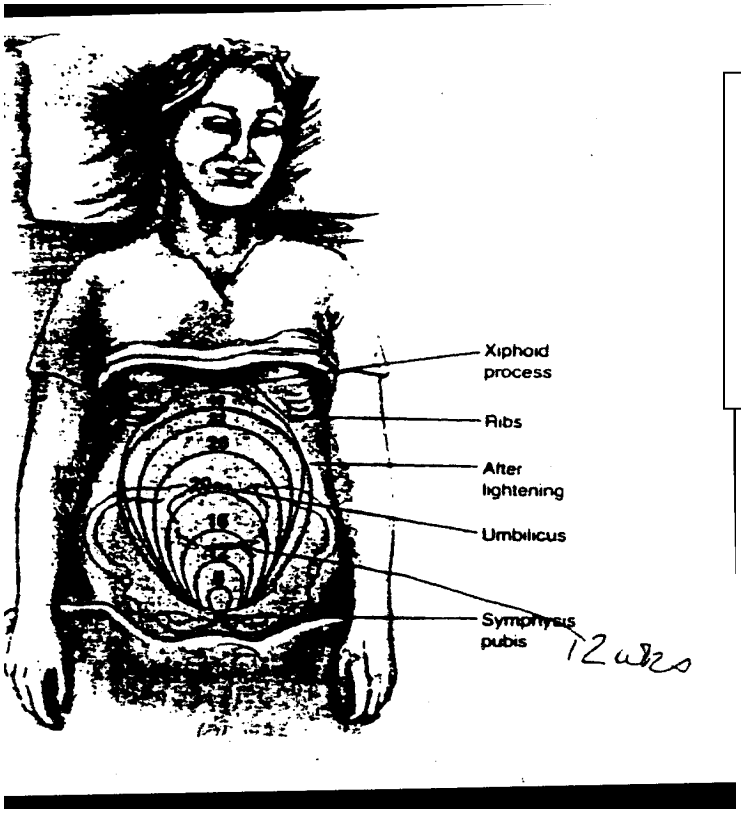
APPENDIX FOR
OB SECTION



The fundal height reaches the symphysis at 12 weeks, the umbilicus at 20 weeks, and costal margin at 36 weeks.

Fundal height is measured in cm from top of symphysis pubis to the top of the fundus.

OB PROTOCOL

MORGAN COUNTY AMBULANCE

Note: MCAS will not transport high risk OB patients unless escorted by a critical care RN and or physician familiar with high risk OB patients. High risk OB patients should be transported by a critical care team trained in high risk OB.

FEBRUARY, 2003
REVISED 1/2007, 8/2007Reviewed 7/13

OB CHECKLIST

GRAVIDITY AND PARITY

GESTATIONAL AGE

CERVIX DILATION! @ TIME >3CM DO NOT TRANSPORT WITHOUT CTN

LABOR PATTERN

IS LABOR CONTROLLED??

FETAL STATUS

MEMBRANES

SINGLETON VS. MULTIPLE

STABILITY OF MOTHER AND FETUS

ASSOCIATED PROBLEMS

EFFECTIVE DATE: 2/03
REVISED 1/2007 Revised 07/2013

CHILDBIRTH

SPECIFIC INFORMATION NEEDED:

1. History of present pregnancy: due date, previous problems during pregnancy. Will the child be premature?
2. Current problem: contractions (regular, how long, how far apart), ruptured membranes; presence of meconium, bleeding, presence of urge to push
3. Medical history and previous pregnancy history: medications, allergies, gravida (# of pregnancies), para (#of live births), length of previous labors.

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs and fetal heart tones, if possible
2. Signs of toxemia: hypertension, edema face and hands, seizures
3. Presence of active labor; contraction and relaxation of the uterus
4. If a question of imminent delivery, observe for 5 to 10 minutes, then transport unless delivery is in progress
5. If delivering, do so on scene or pull over and stop if transporting
    A. Use a clean or sterile technique
    B. Guide and control, but do not retard or hurry the delivery

Note: If the Amniotic sac is still intact, simply tear it with your fingers to allow the fluid to escape so that the baby can breathe on its own.

C. Suction the nose, then mouth (not the throat) with a bulb syringe while the head is on the perineum. Keep the infant level with the perineum.
D. Clamp the cord in two places, approx. 5-6" from infant and approximately 2" apart.
E. Cut the cord between clamps
F. If meconium stained amniotic fluid present, and the baby has depressed respirations, muscle tone or heart rate then tracheal suction is indicated. Suction until clear.
G. Protect the infant from fall and temperature loss. Wrap in space blanket, cover their heads with a stocking cap and place infant on mother's chest to allow nursing which in turn aids contraction of the uterus (if infant's condition allows)

NOTE: Hypothermia is the number one complication of field deliveries!

H. Evaluate the infant's respirations, heart rate. Initiate resuscitation as per newborn resuscitation guidelines.
I. Start maternal IV: NS, large bore, TKO, or as indicated.
J. Massage the uterus after the delivery of the placenta.
K. If excessive bleeding occurs postpartum; treat for hypovolemic shock
    i. Uterine massage, aggressively at the level of the fundus with downward pressure
    ii. Volume replacement

L. Transport. Do not wait for or attempt delivery of placenta. If placenta delivers spontaneously, bring to hospital
M. Monitor vital signs during transport (both patients)

SPECIFIC PRECAUTIONS:

1. Do not pull on the cord to expedite delivery of the placenta, except in the case of heavy bleeding.
2. Ask patient if she feels as though she will deliver, particularly with prior deliveries, most mothers will know. Subsequent deliveries are frequently faster.
3. Infants have poor temperature regulation. Bundle and keep near mother. Hypothermia is a major complication for the neonate.
4. It is always safe to assume that any medical or trauma condition will be complicated by any medical or trauma condition. The abdominal pain complained of my pregnant woman may not be uterine contractions.
5. APGAR score should be given 1 and 5 minutes following birth.

