

Cleveland Regional Code Pink Program
Regional protocol for Neonatal Resuscitation - Revision 10

November, 2006

Purpose: At the time of birth, the newborn must make a transition from intrauterine to extrauterine life which involves major physiological changes including: the onset of respiration, changes in blood flow patterns, the loss of placental support and the establishment of homeostasis in a relatively cold and dry environment. This difficult process can be complicated by inherent problems of the mother or the infant leading to distress at the time of birth. The purpose of this protocol is to support the normal physiological process of adjustment to extrauterine life and to reverse or compensate for the effects of adverse maternal or neonatal problems. This support is accomplished by the provision of a patent airway and adequate ventilation, maintenance of cardiac output, correction of hypovolemia and acidosis, and avoidance of cold stress.

Policy:

1. The Code Pink team is not intended to eliminate the need for a physician in neonatal resuscitation. It is recommended, when feasible, that a Pediatrician (Neonatologist) or other physician specifically trained in the resuscitation of the newborn infant be present at the delivery of all infants where the need for neonatal resuscitation is anticipated. (An Anesthesiologist, Obstetrician or Emergency Physician can substitute for a Pediatrician in this situation if he/she is both adequately trained and free from immediate responsibility for the mother's welfare). The Obstetrician/Certified Nurse Midwife will make the request for a Pediatrician. The delivery room nurse will document on the code pink sheet that the Pediatrician/Neonatal Nurse Practitioner (NNP) was notified and/or is present at the delivery.
2. The Code Pink Team as defined below will routinely be present for the delivery of all anticipated high risk patients. (See Risk Factors - below) If risk factors are present, the delivery room nurse will document that the Code Pink Team has been notified on the code pink sheet and inform the Obstetrician that the Code Pink Team will be present at the delivery. In such cases the Code Pink Team will be notified using the routine procedure below.
3. The Code Pink Team will be immediately summoned to the delivery area if a depressed infant (ineffective/absent respirations, Heart Rate (HR) is less than 100, central cyanosis and/or minimal tone/activity) is delivered to a low risk mother. The Code Pink Team will be assembled using the **EMERGENCY** procedure below.

4. When a Pediatrician or other physician trained in neonatal resuscitation is present, he/she will assume responsibility for the resuscitation and delegate responsibility to the Code Pink Team members. When this physician is not present, the Captain of the Code Pink team will function as the team leader under the guidance of the delivering physician or anesthesiologist and in accordance with this protocol.

Code Pink Team:

1. **The Code Pink Team** consists of three hospital based professionals who are capable and prepared to respond to the delivery area within three minutes of a summons and perform neonatal resuscitation according to this protocol.
2. **Code Pink Team members** will have individually completed general training in the neonatal resuscitation through NRP and specific training utilizing this Code Pink protocol (Phase I). Initial training will be supplemented by regular in services/updates, including participation in mock code drills.
3. **A Code Pink record or schedule** will be kept of the staff assigned for each shift to the Code Pink Team. Code Pink Team members will communicate near the beginning of their shift and receive report from an off-going team member concerning the status of all patients in the labor suite. A team member will also inventory the Delivery Room (DR) resuscitation equipment using the equipment checkout list of this protocol during each shift as appropriate.

Hospital-Specific Section

Each hospital must tailor this section of the protocol to its individual circumstances. The items listed below, however, should be included in this section of the protocol.

1. The Code Pink Team members will be: (THESE DESIGNATIONS SHOULD BE AS SPECIFIC AS POSSIBLE FOR EACH HOSPITAL)
 - A. TEAM MEMBER #1 - AIRWAY MANAGER - dries head, suction, administers oxygen in all forms, intubates (possible choices - Anes/Ped/Nur Anes/Resp T/NNP).
 - B. TEAM MEMBER #2 – STIMULATION/DRY BODY/CARDIAC EVAL/COMPRESSION (RN/RT/MD).
 - C. TEAM MEMBER #3 – RECORDER/MEDICATIONS – (RN, LPN).
 - D. Hospitals should list other individuals who may also participate in the resuscitation on an “as needed” basis.
 - E. The Code Pink Team Captain should be designated.

2. Mobilization of the Code Pink Team
 - A. Routine Procedure – This procedure should result in the Team being assembled in the DR prior to the delivery.
 - B. Emergency Procedure – THIS PROCEDURE SHOULD BE POSTED IN THE DR. (Using this procedure should not require anyone to leave the DR. A buzzer system, alarm, or phone is suggested).

3. Code Pink Coordinator – Responsible for coordinating the training and scheduling of team members, and the keeping of records documented training and audits.

