

MEDICAL MANAGEMENT OF MATERNAL PATIENTS

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Fetal Assessment

SCOPE

All maternal transports with a live fetus of viable gestation (> 22 weeks).

PROCEDURE AND TERMINOLOGY

- A. Attach FHM and observe a 20-minute strip to establish baseline, variability, and periodic/spontaneous changes.
- Normal baseline:** 110-160bpm. (A baseline of 100-110bpm in a term fetus with normal variability and no decelerations may be normal.)
 - Fetal bradycardia:** A baseline of < 110 for an infant < 37 weeks, or < 100 for a term infant.
 - Causes:** Late sign of fetal hypoxia, cardiac arrhythmias, maternal drugs/medications, maternal hypothermia, poor uterine perfusion/rupture, placental abruption, late maternal hypotension, umbilical cord prolapse.
 - Initial Treatment:** Maternal oxygen administration (15LPM NRB mask), IVF bolus, and position changes.
 - Additional Info:** Refer to “Fetal Distress” protocol if above measures fail to resolve bradycardia. Delivery at the referring facility is indicated for unresolved fetal bradycardia with loss of variability or late decelerations.
 - Fetal tachycardia:** Baseline FHR > 160bpm.
 - Causes:** Maternal pain and/or anxiety, betamimetics therapy, maternal fever/sepsis, fetal sepsis and (early) maternal/fetal hypotension
 - Initial Treatment:** Treat pain/anxiety, IVF bolus, decreasing or stopping betamimetics (i.e., Terbutaline), oxygen (15LPM NRB mask), temperature check (rule out fever/sepsis), IV antibiotics for suspected /infection, antipyretics, and maternal position changes.
 - Additional Info:** Delivery at the referring facility may be indicated for unresolved fetal tachycardia with loss of variability, late decels, or sustained baseline FHR > 180 without betamimetics on board.
 - Variability:** Fluctuations in FHR of 6-25bpm in 3 or more cycle changes per minute. Excludes accelerations/decelerations.
 - Causes:** Compromised or hypoxic fetus.
 - Initial Treatment:** Maternal oxygen (15LPM NRB mask), IVF bolus and maternal position changes. Contact Medical Control/follow fetal distress protocol.
 - Additional Info:** Delivery at referring facility may be indicated if there is loss of variability with late decels or persistent variable decels. Non-reactivity without ominous signs is acceptable for transport.
 - Absent – Amplitude range undetectable. (Non-reassuring finding)
 - Minimal – Amplitude range detectable, but \leq 5bpm. (Non-reassuring finding)
 - Moderate – Amplitude range 6-25bpm. (Normal, but does not rule out complications)

(d) Marked – Amplitude range > 25. (Non-reassuring finding)

5. **Accelerations:** Visually apparent, abrupt increase in FHR. Positive/reassuring sign.
 - > 32 weeks gestation: peak must be ≥ 15 bpm and last ≥ 15 seconds.
 - < 32 weeks gestation: peak of ≥ 10 bpm and last ≥ 10 seconds.
 - Prolonged acceleration: increase in FHR ≥ 2 minutes but < 10 minutes in duration.
 - Additional Info: If absent on FHM, accelerations may be induced at the direction of MD to evaluate fetal well-being, including but not limited to acoustical stimulation, scalp stimulation, uterine stimulation, maternal oral glucose and maternal position changes. Maternal sedatives/analgesics may result in a non-reactive fetus.
6. **Early decelerations:** Visually apparent gradual decrease (onset to nadir/lowest point is ≥ 30 seconds) and return of FHR associated with a uterine contraction. Nadir of early decelerations occurs at the same time as the peak of the contraction.
 - Causes: Head compression.
 - Initial Treatment: Intervene if contractions are repetitive and severe or patient should not be contracting (pre-term labor). Interventions include maternal position changes. Consider MD consult, IVF bolus or tocolytics.
7. **Late decelerations:** Ominous sign. Visually apparent gradual decrease (onset to nadir/lowest point is ≥ 30 seconds) and return of FHR associated with uterine contraction. Nadir of late decel occurs after the peak of the contraction.
 - Causes: Uteroplacental insufficiency (e.g., abruption, placental ageing/calcification, maternal hypotension)
 - Initial Treatment: Maternal oxygen (15LPM NRB mask), IVF bolus, and maternal position changes.
 - Additional Info: If late decels that are repetitive or not corrected by interventions listed may need tocolytics to remove the stress of contractions and/or immediate delivery at the referring facility. Aggressive intervention required and MD consult if not resolved by first line interventions.
8. **Variable decelerations:** Visually apparent abrupt decrease (onset to nadir/lowest point is ≤ 30 seconds) of FHR below the baseline. Decrease is ≥ 15 bpm. Duration is ≥ 15 seconds and < 2 minutes. Not always associated with a uterine contraction. Variable decels that are > 45-60 seconds and drop below 60bpm should be treated. Smaller variable decels are not ominous but should be treated with position changes to relieve cord compression. Variable decels with decreased variability or slow return to baseline should be considered serious. Continuing variable decels may cause fetal compromise.
 - Causes: Cord compression
 - Initial Treatment: Initial treatment of large or frequent variable decelerations: Maternal oxygen at 15LPM, IVF bolus, maternal position changes (including knee-chest) and possible tocolytics.
 - Additional Info: Consider MD consult if not resolved by first line interventions. Delivery at referring facility may be indicated if no improvement with above treatments.
9. **Prolonged decelerations:** - Visually apparent decrease in FHR below baseline. Decrease is ≥ 15 bpm and duration is ≥ 2 minutes but < 10 minutes. VERY non-reassuring.
 - Causes: Maternal hypotension, seizures, magnesium or narcotic overdose, cord prolapse.

