NRP Update 2016

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Initial Steps-Big Changes

Meconium

- 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

Table 2-1. Perinatal Risk Factors Increasing the Likelihood of Neonatal Resuscitation

Antepartum Risk Factors	
Gestational age less than 36 0/7 weeks	Oligohydramnios
Gestational age greater than or equal to 41 0/7 weeks	Fetal hydrops
Preeclampsia or eclampsia	Fetal macrosomia
Maternal hypertension	Intrauterine growth restriction
Multiple gestation	Significant fetal malformations or anomalies
Fetal anemia	No prenatal care
Polyhydramnios	
Intrapartum Risk Factors	
Emergency cesarean delivery	Intrapartum bleeding
Forceps or vacuum-assisted delivery	Chorioamnionitis
Breech or other abnormal presentation	Narcotics administered to mother within 4 hours of delivery
Category II or III fetal heart rate pattern*	Shoulder dystocia
Maternal general anesthesia	Meconium-stained amniotic fluid
Maternal magnesium therapy	Prolapsed umbilical cord
Placental abruption	

*See Appendix 3 for description of fetal heart rate categories.

Page 18, 7th edition NRP Provider textbook

Delayed cord clamping

- 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

The Future?

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

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
    - Helps maintain lung inflation between positive pressure
- 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)
  - **M**ask reposition
  - **R**eposition the airway
  - **S**uction the airway
  - **O**pen the mouth
  - **P**ressure increase-increase peak inspiratory pressure to 30 or higher
  - **A**lternate 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

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

Medication

- 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-faqs/environment-of-care

Thermoregulation

- 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

Communication

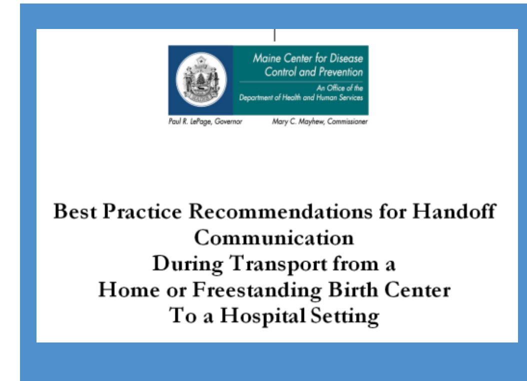

Table of Contents

Table of Contents 3
Introduction: 4
Pre-Labor Transport Guidance: 6
Best Practice Recommendations 7
Role of the Mother 7
Role of the Transferring Midwife or Physician 8
Role of the Emergency Medical Service Provider 9
Role of the Receiving Registered Nurse 9
Role of the Receiving Obstetrical or Pediatric Care Physician or Practitioner 10
Appendix A: Brief SBAR Script for Phone Call Initiating Transport by EMS 11
Appendix B: Brief SBAR Form for Recording Phone Call Initiating Transport by EMS Dispatch 12
Appendix C: Brief SBAR Script for Phone Call Initiating Transport to Hospital 13
Appendix D: Brief SBAR Form for Recording Phone Call to Hospital regarding Transport 14
Appendix E: Maternal/Neonatal Transport Form from Home or Freestanding Birth Center 15
Appendix F: Definitions/Acronym Key 17
Appendix G: Professional Competence Review Process 20
Appendix H: Evaluation and Feedback on Tools Provided in the Maine CDC Best Practice Recommendations 22
Appendix I: Evaluation and Feedback about Transport Process 23
References 24

Quality Patient Care in Labor and Delivery: A Call to Action

"Attention to language, communication, and care practices can create a climate of confidence as well as enhance the woman's child-bearing experience.

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.

The Barbara Bush Children's Hospital At Maine Medical Center
PATIENT CENTERED | RESPECT | OWNERSHIP | INNOVATION | INTEGRITY

BIRTH CARE PROVIDER to complete the sections that are applicable; demographic and prenatal information may be filled out in advance.

Appendix E: Maternal/Neonatal Transport Form from Home or Freestanding Birth Center

Demographics

Client's Name ________ DOB ________ Age ____
GP ________ Gestational Age ________ Weeks by ☐LMP ☐ U/S ☐ B-HCG ☐ First FHR

Individual(s) who will accompany the woman/baby:

Name ________ Relationship ________
Special considerations for the woman and her family: ________

Prenatal History (Additionally, please supply applicable prenatal records)

Current pregnancy course including any variations ________
Ultrasound findings ________
Labs/Pertinent findings ________
Prior pregnancy outcomes ________
Current meds/supplements ________
Allergies ________
Hx of medical problems ________

Reason for Transport Details

☐ **Antepartum:**

- ☐ **Preeclampsia**: First trimester BP_______ Current BP________ Urine/pro______
  - ☐ Presence of symptoms of severe preeclampsia
- ☐ **Preterm Labor**: Frequency of contractions________
  - ☐ Presence of bleeding or abnormal discharge

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

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