A perinatal steering committee including but not restricted to representatives from obstetrics, pediatrics, anesthesiology, nursing, and respiratory therapy to guide the necessary development, administration and quality assurance aspects of the program is highly recommended.

4. Resuscitation Guidelines – Some mention of when resuscitation is inappropriate (i.e. gestational age, weight), and how such decisions are made is necessary.

5. Training Requirements

A. Individual Training

- 1) Intensive individual training in both general resuscitation (NRP) and Code Pink (Phase I) Course should be accomplished prior to assignment to the Code Pink Team. A performance appraisal of the individual's ability to perform his/her team assignment in mock codes done with the hospital's equipment should also be satisfactory prior to assignment to routine shifts as a regular Code Pink Team member.
- 2) Refresher training including mock code drills should be done on a regularly scheduled basis. Participation in a difficult resuscitation can be substituted for alternate in services if performance feedback is given.
- 3) Records of individual training should be kept in the Code Pink file and in the individual personnel files of the team members.

- B. Team training - shift teams should be drilled together using surprise mock codes on a regularly scheduled basis. Records of these exercises should be kept in the Code Pink file.

6. Quality Improvement (QI) Guidelines

A. Monitoring to be accomplished:

- 1) Structure - Protocol and training
- 2) Process - Protocol and training
- 3) Outcome - Code Pink Team and neonates

- B. Basic QI includes monitoring, identifying problems, initiating problem-solving interventions, and monitoring with re-evaluation. The hospital Quality Management Department should be involved as much as possible. A mixture of direct observation and chart audit can be used for monitoring. The frequency of monitoring and re-evaluation varies with the activity. Quarterly (every 3 months) QI audits are suggested.

- C. Each hospital will monitor the same basic issues, but hospital specific issues/forms may also be added. The hospital QI activities should be coordinated by an AHA /AAP resuscitation instructor.

- D. Code Pink monitoring standards are all included in the protocol and the hospital-specific policies/procedures. These include:

- 1) Training Standard Compliance (Maintained at each individual institution)
 - a) AHA/AAP Neonatal Resuscitation Program
 - b) Code Pink training
 - c) Hospital in-services/classes
 - d) Periodic Mock Code attendance

- 2) Code Pink Regional Protocol (See sample form attached)
 - a) Code Pink Team delineated/present
 - b) Routine team mobilization procedure
 - c) Emergency team mobilization procedure
 - d) Team response
 - e) Risk factors identified
 - f) Delivery Room equipment
 - g) Maternal database documentation
 - h) Resuscitation Protocol
 - i) Code Pink standing orders
 - j) Documentation

- 3) Mock Codes (same as above or utilizing mock code evaluation forms from NRP)

- 4) Outcome/Results of Neonatal Resuscitation
 - a) Can identify by increased number of positive responses (improved apgars) or decreased number of negative responses (poor outcomes).
 - b) Recommended purposeful rather than random audits.
 - c) Communication between involved hospitals may assist with data evaluation.

Suggestion:

- 1) A minimum audit of charts meeting either of these two criteria:
 - a. Apgar score less than 6 at 1 minute or
 - b. Code Pink Team intervention greater than suction, stimulation and blow-by oxygen.
- 2) Periodic audit of a specified percentage of deliveries.

CODE PINK EVALUATION CHECK LIST

Date: _____

PT. NUMBER _____

		<u>YES</u>	<u>NO</u>	<u>N/A</u>
1.	Team took minimal history and identified risk factors in the maternal history?	_____	_____	_____
2.	Team prepared and checked equipment prior to use.	_____	_____	_____
3.	Team arrival time noted?	_____	_____	_____
4.	Delivery time noted on the flow sheet?	_____	_____	_____
5.	Tracheal suctioning with OET tube performed per protocol and documented?	_____	_____	_____
6.	Physical exam and stimulation performed while drying and positioning?	_____	_____	_____
7.	CPAP correctly applied?	_____	_____	_____
8.	Bag and mask ventilated correctly, breath sounds assessed and chest rise assessed?	_____	_____	_____
9.	Correctly intubated for ventilation, to < 30 sec.?	_____	_____	_____
10.	Chest compressions appropriately initiated?	_____	_____	_____
11.	Drugs drawn-up and given appropriately?	_____	_____	_____
12.	Team members demonstrated knowledge of protocol/ resuscitation progressed smoothly?	_____	_____	_____
13.	Vital signs recorded to accompany interventions?	_____	_____	_____
14.	Apgar appropriately assigned?	_____	_____	_____
15.	Team members recorded appropriately?	_____	_____	_____
16.	Disposition of infant recorded?	_____	_____	_____
17.	Communication with parents documented?	_____	_____	_____
18.	M.D. signature obtained	_____	_____	_____

Comments/Recommendations: _____

TEAM MEMBERS: _____

EVALUATOR: _____
 DATE: _____

ACTION TAKEN AS A RESULT OF THIS AUDIT:

REGIONAL SECTION

I. Risk Factors:

This list of Perinatal Risk Factors should be posted in the DR area with the Code Pink Mobilization procedures.