APGAR SCORING

ADAPTATION	0	1	2
Heart rate	Absent	Slow, below 100	Over 100
Respiratory effort	Absent	Weak Cry	Strong Cry
Muscle Tone	Limp	Some flexion of extremities	Active Motion
Grimace (reflex, irritability)	No Response	Grimace	Cry
Color	Cyanotic, Pale	Body Pink Cyanotic extremities	Completely Pink

** SCORES: 7-10 Good Condition; 3-6 Moderately depressed; 0-2 Severely Depressed

Fundal Height - is an easy way to estimate gestation if you are unable to communicate with your patient, or they simply don't know. The fundal height is measured in cm, from the top of the symphasis pubis, to the top of the uterus.
The fundus reaches the symphasis at 12 weeks, the umbilicus at 20 weeks and the costal arch at 36 weeks. (See diagram above)

EFFECTIVE DATE: 2/03
REVISED 1/2007 REVISED 07/13

CORD PROLAPSE

SPECIFIC FINDINGS:

1. Prolapse of the cord, prior to delivery of the infant
2. Occurs once in about three hundred deliveries
3. Often associated with prematurity, a long cord, or maipresentation of the infant.

OBJECTIVE AND SUBJECTIVE FINDINGS:

1. Determine gestational age.
2. Pelvic: **DIRECT PHYSICIAN ORDER ONLY**
    A. Palpate cord and feel for pulsations.
    B. Determine presenting part and station.
3. Vital signs and FHT's, if present.

TREATMENT

1. Position the mother in a knee-chest position to alleviate cord pressure.
2. Encourage her to pant with each contraction, this will not allow her to push
3. Using two fingers GENTLY push the HEAD, not the cord back up into the vagina until you can feel a pulse in the cord.
4. Keep hand in the vagina and elevate presenting part sufficient enough to allow cord pulsations to maintain fetal circulation. **DO NOT LET GO UNTIL YOU ARE ASKED TO (**you may go into the OR in this position)
5. Give high flow 02 per mask to increase fetal 02 indirectly.
6. Start IV, NS, TKO or as indicated and monitor FHT if help is available.

EFFECTIVE DATE: 2/03
REVISED 1/2007 REVISED 07/1

EARLY PREGNANCY HEMORRHAGE

SPECIFIC FINDINGS:

1. Vaginal hemorrhage in the first twenty weeks of pregnancy

2. The primary causes are abortion and ectopic pregnancy

OBJECTIVE AND SUBJECTIVE:

1. Determine gestational age
2. Vital signs obtain orthostatic unless extreme shock is present
3. Examine abdomen: point tenderness, voluntary guarding, rigidity, rebound, tenderness, and bowel sounds.
4. Evaluate FHT's if possible using Doppler.
   a. Fetal heart tones can be heard at 12 weeks.
5. Observe amount of vaginal bleeding and take history (# of pads saturated over a certain amount of time)

TREATMENT:

1. Monitor vital signs and blood loss
2. Start two large bore IV if possible, NS TKO or as needed
3. Hypovolemic shock, per protocol
4. Transport

EFFECTIVE DATE: 2/03
REVISED 1/2007

Reviewed 07/13

LATE PREGNANCY HEMORRHAGE

SPECIFIC FINDINGS:

1. Vaginal hemorrhage after the first twenty weeks of pregnancy
2. Common causes: rupture of marginal sinus, abruptio placenta, placenta previa, rupture of the uterus.

OBJECTIVE AND SUBJECTIVE FINDINGS:

1. Determine gestational age
2. Vital signs, FHT's
3. Palpate abdomen, check for:
    A. Rhythmic contractions
    B. Tetanic uterus
    C. Guarding
    D. Rigidity
4. Amount of bleeding
5. Never do a pelvic if bleeding — **DIRECT PHYSICIAN ORDER**

TREATMENT:

1. Same as above, support intravascular volume.
2. Mark fundal height with a pen in order to monitor internal bleeding

EFFECTIVE DATE: 2/03
REVISED 1/2007
Reviewed 07/13

PRE-ECLAMPSIA

SPECIFIC FINDINGS:

Presence of hypertension, edema, and/or proteinuria after twentieth (20) week of pregnancy.

OBJECTIVE AND SUBJECTIVE FINDINGS:

1. Symptoms associated with various levels of pre-eclampsia
    A. Early: none
    B. Mild: generalized edema (face, hands, feet)
    C. Severe: headache, visual disturbances, cerebral edema, nausea, vomiting, abdominal pain (stretching of liver capsule), hematuria
2. Vital signs:
    A. **BP 140/90 or greater = pre –eclampsia until proven otherwise**
3. Extremities:
    A. Pretibial edema: one plus or greater
    B. Reflexes: hyper-reactive
4. Urine dip stix: positive for protein
5. Complete the basic OB examination

TREATMENT OBJECTIVE

Control of hypertension and prevent convulsions

1. Position: laying on their left side to improve uterine blood flow
2. Start IV: NS, large bore, TKO
3. Magnesium sulfate (per protocol with MD order) to prevent seizures.
4. Constantly monitor BP, FHT, I/O, reflexes, contractions for any worsening of fetal and maternal condition and to evaluate the effects of therapy
5. Seizure precautions: anticonvulsant readily available. Protect the mother

SIGNIFICANT FINDINGS and TREATMENT: Pre-eclampsia and Eclampsia

1. Pre-eclampsia progresses to eclampsia once the patient develops seizures.
2. Treat seizures with Mag Sulfate not Valium
3. ABC's, high flow O2
4. Cardiovascular support
5. Monitor LOC

EFFECTIVE DATE: 2/03
REVISED 1/2007
Reviewed 07/13

PREMATURE LABOR PROTOCOL

DEFINITION

Pre-term gestation is considered to be greater than 20 weeks, and less than 37 weeks. Pre-term labor is a clinical diagnosis based on uterine activity sufficient to dilate and efface the cervix. Morgan County Ambulance personnel will not transport patients < 30 days old from one facility to another without CTN.

