mouth
Ventilation of the Newborn

Assisted rate = 40 to 60 bpm

Signs of Adequate Ventilation:

- Bilateral Chest Expansion
- Bilateral Breath Sounds
- Adequate Heart Rate & Color
Indications for Intubation

- BVM Ventilation Not Effective
- Thick Meconium
- Prolonged Positive Pressure Ventilation (PPV)
Chest Compression

Indications:

- Despite Adequate Stimulation & Effective Ventilation With 100% O₂
- Heart Rate <60 bpm
Chest Compressions

- Rate: 90 per minute, Interposed by Vent.
- Compression - Ventilation Ratio: 3:1
- Stop Compressions When HR > 80 bpm
Chest Compressions

Methods:

- **Two Finger Chest Compressions**
  - Two Fingers are Placed Just Below the Nipple Line

- **Hands-Around-the-Chest Compressions**
  - Two Hands Encircling the Chest
  - Two Thumbs at the Nipple Line
Medications

Epinephrine:
- Indications: HR <80 bpm Despite PPV & Chest Compressions
- Dose: 0.01 to 0.03 mg/kg IV, ET, IO (0.1 to 0.3 mL/kg of 1:10000)
- If no Response to ET, may Increase ET Dose to 0.1 mg/kg of 1:1000
Medications

Naloxone:

- Indications:
  - Respiratory Depression
  - Narcotic Administration Within 4 Hours of Delivery
- Dose: 0.1mg/kg IV, ET, IO, SQ
Common Post-Resuscitation Airway Complications

- Displaced ET Tube
- Obstructed ET Tube
- Pneumothorax
- Equipment Failure
  - Inadequate Ventilatory Support
  - Gastric Distension
Post-Resuscitation Evaluation & Care

- Temperature Regulation
- Acid-Base Status
- Blood Glucose
- Laboratory Studies
- Chest X-Ray
Neonatal Resuscitation

Ultimate Outcome: Healthy Baby

- Time is Vital
- Speed is Essential
- Preparation – a Must
Thank You and Good Luck!