THE CODE PINK TEAM SHOULD BE PRESENT AT THE DELIVERY WHEN ANY OF THE FOLLOWING CONDITIONS ARE PRESENT.

A. Maternal Factors

- History of:
 - a. No prenatal care: with maternal distress and/or non reassuring fetal heart rate patterns, unknown dates
 - b. Substance abuse: with maternal distress and/or non reassuring fetal heart rate patterns present
 - c. Toxemia/preeclampsia
- Diabetic - insulin dependent.
- Fever greater than 38°, with signs of infection (WBC shift to left, foul smelling amniotic fluid)
- Abnormal vaginal bleeding
- Preterm Labor
- Prolonged premature rupture of membranes (PPROM)

B. Labor and Delivery Factors

- Non-vertex presentations delivering vaginally (breech, face or brow)
- Emergency Cesarean sections
- Cord prolapse
- Placenta previa, placenta abruption
- Difficult delivery - shoulder dystocia
- General anesthesia or problems with anesthesia, (i.e. complications with high spinal)
- Delivery occurring outside Labor and Delivery area

C. Fetal Factors

- Abnormal fetal heart rate, baseline greater than 160 or less than 100
- Meconium stained amniotic fluid with evidence of nonreassuring fetal status
- Late deceleration pattern
- Persistent loss of heart rate variability
- Known anomalies
- Gestation less than or equal to 35 weeks (gestational age lower limit for resuscitation defined in Hospital-Specific Section)
- Small-for-dates (SGA)/large for dates (LGA)
- Multiple gestation

D. Specific Request of Obstetrician

E. Hospital-Specific additional risk factors can be added (i.e. sedation/hypnotics within 4 hours, forcep or vacuum deliveries)

II. EQUIPMENT LIST

THIS EQUIPMENT LIST IS TO BE POSTED IN THE DR, LABOR ROOMS AND ALL OTHER AREAS WHERE NEWBORN RESUSCITATION MIGHT OCCUR (i.e. ER), and should be used for audit of the equipment by the Code Pink Team.

Suggested Delivery Room Equipment Checklist

Equipment to provide basic environment

- _____ 1. Area of delivery room devoted to infant resuscitation equipped with wall outlets for oxygen and suction.
- _____ 2. Overhead radiant heater with skin servo feedback control.
- _____ 3. Crash cart or tackle box, board for storage and easy accessibility of equipment and drugs required for resuscitation. This equipment list should be attached.
- _____ 4. Appropriate masks, eyewear, gowns and non-sterile gloves for infection protection.

Basic Equipment:

- _____ 1. Thermometer and skin probe for radiant warmer
- _____ 2. Alcohol swabs
- _____ 3. Band-Aids
- _____ 4. Warm blankets/plastic wrap
- _____ 5. Infant hat
- _____ 6. Umbilical clamp

Equipment to clear airway:

- _____ 1. Bulb syringe
- _____ 2. Suction catheters 6, 8, 10 Fr, 12 Fr
- _____ 3. Meconium aspirator
- _____ 4. Nasal Aspirator
- _____ 5. Roll 3/4" for shoulders

Equipment for respiratory support:

- _____ 1. Ventilation bag connected to wall oxygen. A pressure manometer connected to the system is required.
- _____ 2. Oxygen blender available for preterm infants*.
- _____ 3. Face masks of various sizes. (At least sizes 0 and 1)
- _____ 4. Infant laryngoscope
- _____ 5. Spare light bulbs and batteries for the laryngoscope
- _____ 6. Laryngoscope blades (Miller 0 and Miller 1)
- _____ 7. Endotracheal tubes (ET) (2.5, 3, 3.5, and 4 Fr)
- _____ 8. Plastic oral airways
- _____ 9. Tincture of Benzoin
- _____ 10. Roll of 1/4 inch tape
- _____ 11. Feeding tube (#5 Fr, #8 Fr) to deflate stomach
- _____ 12. Infant or pediatric stethoscope
- _____ 13. Stylet for intubation