SPECIFIC INFORMATION NEEDED:

1. Complete obstetric history
    A. Gravidity / Parity
    B. Estimated gestational age (dates, early exams, ultrasound, etc.)
    C. Labor pattern
    D. Fetal status (non-reassuring, non-reassuring FHT)
    E. Premature rupture of membranes (method to diagnose, color of fluid, how many hours ruptured?)
    F. Chance of multiple birth

2. Significant associated symptoms:
    Presence of risk factors associated with pre-term labor such as placenta previa, placental abruption, multiple gestation, hydramnios, fetal anomalies, pre-eclampsia and eclampsia, Rh disease, and other systemic illness (diabetes, pyelonephritis, etc.)

3. Past obstetrical history:
    A. History of premature labor
    B. History of previous labor and deliveries

TREATMENT

1. Assessment
    a. Look for crowning
    b. FHT by Doppler
2. Reassurance
3. IV NS – 2 if possible
4. Transport on left side
5. O2
6. Be prepared for delivery
    a. have equipment out and ready
7. Do not delay transport unless delivery is eminent
    a. if transporting and patient begins to deliver, pull over and have both

attendants assist in delivery.

DELAYING DELIVERY DURING TRANSPORT– CTN ONLY
Medications: Magnesium sulfate, Terbutaline

NOTE: MUST BE ADMINISTERED VIA PUMP ONLY
TERBUTALINE FOR PREMATURE LABOR

EFFECTIVE DATE: 2/03
REVISED 1/2007

Reviewed 07/13

GUIDELINES FOR TRANSPORTING OBSTETRIC PATIENTS
IN PREMATURE LABOR
CTN ONLY

DEFINITION

Preterm gestation is considered to be greater than 20 weeks, and less than 36 weeks. Preterm labor is a clinical diagnosis based on uterine activity sufficient to dilate and efface the cervix.

HOSPITAL TO HOSPITAL

1. The decision to transport a patient from a hospital in premature labor will not be done by MCAS without either an "OB nurse", physician or resident capable of managing a high risk OB patient. It is highly recommended that these transports be done by specialty teams trained in managing preterm labor. Furthermore, if the patient's **cervix is dilated to *4* cm** or greater and multiparous with moderate to strong contractions, this patient **should not be transported out of the county by MCAS without, physician approval and a highly capable team accompanying the patient.**

NOTE: Cervix dilation checks must be performed by ER staff prior to transport without exception for all imminent delivers.

2. Patients will be transported only when it is unlikely that delivery will take place.
3. The mother and fetus must be stable prior to transport.
4. If concerns arise about the stability of the patients and their safety, then consultation should be obtained with Medical Control.
5. If the crew is uncomfortable and or the possibility for delivery exists, the transport should be turned down.

SCENE TRANSPORTS TO HOSPITAL

1. The decision to transport immediately from the field verses remaining on scene will be individualized based upon obstetric history, associated symptoms, status of fetus and the capability of the crew on scene. If the mother is crowning and delivery immanent, the crew should remain on scene and prepare for a controlled delivery.
2. Patients should be transported non emergent when delivery is unlikely to take place.
3. Emergent transports, spending a minimal amount of time on scene should be done for all high risk deliveries (Dystocia, prolapsed cords, footling or arm presentation
4. Always have your delivery kit out, opened and ready to deliver.
5. If possible there should be two attendants in the back with the patient, however, do not delay transport to wait on a third person if there is a chance of delivery complications.
6. The mother should be transported on her left side (pre-delivery) unless in the case of prolapsed cord (see cord prolapsed protocol), to prevent Supine Hypotension Syndrome

a. when supine in the third trimester the fetus can put pressure on the inferior vena cava which decreases venous blood return which can cause a drop in B/P and possibly syncope.

MONITORING:

1. Duration, frequency, and intensity of uterine contractions
2. FHT's every 15 minutes and for 1 minute following the end of a uterine contraction
   a. Assessing FHT's is the only way in the field to detect fetal distress. A significant drop in the heart rate is worrisome.
   b. Fetal Heart rates should be 120 -160
   c. Placing the mother on a heart monitor or pulse ox will help disseminate between the maternal and fetal heart rate.
3. Maternal vital signs every 15 minutes
4. Vaginal bleeding

SPECIFIC INFORMATION NEEDED:

1. Complete History
   a. Estimate gestational age (EDC, early exams, ultrasound etc.)
   b. Multiple births or chance thereof
   c. Cervix dilation and effacement (should never be checked in the field)
   d. Labor pattern (controlled/ uncontrolled)
   e. Fetal status (FHT's, signs of fetal distress)
   f. Premature rupture of membranes (time elapsed, color of fluid)
2. Significant associated symptoms:

   Presence of risk factors associated with preterm labor such as placenta previa, placenta abruption, multiple pregnancies, fetal abnormalities, preeclampsia and eclampsia, Rh disease and any other significant illnesses (diabetes, pyelonephritis, etc.)

TREATMENT

1. Initiate IV of NS or LR at TKO
2. 02 per NC at 2 liters
3. If fetal distress: reposition mother to left lateral decubitus position and change to 100% NRM
4. Prepare for possible delivery of infant and neonate resuscitation
5. Treat seizures as per protocol
6. Divert to nearest facility if delivery is imminent and or has taken place.

