Initial Steps - Big Changes

- Non-vigorous babies do not require routine intubation and suctioning
- Meconium is a risk factor for resuscitation
  - At least one resuscitation member with full resuscitation skills should be present
- Harm Avoidance
  - Delay in providing PPV
  - Potential harm of the intubation
Risk Factors for Resuscitation

- Delay cord clamping for at least 30-60 seconds
  - Vigorous term and preterm infants
- Not intended for situations where placental circulation is not intact
  - Clamp and cut the cord in these situations

Delayed cord clamping

- Sharp Hospital for Women and Infants
- Research Trial
- Delayed Cord clamping for babies requiring resuscitation
- Bed pre-warmed to 39.5 and height adjustable

The Future

Also being trialed in Europe. Go to:
http://europepmc.org/articles/PMC4467574/
What about Oxygen?

- Late preterm and term
  - 35 weeks EGA and above
  - Start with 21%
- Preterm
  - Less than 35 weeks EGA
  - Start with 21-30% Oxygen

What about Oxygen? Let's talk scenarios

- Baby is breathing, Oxygen saturation not in the target range
  - Start at 30%
  - Adjust as needed to achieve oxygen target
- Baby with labored breathing or saturations not maintained despite 100% O2
  - Try CPAP

Positive Pressure Ventilation

- Indications for PPV?
  - Apnea
  - Gasping
  - Heart rate less than 100
  - Baby breathing and heart rate over 100 but unable to maintain oxygen saturations in target range with 100% free flow oxygen
Positive Pressure Ventilation

- **How to?**
- Adjust flowmeter to 10L/Min
- Inspiratory pressure 20 to 25 cm H2O, PEEP 5 cm H2O
  - PEEP preferable for preterm newborns
- If possible place baby on cardiorespiratory monitor
- Listen to the baby
  - Bilateral breath sounds
  - Rising heart rate

Positive Pressure Ventilation

- Start PPV, assistant listens for an increasing heart rate for the first 15 seconds of PPV
- PPV and no improvement try MR. SOPA (also known as MRS. OPA)
  - Mask reposition
  - Reposition the airway
  - Suction the airway
  - Open the mouth
  - Pressure increase; increase peak inspiratory pressure to 30 or higher
  - Alternate airway
- Still no chest rise?
  - Suction trachea through endotracheal tube or direct with meconium aspirator

Endotracheal Intubation and Laryngeal Masks

- Intubation strongly recommended prior to chest compressions
- Consider laryngeal mask if unsuccessful intubation
- New! Endotracheal tube (ETT) size
  - Greater than 2 kg and greater than 34 weeks = 3.5 ETT
  - 4.0 ETT no longer recommended; remove from supplies
- Note: vocal cord guide is an approximation
  - May not reliably indicate correct insertion depth
  - Tip to lip measurement or depth of ETT
  
  **Note:** vocal cord guide is an approximation
Chest Compressions

- Indications
- Heart rate less than 60 beats per minute
- After at least 30 seconds of PPV that inflates the lungs
  - Chest movement
- In most cases at least 30 seconds of PPV through properly inserted ETT or LM

Chest Compressions

- Increase oxygen to 100%
  - Oxygen remains at 100% until heart rate greater than 60
  - And
  - Pulse oximeter has a reliable signal
- Two thumb technique
- Place electronic cardiac monitor
  - Preferred method for assessing heart rate during compressions
- Continue for 60 seconds prior to checking a heart rate

Scenario

- 26 year old at 38 3/7, spontaneous labor, meconium stained amniotic fluid, C-section for Category 2 tracing and failure to progress
- Infant limp and apneic at birth; assistant tells you the heart rate is 50
- What are your next steps?
Medication

• Epinephrine
  - Heart rate less than 60 after at least 30 seconds of PPV
    » Preferably through a properly inserted ETT or LM
    AND
  - Another 60 seconds of chest compressions coordinated with PPV using 100% oxygen
  - Not indicated if you have not established ventilation that effectively inflates the lungs

• Epinephrine Dosing
  - One dose via endotracheal tube while establishing vascular access
  - If you give the first dose via ETT and response not satisfactory, repeat the dose as soon as you have vascular (umbilical venous catheter) or intraosseous access
    » Do not wait 3-5 minutes

• Fluids
  - 0.9% NaCl or O negative blood
  - Ringers lactate no longer recommended—remove from supplies

Medication

• Umbilical venous catheter
  - Preferred

• Intraosseous
  - Reasonable alternative
  - Anything that can be given via UVC can be infused into an IO

• Sodium bicarbonate is not recommended as a routine
  - Talk to your local neonatologist

• Do not give Narcan/Naloxone to neonates
  - Positive Pressure Ventilation, monitor for apnea
  - Animal studies: pulmonary edema, cardiac arrest, seizures
Thermoregulation

- For preterm deliveries:
  - Increase room temperature to 23-25 Celsius (74-77 Fahrenheit)
  - Goal: axillary temperature of 36.5 to 37.5
- AORN recommends the OR is 68-75 degrees
  - This is not specific to birth; discuss with your OR team
  - https://www.aorn.org/guidelines/clinical-resources/clinical-faq/environment-of-care

- For less than 32 weeks:
  - Plastic wrap or bag and thermal mattress and hat
  - 3-lead electronic cardiac monitor with chest or limb leads
    » Quick and reliable way to monitor heart rate
  - T-piece resuscitator or flow inflating bag preferred

Post Resuscitation Care

- Who Needs It?
  - Babies who required supplemental oxygen or PPV
  - Can post-resuscitation care be provided in mom's room?
    - Yes!
  - Must have:
    - Appropriate monitoring
    - Prompt recognition of medical conditions that require intervention and
    - Initiation of the necessary treatment
Post Resuscitation Care

- Risk factor review
- Monitor Temperature, Heart Rate, Respiratory Rate
- Oxygen Saturations and/or Cardiorespiratory monitoring
- Labs
  - Glucose
  - CBC, CRP
  - Blood gas (capillary, venous, arterial)
- X-Ray

Ethics and Care at the end of life

- Two Categories
- First:
  - Baby has no chance for survival
  - Initiation of resuscitation is not ethical and should not be offered
  - Examples are:
    » Less than 22 weeks gestation
    » Some congenital malformations
    » Some chromosomal anomalies
Ethics and Care at the end of life

- Category Two
  - Conditions associated with high risk of mortality or significant burden of morbidity for the baby
    - Parents participate in decisions whether resuscitation in baby's best interest
  - Examples:
    - Birth between 22 and 24 weeks gestation
    - Some serious congenital and chromosomal abnormalities

Best Practice Recommendations for Handoff Communication
During Transport from a Home or Freestanding Birth Center To a Hospital Setting
Every woman and newborn deserves ready access to quality maternity and newborn care that is respectfully provided; addresses identified health needs; and honors cultural and social preferences.
A few things about testing

- **Start date**
  - January 1, 2017; Renew at your usual renewal date
- **Eleven lessons**
  - Must do all eleven. No more options for “basic” or “advanced”
- **On-line exam**
  - Now have 90 days to do skills testing after taking the on-line exam
- **On-line simulation**
  - Think of this as a video game simulation
- **Skills testing**
  - Within 90 days of completing the on-line exam

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**For Instructors**

- **Instructor Toolkit**
  - No more in person instructor classes
  - Must have current NRP Provider card
  - Purchase toolkit and completed every 2 years
  - Complete on-line exam
- **For new instructors only:**
  - Find an instructor mentor
  - Teach 2 classes with mentor
- **Existing instructors indicate their preference to be a mentor or not**