- _____ 14. Pedicap, end tidal CO2 detector
- _____ 15. Laryngeal Mask Airway (LMA) **
- _____ 16. T-Piece Resuscitator **

Equipment required to place Umbilical Venous Catheter for drugs, blood and fluid:

- _____ 1. Betadine or other skin cleanser
- _____ 2. Umbilical catheter tray containing:
 - sterile umbilical tape
 - containers for Betadine and saline flush
 - disposable scalpel
 - clamp
 - 2 forceps with teeth
 - probe, dilator
 - three-way stopcock
 - umbilical catheters (sizes 3.5 and 5)
 - suture scissors
 - 3 silk suture
 - Sterile pen/labels to identify fluids
- _____ 3. Tape
- _____ 4. Tape scissors
- _____ 5. Limb restraints (can be made from 4 x 4 gauze, tape and safety pins)
- _____ 6. Syringes (TB to 20 ml capacity)
- _____ 7. Sterile gloves

Other desirable equipment:

- _____ 1. Cardiac monitor and chest electrodes
- _____ 2. Flashlight
- _____ 3. Boxes of #23 gauge and #25 gauge butterfly catheters
- _____ 4. Intravenous catheter #22 gauge and #24 gauge
- _____ 5. T connectors
- _____ 6. Arm boards
- _____ 7. Pulse oximeter*
- _____ 8. Glucometer
- _____ 9. Capillary tubes

Drugs:

- _____ 1. Epinephrine (1:10,000 dilution)
- _____ 2. Normal saline
- _____ 3. Sodium bicarbonate (infant bristojets recommended) (4.2% solution)
- _____ 4. Naloxone (narcan) - 1 mg/ml or 0.4 mg/ml
- _____ 5. Dextrose 10% in water
- _____ 6. Sterile water

* Highly recommended by the 2005 NRP Guideline update for those services routinely delivering less than 30 week infants.

** Optional equipment

III. RESUSCITATION PROTOCOL

- A. **Neutral Thermal Environment**
 A neutral thermal environment will be provided for all neonates through use of a radiant warmer, preferably warm, humidified oxygen, and warm blankets and hat. The infant should be brought to the resuscitation area from the delivery area by team member #2.
- B. **Use of hypothermia wrap:** For infants less 1000 grams or 28 weeks, a food grade plastic sheet can be utilized to facilitate heat retention. The plastic wrap is placed on the radiant warmer prior to delivery. Once the infant is delivered and carried to the radiant warmer, they are placed in the plastic wrap. Resuscitation efforts are carried out while the infant is wrapped in the plastic.
- C. **Stimulation**
 Will be done by the Airway Manager (Team Member #1), who dries the head and by Team Member #2, who dries the body with a blanket or brisk rubbing of the neonate's back after assessment for anomalies. STIMULATION should be brief, 10-15 seconds. If little or no response in heart rate and respiratory effort is elicited, then proceed with assisted ventilation.
- D. **Suction**
 Suctioning assures an open airway. Bulb syringe and wall suction should be available. Most neonates will respond to gentle clearing of blood and mucous from the mouth, oropharynx and external nares with a bulb syringe. When wall suctioning is indicated, the suction should be set at medium (80-100 mm hg) (to be done by team member #1). Suctioning should be intermittent and applied only during catheter withdrawal for a maximum of 10-15 seconds. Vigorous, deep suctioning, including gastric emptying is not recommended as both can cause reflex bradycardia through vagal stimulation.
- E. **Endotracheal Suctioning Protocol USED ONLY WITH THE FOLLOWING:** suspicion of meconium, blood, or thick mucous in the trachea, in an infant depressed at birth.
- a) If the newborn is crying or active at the time of delivery, proceed to the evaluation of breathing effectiveness.
 - b) If the infant is depressed, the trachea should be intubated and suctioned with the ET tube connected to wall suction (through a meconium aspirator) at medium setting.

The trachea should be suctioned until clear, or a maximum of 2 minutes have transpired since the infant was delivered. The stomach may be suctioned clear of meconium with suction catheter after infant is stabilized.

- F. Oxygen - 100% (5-10 L/min.) oxygen (preferably warmed and humidified) is used in the Delivery Room. Blended oxygen may be indicated for some preterm infants (28-30 weeks gestation or less). Oxygen can be given blow-by, by bag and mask, bag to ET tube or by T-piece resuscitator device. Oxygen by all modes will be administered by the Airway Manager (Team Member #1).

Blow-by oxygen will be administered to any baby with spontaneous respirations that is not centrally pink by 60 seconds of age, or that shows signs of distress such as grunting, retracting or unequal expansion of the chest.