EFFECTIVE DATE: 2/03
REVISED 1/2007 Reviewed 07/13

VAGINAL BLEEDING

SPECIFIC INFORMATION NEEDED:

1. Associated symptoms (abdominal pain or cramping, clots or tissue passed, dizziness, weakness, etc.)
2. Present history:
    A. Time elapsed since onset
    B. Amount of bleeding (small to large; number of pads saturated per hour)
    C. Last normal menstrual period
    D. Birth control measures
    E. Pregnant (EDC) estimated date of confinement
    F. Post partum (? Delivery date)
3. Past medical or maternal history (treatment of eclampsia)

SPECIFIC PHYSICAL FINDINGS:

1. Orthostatic vital signs
2. Other signs of hypovolemic shock; vasoconstriction, sweating, air hunger, and altered mental status.
3. Estimated blood loss of present
4. Signs of acute abdomen, rigidity, distention, tenderness
5. Fever
6. If tissue passed, bring to ER if available.

TREATMENT:

1. 02 as indicated
2. IV; NS large bore
3. If BP less than 80 and/or pulse is greater than 120:
    A. 20cc/kg fluid bolus rapid IV, then re-evaluate VS and administer fluids as indicated
    B. If patient is post partum (usually within 24 hours)
        i. Massage uterus and/or have mother nurse infant to aid in uterine contraction
4. Monitor vital signs during transport

SPECIAL PRECAUTIONS:

1. Amount of vaginal bleeding is difficult to estimate. Visual estimates from sheets and towels can be misleading. Try to get an estimate of # of saturated pads in previous 6 hours. Discrete inspection of the perineum maybe useful to determine if clots or tissue are being passed. VAGINAL EXAM IN THE FIELD IS NOT INDICATED.
2. Patients in shock from vaginal bleeding should be treated as with any patient with hypovolemic shock.

EFFECTIVE DATE: 2/03
REVISED 1/2007 Reviewed 07/13

MAGNESIUM SULFATE
(MUST TAKE CALCIUM CHLORIDE ALONG)

PHARMACOLOGY AND ACTIONS:

Magnesium sulfate is a CNS depressant and peripheral neuromuscular blocker producing anticonvulsant effects.

INDICATIONS:

For control of the patient with pre-eclampsia and the control of convulsions in eclampsia:

1. Provides sedation to stop convulsions
2. Combat vasospasm
3. Promote diuresis
4. Pre-term labor

PRECAUTIONS:

1. It is important that a high concentration of medication does not settle in the bottom of the IV bottle.
2. Watch for signs of toxic dosage levels:
   A. Knee jerks disappear (can be gradual or abrupt) loss of reflexes Assessment of reflexes should be done every 15 minutes
   B. Respiratory difficulty or failure
   C. Cardiac arrest
   D. Hypotension
   E. Flushing, sweating
   F. Visual changes
3. IV calcium chloride 1 gm/10 ml should be kept at the bedside (antidote for MgSO4)
   a. 3mg/kg slow IV push (5-10 mins)
   b. may repeat after 10 minutes
4. Watch for renal failure Foley catheter is advised for urine output monitoring every one hour. (30 cc/hr/kg)
5. Watch for signs of fetal depression and labor inhibition
6. Patient may experience a feeling of warmth during IVP

ADMINISTRATION:

1. Usual loading dose of 4 gms (diluted)
2. Pre-term Labor
   (1) Loading dose of 4-6 gms IV over 20-30 minutes (must be done by hospital prior to transports)
   (2) Maintenance dose of 2-4 gms/hr
   (3) Monitor urine output and total fluid to avoid fluid overload, max recommended fluid is 3000 ml/24 hrs

   Note: Fluid retention will without a doubt cause toxicity

Maintenance drips for Mag
(always use a pump)

Note: Must be initiated at the transferring hospital prior to transport.

MIXTURE RECOMMENDATIONS:

20 grams $MgSO_4$ in 500cc D5LR
(vial = 5gms/10cc which constitutes 4gms/100cc)
1gm/hr = 25cc/ hr
2gm/hr = 50cc/hr
3gm/hr = 75cc/hr
4gm/hr = 100cc/hr

IV PUSH:

IV $MaSO_4$ burns when being pushed; therefore you should dilute it prior to administration. Dilution; for every gram of $MaSO_4$, dilute it in 8cc of sterile water or NS.

1gm = 2cc of Mag in 8cc H_2O
2gm = 4cc of Mag in 16cc H_2O
2gm = 8cc of Mag in 32cc H_2O

EFFECTIVE DATE: 2/03
REVISED 1/2007 Reviewed 07/13

PREMATURE LABOR (CTN TRANSFERS ONLY)

TERBUTALINE (BREATHINE)

Mechanism of Action

1. Terbutaline is a beta-2 mimetic drug with direct effect on the uterine muscle, in this scenario, to inhibit uterine contractions.

Indications

For use in premature labor to delay labor in 27 to 36 week gestational patients. Therapy will be initiated in the labor and delivery department and administration done using an IV infusing device.

Contraindications

Adverse Reactions/Precautions

1. Establishing the required IV doses should be completed in the hospital prior to ambulance transport.
2. Fetal monitoring is maintained constantly while establishing required IV doses and until stable fetal heart tones are present.
3. Mother's vital signs will be monitored closely until dosages are stable (sufficient suppression of contractions) and vital signs are stable.
4. Obtain baseline maternal and fetal vital signs from Labor and Delivery prior to transport.
5. Chart vital signs every 15 minutes during transport, including labor pattern.
6. If dosage is increased during transport, monitor and chart breath sounds and watch for Pulmonary edema.
7. Common maternal side effects: tachycardia, light headedness, flushing, and hypotension (blood pressure less than 90 systolic).
8. Other maternal side effects: substernal chest pain which may lead to pulmonary edema. Also a drop in hemoglobin, hematocrit and potassium. Mild hyperglycemia may occur.
9. Fetal side effects: tachycardia and hyperglycemia may occur.
10. If premature infant is delivered, advise personnel receiving child of Terbutaline usage during pregnancy.
11. If contractions increase, infusion may be increased but no more than 50 mcg/minute.
12. If side effects increase, infusion may be decreased, but no more than 5 mcg/minute every 10-15 minutes.

Administration

1. Baseline vitals
2. Terbutaline is mixed 10mg in 500cc D5W. = 20 mcg/ml
   Max rate of infusion should be 50mcg/min or 150cc/hr
3. Refer to infusion rate chart to determine needs at specific concentrations.
4. **Using a pump-** start at 10mcg/min (30cc/hr)
5. Increase dosages at increments of 5mcg/min (15cc/hr) EVERY 10 MINUTES until the results are obtained
6. Once contractions have stopped, maintain the infusion at that rate.
7. After 60 minutes, start to decrease the dose in 5mcg/min increments EVERY 30 MINUTES until the lowest effective dose is obtained.

Dosage Chart: 10mg in 500cc D5W

Mcg/min	ml/hr
10	30
15	45
20	60
25	75
30	95
35	105
40	120
45	135
50	150

EFFECTIVE 2/03
REVISED 1/2007
Reviewed 07/13

RESUSCITATION PROTOCOL

NOTE: The most important, and effective action in a neonatal resuscitation is ventilation of the baby's lungs with oxygen.

ROUTINE CARE:

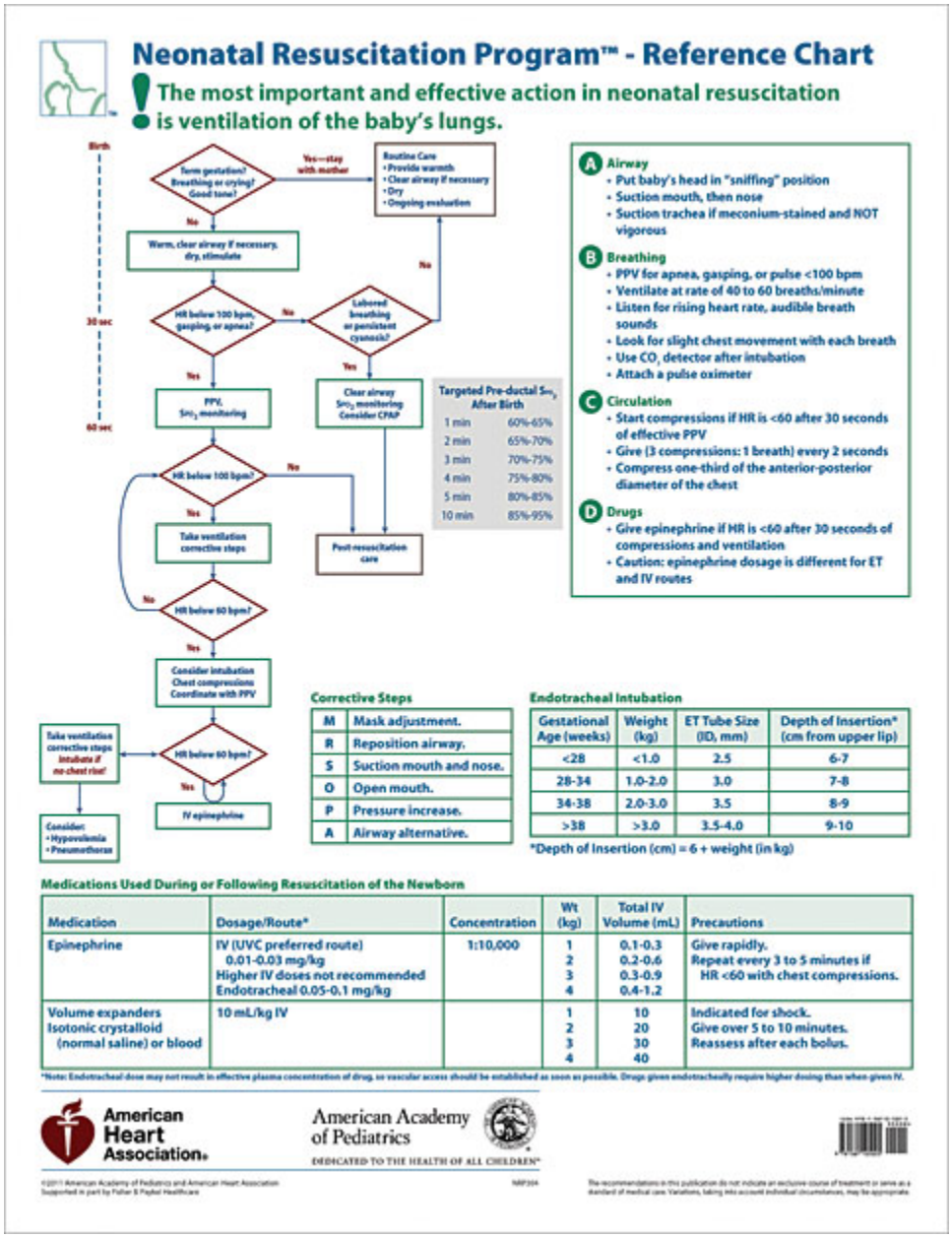
1. Ensure a controlled delivery by applying gentle pressure as the head presents to prevent an explosive delivery.
2. Once the head has delivered suction on the perineum with a bulb syringe. Suction the mouth, then the nose. (check for meconium)
3. With the head cradled and supported, gently guide the head downward to allow for delivery of the upper shoulder. Then guide the head upward to deliver the lower shoulder.
4. Once delivered keep the baby below the pelvic height until the cord has been cut.
5. Wipe the mucus from the mouth and nose and suction again with a bulb syringe (nose than mouth), if meconium is present suction trachea immediately before stimulating the baby.
6. Clamp the cord 5-6 inches from the baby approximately 2 inches apart.
7. Cut the cord between the clamps
8. Stimulate by vigorously drying
9. Remove wet linen and wrap in dry blankets, covering the head with a stocking cap, or wrap in the blanket.
10. Place the baby on the mothers chest
11. Massage the uterus to assist with delivery of the placenta.
12. APGAR at 1 and 5 minutes unless the APGAR is below 7 at the 5 minute mark, then reassess APGAR every 5 minutes there after until resuscitation is complete.