Mask CPAP is viewed as an augmented form of blow-by oxygen. It is appropriate only if there are spontaneous respirations. A maximum of 8 cm. of water pressure should be utilized. CPAP is utilized in an infant who remains blue in spite of apparent normal respirations and blow-by oxygen. It is also used in an infant with improving respiratory status, as an intermediary step when moving from positive pressure bag and mask ventilation to oxygen alone (blow-by). Mask CPAP can be accomplished using a flow inflating bag mask system or a T-piece resuscitator device only.

Oxygen via bag and mask with positive pressure will be utilized if:

- 1) Cyanosis does not improve rapidly with blow-by/CPAP
- 2) If respiratory effort is:
 - a) Absent
 - b) Consists of gasping only
 - c) Irregular with a rate less than 40 breaths/min. (ineffective)
- 3) If the heart rate is less than 100.

If this is the first breath of life, pressure of 30cm or greater of H₂O may be used to achieve adequate chest rise and air exchange. Continue ventilation with pressures needed to achieve adequate chest rise and air exchange at a rate of 50-80 breaths per minute until the heart rate normalizes and color improves. Thereafter, decrease the rate to 40-60 breaths per minute. If the infant's respirations become adequate, slow the rate gradually until the infant is on CPAP. If bag and mask ventilation continues for several minutes, an oral-gastric tube will be passed and the end port left open for air and gastric drainage release.

Newborn and preemie masks are available. A premature mask will be used on any baby less than 2500 grams. (5 lbs).

If the infant is transferred from the Delivery Room to the nursery, oxygen via a portable oxygen tank will be utilized.

G. Endotracheal Intubation will be the responsibility of the Airway Manager (Team Member #1) under the direction of the Team Leader.

- 1) The Code Pink Team Leader will direct the Airway Manager to intubate the neonate under the following conditions:
 - a) If adequate ventilation (determined by chest wall expansion and bilateral breath sounds) has not been established within 30 - 60 seconds with bag and mask.
 - b) If after adequate ventilation with bag and mask for 1-2 minutes, the heart rate remains less than 100 and there is no color improvement.
 - c) If physical assessment reveals an omphalocele, gastroschisis or scaphoid abdomen with possible diaphragmatic hernia.
 - d) To suction the trachea for airway clearance indications (see above).
 - e) Administration of medications is required.
- 2) Appropriate sized polyvinyl tube and laryngoscope blade will be used.

<u>SIZE OF NEONATE</u>	<u>TUBE SIZE</u>	<u>BLADE SIZE</u>	<u>LENGTH OF TUBE INSERTED</u>
< 1 Kg (2 lbs)	2.5	0	7 cm
1 - 2 Kg	3	0	8 - 9 cm
2 - 3 Kg	3.5	0	9 - 10 cm
3 - 4 Kg	3.5 - 4	0/1	10 - 11 cm

- 3) The ET connector must be attached to the ET tube before intubation. The ET tube is to be passed 1 cm beyond the vocal cords, and rests above the tip of the carina.
- 4) The team member #2 will continuously monitor the neonate's heart rate during the procedure. In a neonate who has been previously stabilized with positive pressure ventilation, if the heart rate drops to less than 60 BPM, stop intubation efforts and provide bag and mask ventilating until the heart rate increases to 100 or greater. Once the neonate is intubated, check for proper position of the ET tube by noting depth of insertion, observing equal chest expansion, auscultating equal breath sounds, and utilizing an end tidal CO₂ detector. If breath sounds predominate on one side, have Team Member #1 pull the tube back by 0.5 cm increments until bilateral breath sounds are heard. Secure the ET tube with benzoin and tape.

- 5) Once correctly intubated, DO NOT extubate until the infant's physician is in attendance. Pressures and rates of ventilating should be the same as those indicated for bag and mask ventilation (above).
 - 6) Chest x-ray is obtained when infant stable for verification of tube placement.
- H. Cardiac compressions will be initiated by Team Member #2 any time the apical pulse is less than 60 BPM after effective ventilation for at least 30 seconds has been established. Position thumbs or 2nd and 3rd fingers over the sternum, after sliding fingers along the ribs above the xiphoid process. Compress the chest one-third of the AP diameter of the chest. Cardiac compressions are done at a ratio of 3:1 with ventilation after the third compression. Support the back with your fingers if using the "thumb" method or with your free hand if using the "2nd and 3rd" finger method. Assess for a palpable pulse while performing chest compressions. Chest compressions are discontinued once the heart rate is 60 or above.
- I. Biochemical Resuscitation
- 1) The use of drugs should be considered only if the following criteria are met:
 - a) An adequate airway has been established, and effective bag or ET tube ventilation established.
 - b) The heart rate remains less than 60 despite adequate ventilation and compressions.
 - c) The perfusion remains inadequate.
 - 2) Administration:
 - a) Drugs will be given by team member #3 via an UMBILICAL VENOUS CATHETER (see procedure for insertion) or via the ET tube (epinephrine only). ET tube is becoming a secondary mode of administration.
 - b) Drugs to be administered: (See protocol flow sheet and emergency drugs sheet for appropriate timing and dosage).
Epinephrine, Normal Saline, Narcan and Sodium Bicarb