RESUSCITATIVE CARE:

The decision to resuscitate a neonate has to be done within seconds of delivery. Most new borns are vigorous, 10% of new borns will need some assistance while only 1% will require resuscitation. It is important to have everything you could possibly need to resuscitate out and available prior to delivery. Following the ABC's and ensuring their warmth is usually all you need, however you must be prepared to act quickly in cases of resuscitation.

The diagram below illustrates the levels of resuscitation. The top are procedures that are needed for every delivery, and as you work your way down, the bottom are procedures rarely needed.

Resuscitation Algorithm for new born infants



NOTE; EVERY ACTION TAKEN SHOULD BE FOLLOWED WITH A REASSESSMENT

A = Airway

* Suction trachea if meconium stained if the baby is not vigorous

B = Breathing

* PPV with 100% o2 at 40 -60 breaths/min using the anesthesia bag
* Observe the chest rise ("easy breaths")

C = Circulation

* Start compressions when the HR is less the 60bpm. Rate should be at 90 compressions with 30 breaths/minute 3:1 ratio every 2 seconds.

D = Drugs

* See table on the previous page for medications.

EFFECTIVE DATE: 4/03
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ABNORMAL DELIVERIES PROTOCOL

Approximately 1 in 300 deliveries will be abnormal. Abnormal deliveries are considered any delivery other then cephalic. In order to deal with these complications successfully, you must know when to anticipate they will happen, how to recognize them when they occur, and what actions to take. Most term babies are delivered cephalad. Pre-term babies are most likely to present with a complication of delivery.

BREECH (buttocks)

Happens in about 4% of all deliveries, and is more common in preterm babies.

- POSITION the mother supine with her buttocks at the edge of the bed with her legs flexed as far as she can (helps to have two people, one on each side pulling knees toward her head)
- Allow the buttocks and the trunk to deliver on their own, DON'T PULL!
- Once the legs are clear, Support the baby's body on the palm of your hand and forearm
- Now lower the baby slightly so that it nearly hangs by itself. The weight will help the head pass through the pelvis. DON'T PULL!
- Once you see the baby's hair line, grasp them by the ankles and lift them gently in the direction of the mothers abdomen. The head "should" deliver without difficulty.
- IF THE HEAD DOES NOT DELIVER WITHIN THREE MINUTES, the baby could suffocate if the cord is compressed against the birth canal. You should:
    1. Place your gloved hand in the vagina with your palm toward the baby's face.
    2. Form a "V" with your fingers on either side of the baby's nose, and push the vaginal wall downward away from the baby's face.
    3. Keep doing this until the baby delivers.
    4. DO NOT PULL
    5. Rapid transport and call ahead so that the ER is ready when you get there.
    6. You must maintain the airway in this manner until delivery

NUCHAL CORD (cord wrapped around the baby's neck)

This situation is usually easily rectified, but untreated it can lead to suffocation of the infant. Remember that if the cord has wrapped once, it can be wrapped multiple times.

- As the head delivers; you should run your middle finger up, and around the neck to check for a Nuchal Cord.
- Using your middle finger, gently slip the cord over the baby's head and shoulder
- Make sure it's not wrapped a second time
- If the maneuver to remove the cord has failed:
    1. Clamp the cord in two places, approximately 2 inches apart

2. Cut the cord between the clamps
3. Unwrap it once it has been cut
4. Proceed with the delivery and resuscitate as per protocol

DYSTOCIA (baby is stuck in the birth canal)

This is a true life or dearth emergency for the baby. After the head delivers, you have only 10 minutes to complete the delivery. At the 5 minute mark, neurological impairment is inevitable. ½ of 1% of all births (approx 20,000) are at risk for this during labor.

A baby can become stuck for a number of reasons. It may be caused by either the size of the delivering fetus, or abnormalities with the birth canal. Fetal causes are usually do to a large baby, hydrocephalus, tumors on the neck or abdomen, or malpositions. In most cases, the risk of a Dystocia is known by the mother and her physician prior to the delivery, as most of these cases will require a cesarean delivery. There are however unpredictable times when this may occur. EMS concerns develop when the baby's head has delivered, and the baby's shoulder, or sometimes the knees get stuck on the mother's pelvis. A Shoulder Dystocia is the more common of the two.

If the head has delivered, every attempt should be made to complete the delivery while at the same time heading to the hospital.

<u>RISK FACTORS:</u>

1. Large babies >8lbs 14oz
2. maternal diabetes
3. maternal obesity
4. maternal weight gain >35lbs
5. gestation beyond 40 weeks
6. short maternal stature
7. pelvic abnormalities

<u>COMPLICATIONS:</u>

1. Fetal death
2. Brachial Plexus Injury - caused by pulling on the infants head and neck during delivery. Injuring to the brachial plexus nerves (which present at C5 - C6) are caused by starching and tearing of the nerves. Depending upon the severity of the injury, some patients will lose total function of their arms, and hands. (Erbs Palsy)

TREATMENT: Rapid transport, but while enroute

1. Maternal O2, monitor and IV
2. Suction baby on perineum

3. Hyperflexion of the mothers knees forward while performing-
   McRoberts maneuver –

   This maneuver takes 4 people. One delivery the baby, one on each leg hyper flexing both legs forward as far as they'll go, and one person pushing downward (using their fist), as hard as they can on the mothers abdomen just above the symphysis pubis in an attempt to dislodge the shoulder from being the pubis bone.

DO NOT PULL ON THE BABY!!!!! Should this maneuver fail,

1. The person delivering the baby needs to reach into the vagina and try to reposition the baby to free up the shoulder
3. If this fails, break the baby's clavicle between your index and middle finger

Delivery is the only hope in this situation but again DO NOT PULL!!!

PROLAPSED CORD - see Cord Prolapse Protocol (page 5)

FOOTLING - One or both feet present first.

TRANSVERSE - The baby is lying sideways and a Hand will present first.

VERTEX - The baby's head is flexed and the face or brow will present first.

TREATMENT:

There's nothing you can do for these situations; these babies need to be delivered by C section. Rapid transport with maternal IV's, O2, and FHT monitoring.

RULE;

IF YOU DON'T SEE THE TOP OF THE HEAD OR THE BOTTOM OF THE BUTT, THE ONLY WAY OUT IS THROUGH THE GUT.

TWINS or MULTIPLES

With the increase of patients on fertility medications, the chances of multiple births are on the rise. Most people however are aware of the situation and the numbers. There are however still patients who haven't had any prenatal care, which makes your anticipation and assessment of there fundal height and girth even that much more important. When you suspect multiple births:

- Prepare every thing you'll need for delivery
- After the first baby is delivered clamp and cut the cord as usual.
  a. make sure that both ends of the cord are not bleeding. If they are clamp above the first one to prevent hemorrhage of the twin

● Contractions will usually start within 30 - 45 minutes after the first birth.

a. Transport can usually be completed before the delivery of the second
b. DON'T BANK ON IT as written in stone, be ready for the twin.

Note: Usually both babies' are born before the placentas are delivered and there may only be one placenta.

● Twins are usually smaller then single term baby's and should be treated as premature births even if term.

a. KEEP THEM WARM
b. WELL OXYGENATED
c. MONITOR RESP and HR

Mothers are at risk of postpartum bleeding since the placenta areas are larger and uterine muscles don't contract as well.

a. Massage the uterus and rapid transport.
b. Place the baby's on the mothers breast
c. Notify the ER as soon as possible

PULMONARY OR AMNIOTIC EMBOLISIM

While uncommon, it's the number one cause of maternal deaths during pregnancy, with an 80% mortality rate. It is triggered by a sudden embolization of amniotic fluid or debris from fetal origin (meconium), into the mother's venous circulation. Acute symptoms of profound alterations in hemodynamics and oxygenation should raise suspension and transport should not be delayed. Sudden onset of shortness of breath followed by hypotension will progress to cardiac arrest within minutes. 50% of these patients will die within 1 hour of the initial signs and symptoms. Neurological damage or brain death secondary to the severe hypoxia is not uncommon among survivors.

SIGNS AND SYMPTOMS:

1. Sudden tachycardia, hypotension
2. Acute SOB will occur in 50% of the patients
3. Hypotension is cardiogenic compromise

Note: This is often mistaken as "simple shock", it's not! These patients's are in trouble!

TREATMENT:

1. Rapid transport with notification to ER of possible amniotic embolism
2. O2 high flow, monitor, 2 large bore IV's, FHT monitoring
3. Intubate if unresponsive
4. Rapid fluid challenge 1000cc NS, followed by Dopamine infusion, if patient remains hypotensive
5. Minimize fluid to avoid the risk of pulmonary edema caused by ARDS

100% of the patients will have Hypotension and fetal distress
93% will develop pulmonary edema
87% will rapidly progress to cardiac arrest
83% will develop DIC
50% will complain of acute SOB
50% will have seizures
And only 2% of the patients will complain of chest pain

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PEDIATRIC SHOCK RESUCITATION

Shock is defined as a state of hypo-perfusion. Compensated shock is defined as a state where there is clinical evidence of hypo-perfusion, yet a normal B/P is present.

Three types of shock:

1. Hypovolemia: Etiologies include dehydration states from profound diarrhea, vomiting, DKA, toxic ingestions or hemorrhage from traumatic injuries.

2. Distributive: Etiologies include sepsis, certain toxic ingestions, spinal cord injuries, or anaphylaxis. Hypo-perfusion results from a loss of vascular resistance (venous and arterial dilation) and an increase in vascular permeability.

3. Cardiogenic: Etiologies include arrythmias, both tachy and bradicardias, hypoxic ischemia injures (HII) following resuscitation, i.e., near drowning, primary cardiac dysfunction, i.e., tamponade, cardiac contusions.

Assessment

1. Vital signs
   a. Heart rate, respiratory rate, B/P will be taken on all pediatric patients. (Temperature should be taken prior to transport from hospital to hospital.)
   b. Vital signs should be taken at least every 15 minutes. They should be taken every 5 minutes if therapeutic interventions have been taken.
   c. Blood pressure cuff should be 2/3 the length of the upper arm. Approximate (systolic) should be 80 plus 2 times age in years; (diastolic) 2/3 the systolic pressure.

	HR	**RESP RATE**	**URINE OUTPUT**
Infant	120/160	40-60	2cc/kg/hr
Pre-School	100/120	30-40	Children > 2y/0 1cc/kg/hr
Children	80/100	20-30	

2. Physical Exam

   a. Neuro Status – LOC, interaction with parents and staff, response to pain, eye contact.
   b. Respiratory Status – Air movement, breath sounds, work of breathing, stridor,

cyanosis

Retraction – Respiratory distress in kids will sometimes present with retractions. It is the body's response in using excessorary muscles.

Four types of Retraction:

Abdominal	mild distress
Intra costal	moderate distress
Sternal	severe distress
Supraclavicle	ominous sign

c. Cardiovascular status
   1. Cap refill – soles of feet, this should be the first thing you look at. Less than 2 sec normal. > 2 sec means they are either cold or have hemodynamic compromise.

NOTE: Do not wait for B/P and HR to change before transport.

   2. Ability to palpate the radial and dorsal pedis pulse

d. Secondary survey
   1. Signs of external trauma
   2. Symmetric movement of extremities
   3. Abdominal exam to include palpation of the liver (normally not present).
   4. Skin exam or signs of purpura and pstechiae
   5. Palpation of extremities for evidence of fracture.