V. CODE PINK PREPRINTED ORDERS - GUIDELINES FOR USE

- A. Purpose:
To record the implementation of Code Pink Preprinted Orders by the Code Pink Team.
- B. THE CODE PINK PREPRINTED ORDERS WILL BE INITIATED BY THE LABOR AND DELIVERY NURSE OR CODE PINK TEAM LEADER IN THE ABSENCE OF THE INFANT'S PHYSICIAN OR A PHYSICIAN/NNP/PROVIDER SPECIFICALLY TRAINED IN THE RESUSCITATION OF THE NEWBORN. IN ALL CASES HOWEVER, THE CODE PINK PREPRINTED ORDERS FORM WILL BE USED TO RECORD THE EVENTS DURING NEONATAL RESUSCITATION.
- C. Procedure
- 1) Code Pink Preprinted Orders will be initiated when the team is assembled in the Delivery Room, Nursery, or ER.
 - 2) The Labor and Delivery nurse documents the time the Code Pink Team is called and the time the team arrives. Documentation is assumed by the Code Pink Team if 3 members available or by the Labor and Delivery nurse if less than 3 code pink team members respond.
 - 3) Code Pink Team Member #3 (or additional member) documents sequence of Code Pink Protocol, based on the newborns' response to interventions delineated on the Code Pink Protocol.
 - 4) A pen will be used to trace the progression through the protocol.
 - 5) Times of occurrence will be documented as indicated on Preprinted Orders. (On lines, in boxes, and under arrows)
 - 6) Indicate Team Members present, Apgars at 1 minute, 5 minutes, 10 minutes, and other information as indicated on the Preprinted Order form.
 - 7) Any changes/additions to the Code Pink Protocol or hospital policy will be recorded in the narrative area (right column). When modifications to the protocol are appropriate for individual infants, the modifications and reasons for the modifications will be documented in the narrative area.
 - 8) Documentation of infant status and response to interventions is necessary. Infant assessment boxes will be completed as the resuscitation moves down the flow sheet and the assessment of the infant's condition will correspond to the area of the flow sheet by time assignment.
 - 9) Physician signature serves as an indication of physician's orders to carry out protocol. Code Pink Preprinted Orders do not require recopying.
 - 10) RN's signature indicates all appropriate steps of preprinted orders have been carried out. No additional narrative explanation is necessary.
 - 11) Place in the neonate's medical record per hospital policy.

References:

2005 American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC) of Pediatric and Neonatal Patients: Neonatal Resuscitation Guidelines. American Heart Association, American Academy of Pediatrics *Pediatrics* 2006;117;1029-1038 DOI: 10.1542/peds.2006-0349.

Code Pink Regional Protocol, Version 9, 2000. Code Pink Regional Program.

Rabi, Y., Yee, W, Yue Chen, S, and Singhal, N. (2006) Oxygen Saturation trends immediately after birth. *Journal of Pediatrics* May 2006, 590-594.

Barber, C, and Wyckoff, M. Use and efficacy of endotracheal versus intravenous epinephrine during neonatal cardiopulmonary resuscitation in the delivery room. *Pediatrics* 2006;118;1028-1034 DOI: 10.1542/peds.2006-0416.

NEONATAL RESUSCITATION MEDICATIONS

DRUG	INDICATIONS	DOSE	DILUTION	SIDE EFFECTS OR PRECAUTIONS
Adrenalin (Epinephrine)	To restore myocardial contractility in cardiac arrest – given for flat line EKG or persistent bradycardia Will increase BP	0.5 ml IV/IT rapidly, IT follow with NS 1ml, IV infusion preferred	1:10,000	Rise in BP with cerebrovascular hemorrhage from overdose. Tachycardia
Normal Saline Lactated Ringers	Shock for volume expansion	10-20 ml/kg IV over 5-10 minutes		
O negative Blood	Shock for volume expansion	10-20 ml/kg IV over 5-10 minutes		Transfusion reaction. Transmission of infection
Dextrose 10%	Hypoglycemia, blood sugar below 30 mg/dl	2ml/Kg IV bolus then continuous IV to give 4-6 mg/kg/min	10%	Hyperglycemia Check glucose in 10 minutes and at least every 30 minutes thereafter. Use infusion pump to regulate.
Sodium Bicarbonate 4.2%	Metabolic acidosis with occurs with cardiac arrest	2 meq/Kg IV (1 meq/kg/min)	0.5 meq/ml	High sodium levels, Hyperosmolarity, Intracranial Hemorrhage, Adequate ventilation should be established
Narcan (Naloxone Hydrochloride)	Neonatal respiratory depression with maternal Narcotic administration	0.1 mg/Kg Give rapidly IV, IT, IM, SQ	1 mg/ml (0.1 ml/kg) 0.4 mg/ml (0.25 ml/Kg)	Contraindicated if mother is suspected narcotic user. (Will put infant into withdrawal.) Observe infant for recurrent respiratory depression, as Narcan's effect may be shorter than the narcotic's effect

Date: _____ Reason Team Called: _____

Pediatrician Notified: _____ Arrival Time: _____
 Equipment Check Delivery Time: _____
 Delivery mode: SVD C/section Forceps Vacuum
 MSF Yes/No Suction at Perineum Yes/No

RECEIVE INFANT
 *Minute(min) _____
 Seconds (sec) _____

Tracheal Suction Protocol

Intubation Attempts _____
 ETT tube size _____
 Fluid _____

Initiated by _____

* Time recorded in minutes
 And seconds of life

DRY, STIMULATE INFANT

Pink, HR above 100
 min _____
 sec _____

Spontaneous respirations, blue, adequate air exchange
 HR above 100
 min _____ sec _____

Poor insufficient respirations, HR above 100
 min _____ sec _____

No respiratory effort
 HR below 100,
 min _____ sec _____

Blowby O2
 min _____ sec _____

Improve #1
 (Onset adequate spontaneous respirations)
 min _____ Sec _____

Improve #2
 min _____
 sec _____

CPAP by Mask, 100% O2 (+4-+8)
 (2-5 minutes maximum time, 30 Sec, if worse)
 min _____ sec _____
 Pressure _____

Fail #1
 Min _____ Sec _____

Fail #2
 Min _____ Sec _____

BAG WITH POSITIVE PRESSURE (PPV), 100% O2, rate 50-80, pressure as required for adequate chest rise/air exchange. Wean rate to 40, after HR and perfusion adequate (intubate if HR below 100 after 1-2 minutes, insert O/G tube after several minutes)
 min _____ sec _____ Rate _____
 Pressures _____

Begin Chest compressions if HR below 60 after 30 Sec of ventilation.
 min _____ sec _____

Blowby O2
 min _____ sec _____

Evaluate in 100% O2
 min _____
 sec _____

Intubate, If no change or worse
 min _____ sec _____
 Tube Size _____
 Rate _____ Pressures _____
 End CO2 Detector Yes/No _____
 Reason _____

Narrative Notes

Infant Assessment
 Min _____ sec _____
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: Active, floppy
 Assessment: _____

Infant Assessment
 Min _____ sec _____
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: Active, floppy
 Assessment: _____