CONSTANT REASSESMENT IS CRUCIAL

CONDITIONS REQUIRING RAPID CARIOPULMONARY ASSESSMENT

HR >180 or <80 (under 5 y/o)
Respiratory rate >60
Respiratory distress (retractions)
Trauma
Burns
Cyanosis
Failure to recognize parents
Decreased LOC
Seizures
Fever and petechiae
Any pediatric patient being transported to another hospitals ICU

Treatment

1. High flow o2 by mask or blow by
2. Cardiac monitor, pulse ox
3. Spinal precautions if indicated
4. IV of NS

NOTE: If patient is critical, IV's should be attempted numerous times, simultaneously by numerous people if compensated shock is present. If after "1" minute (total) no IV is accessed then at least one, but preferably 2 IO should be placed.

5. Intubation should be considered when the primary problem is thought to be respiratory, or when there is a depressed LOC secondary to head trauma, or toxic ingestion.

NOTE: The lethargic tachypnic patient in shock from other causes will usually improve rapidly with aggressive resuscitation, and may not require intubation. (the exception may be a patient in septic shock)

6. After any intervention, you must reassess. Improvement should follow treatment, if not, more aggressive treatment or alternative therapy is indicated. Start with the basics, if no improvement get more aggressive, i.e. 02, Bag, ET, Drugs.

All patients with seizures or decreased LOC should have a rapid assessment of blood sugar, D25 should be given if sugar is <80mgdl or if it can't be assessed, administer 2cc/kg I.V.

THERAPY FOR VARIOUS STAGES OF SHOCK

Normal saline is the initial fluid of choice. It should be given 20cc/kg increments as rapidly as possible. Reassess HR, LOC, Resp rate, Cap refill, B/P and liver size after each 20 cc/kg bolus.

Hypovolemic Shock

1. Dehydration: Bolus with NS 20cc/kg increments up to 60 CC/kg. If patient remains in shock after 60 cc/kg contact base control immediately. 60 cc/kg should resuscitate most hypovolemic shock patients that are dehydrated. If it does not, consider the patient to be septic. Use Dopamine 2 – 20mcg/kg, FFP or Albumin.

2. Hemorrhagic – Bolus 20 cc/kg up to 40 cc/kg. If the patient remains shocky after 40 cc/kg, they need PRB 10 cc/kg, contact base control to be standing by with PRB. Continue with NS at 20 cc/kg increments.

Distributive Shock

1. Septic – 20 cc/kg up to 60 cc/kg. Contact base if shock persists and consider Dopamine.

2. Neurogenic 20 cc/kg up to 60 cc/kg. Contact base if shock persists and consider Dopamine, FFP or Albumin.

3. Anaphylactic – Fluid resuscitation is the same as above. EPI should be used very early in this situation. Shock with a palpable pulse should be treated with half the IV dose of 1:10,000 while EPI drip is prepared. If pulses are lost then full dose of EPI 1:10,000, follow ACLS guidelines. EPI is used in anaphylaxis to improve perfusion, evident by increase LOC, increased B/P and improve cap refill

Cardiogenic

A high index of suspicion is needed in order to recognize this. Patients with known congenital heart disease do not present the diagnostic dilemma. While rare, young infants can present with undiagnosed heart disease (usually from VSD or coarctation of the aorta). Contact medical control ASAP when this is suspected.

1. Arrythmogenic shock
    a. SVT and bradicardia are the two most common. HR of 220 or greater are usually SVT. If shock is present, immediate cardiovert at 0.5 joules/kg following sedation. If the patient is stable contact base as soon as possible. HR 200-220 may receive a cautious trial of NS at 10 cc/kg. ST will usually respond to fluid bolus while SVT will not.

    b. Bradicardia's are caused by congenital defects and should be treated with Atropine. Bradicardia's is caused by Hypoxic Ischemia, i.e., near drowning should be treated with EPI

2. Primary Myocardial Dysfunction

    a. Fluid should be used very cautiously in these patients. If lungs are clear, O2 sats are good and the liver edge is not palpable, then give 10 cc/kg bolus of NS, reassess, and then repeat if needed. If there is evidence of pulmonary edema, (wet lungs, chest x-ray, palpable liver edge), then use Dopamine

Drug Therapy

1. Dopamine: it possesses both alpha and beta antagonist properties. Its primary action is to enhance contractility in a dose related way. Increased vascular resistance (alpha) is achieved with doses of 10-20 mcg/kg/min. Increased renal blood flow is obtained with doses less than 5 mcg/kg/min. Indications are septic shock not responsive to 60 cc/kg of normal saline, hypoxic ischemic injuries who are normal tensive, and cardiogenic shock not caused from an arrhythmia. The "Rule of Sixes" should be used to mix Dopamine drips. Six times the body weight in kilos is the milligram dose added to make 100 ccs. One ml/hr delivers 1 mcg/kg/min. Dopamine should be started at 10 mcg/kg/minute and titrated to desired effect

2. Epinephrine: Indications include decreased B/P refractory to 60 cc/kg NS and Dopamine 10 meg/min. Primary use is for anaphylactic shock and hypoxic Ischemic Injury. Use EPI early with anaphylactic. It has very potent alpha and beta effects. It is tolerated well by children. Indications include all shock states unresponsive to fluid and 10 mcg/kg/min of Dopamine. It should be used primarily in anaphylactic shock and following hypoxic Ischemic injuries when hypotension is present. The "Rule of Sixes" should also be used when mixing an epinephrine drip -0 .6 x body weight in kg is the milligram dose added to make 100 ccs. 1 cc/hr delivers 0.1 mcg/kg/min

3. Antibiotics: (CTN) This should be given early if septic shock is suspected. Claforan or Rocefin 50 mg/kg IV should be given. Antibiotics should have already been given or should be given while enroute during an interfacility transfer.

NOTE: Scene time should not be prolonged in order to resuscitate the pediatric patient. Initial stabilization focusing on airway, breathing and circulation should be done followed by resuscitation while enroute.

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