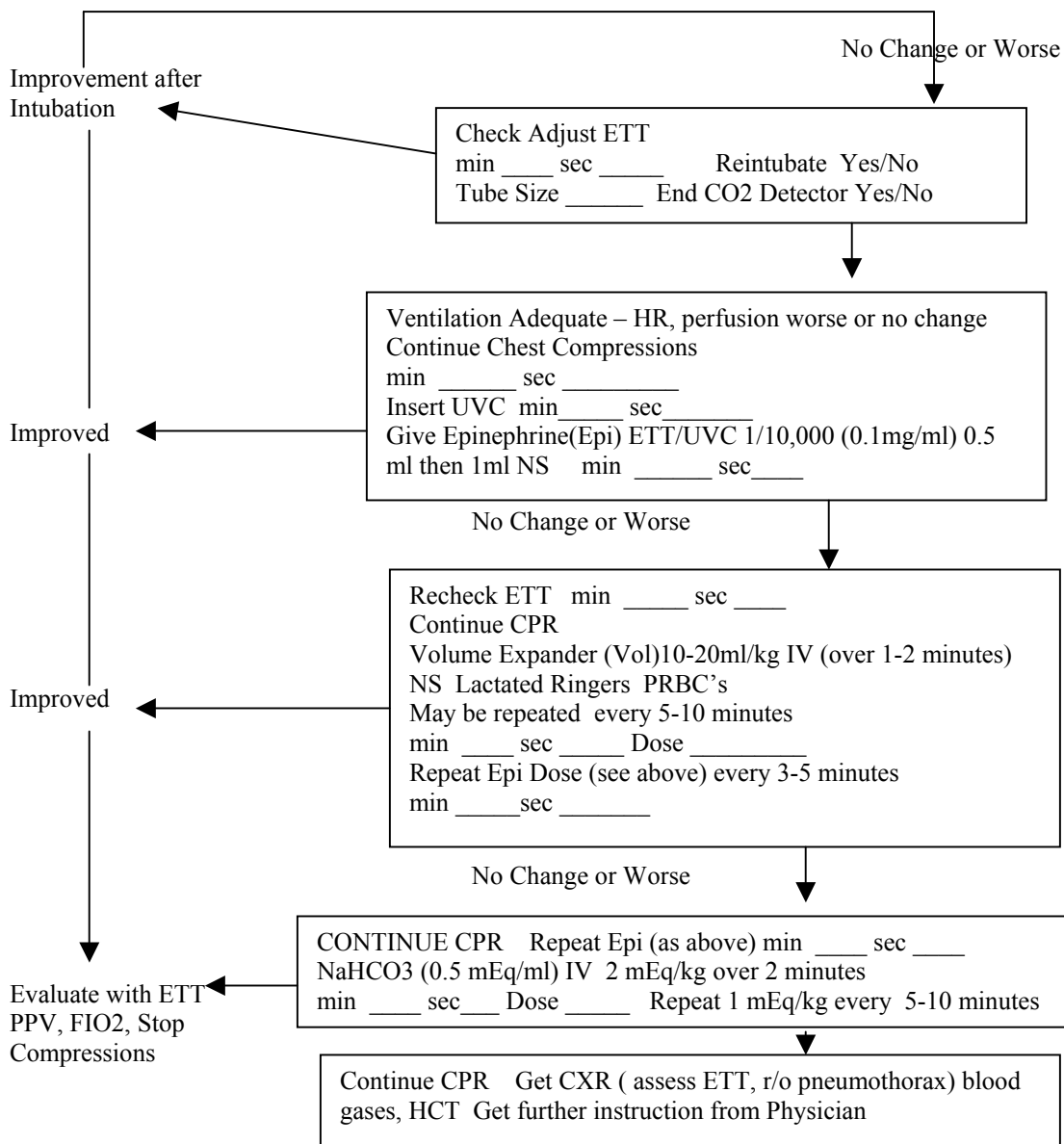
Infant Assessment
 Min _____ sec _____
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
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 Assessment: _____

Infant Assessment
 Min _____ sec _____
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: active, floppy
 Assessment: _____

OBSERVATION
 Stabilization

If Worse
 Consult Physician

INTUBATION/PPV



Infant Assessment
 Min ___ sec ___
 HR: Above 100, 60-100
 Below 60
 Resp: Absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: active, floppy
 Assessment _____

Infant Assessment
 Min ___ sec ___
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: active, floppy
 Assessment _____

Infant Assessment
 Min ___ sec ___
 HR: Above 100, 60-100
 Below 60
 Resp: absent, gasping,
 Regular
 Color: Pink, Blue, pale
 Activity: active, floppy
 Assessment _____

NARRATIVE NOTES

Infant Disposition

NICU

NBN

Remains with mother

Apgar Score

Assisted Apgar

Time	HR	Resp	Color	Activity	Tone	Total	O2	PPV	ETT	CPR	Meds
1 min											
5 min											
10 min											
15 min											
20 min											

HR: 0=No HR, 1= less than 100, 2=above 100 **Resp:** 0= no effort, 1= gasping, 2= regular, rate
Color: 0=blue, 1= blue extremities, 2= all pink **Activity:** 0=none, 1= grimace, 2= active movement **Tone:** 0=limp, 1= some flexion, 2= flexed, good tone

Team Members _____

Signatures: MD/DO _____
 Recorder _____

Date: _____ Time _____
 Parental Consultation: Yes _____ No _____

Drug Table	Time	Dose	Route	Initials
1. Epi #1	_____	_____	_____	_____
2. Epi #2	_____	_____	_____	_____
3. Vol #1	_____	_____	_____	_____
4. Epi #3	_____	_____	_____	_____
5. Vol #2	_____	_____	_____	_____
6. NaHCO3#1	_____	_____	_____	_____
7. Epi #4	_____	_____	_____	_____
8. NaHCO3 #2	_____	_____	_____	_____
9. Other	_____	_____	_____	_____