Initial Treatment: Sterile Vaginal Exam (SVE) for cord prolapse, maternal position changes, maternal

oxygen (15LPM by NRB mask), IVF bolus.

- Consult MD if not corrected with above treatments.

10. A fetal monitor strip may be faxed to Providence Labor and Delivery or the LifeMed Alaska Medical Control if the flight team is unsure of the interpretation or if the referring personnel and the flight team are not in agreement on the interpretation and plan of care/intervention.

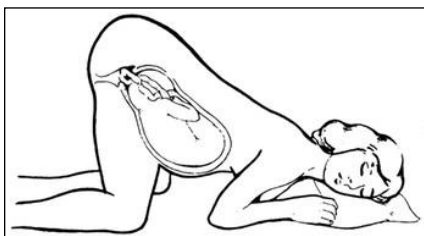
Fetal Distress

SCOPE

Fetal heart rate (FHR) deceleration unresponsive to increased IV rate, position change, oxygen to 15LPM/min. via NRB face mask.

PROCEDURE

- A. Rule out maternal source/artifact vs. FHR. Directly auscultate FHR if possible. Refer to “Fetal Assessment” protocol.
- B. Do SVE to rule out prolapsed cord/imminent delivery. Refer to “Sterile Vaginal Exam SVE,” “Prolapsed Umbilical Cord” and/or “Delivery, Emergency” protocols as necessary.
- C. Place patient in knee-chest position.



- D. Contact LifeMed Alaska Medical Control.
- E. Palpate uterine tone and administer Terbutaline 0.25mg SQ for uterine hypertonicity or fetal bradycardia unresponsive to above measures. Use extreme caution using betamimetics if abruption is suspected or there is acute abdominal pain or vaginal bleeding.
- F. Consider diverting flight to nearest facility with C-section capabilities.

Amniotic Fluid Emboli

SCOPE

Amniotic fluid emboli may present with a variety of symptoms. Maternal deterioration and subsequent arrest are often rapid and irreversible. Symptoms include acute dyspnea and shock often accompanied by chills, cyanosis, vomiting, restlessness, hypotension, rapid weak pulse, tachycardia, tachypnea, convulsions, coma, pink frothy sputum, vaginal hemorrhage and cardiac arrest. The fetus often will have profound bradycardia.

PROCEDURE

- A. If not hypotensive, assist patient to sitting position for respiratory distress.
- B. Start oxygen at 10LPM via NRB.
- C. Contact LifeMed Alaska Medical Control if able, consider landing at nearest medical facility.
- D. Start a second IV line if able, titrate/bolus IV fluids (preferably LR) to maintain blood pressure.
- E. Intubate if indicated.
- F. Administer blood products/volume expanders as needed and if available to maintain blood pressure.
- G. Continue assessment of fetus/newborn as available. Refer to “Fetal Assessment” or “Delivery, Emergency – Immediate Care of the Newborn” protocols.
- H. Administer CPR and drugs per ACLS Guidelines.

Cardiac Arrest

SCOPE

Any pregnant patient who presents with pulseless V-Tach, V-Fib, Asystole, or PEA.

PROCEDURE

- A. *DEFLECT UTERUS TO LEFT*
- B. LifeMed Alaska protocol for cardiac arrest follows the guidelines established by the American Heart Association and approved by LifeMed Alaska Medical Director for the treatment of advanced cardiac life support unless otherwise directed by LifeMed Alaska Medical Control.
- C. **PROVIDE HIGH QUALITY CPR AND ACLS INTERVENTIONS AND MEDICATIONS AS DESCRIBED IN ADULT CARDIAC ARREST PROTOCOL**

Cardiac Dysrhythmias

SCOPE

Any patient presenting with cardiac dysrhythmias.

PROCEDURE

- A. Verify dysrhythmia vs. artifact.
- B. Run EKG strip to document.
- C. Discontinue any beta-mimetic.
- D. Administer oxygen by non-rebreather mask at 15LPM/min.
- E. Provide ACLS interventions and medications per “Adult Cardiac Dysrhythmia” protocol as needed for the specific cardiac dysrhythmia encountered.

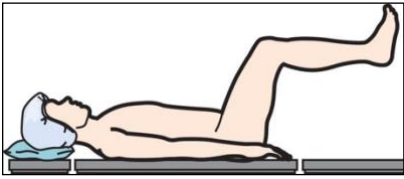
Delivery, Breech

SCOPE

Imminent spontaneous breech delivery where no physician is available. Refer to “Delivery, Emergency” for protocol related to all other aspects of delivery.

PROCEDURE

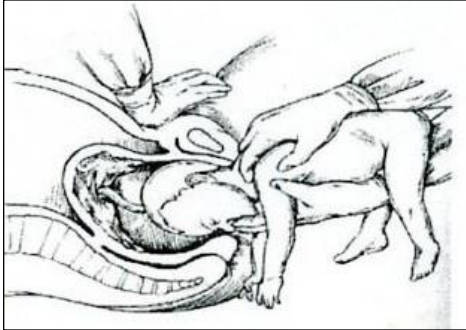
- A. Place patient in lithotomy position with buttocks extending past the end of the table. Elevate buttocks if patient is on a stretcher.



- B. Do not assist expulsion until body is born to umbilicus. (Advisable not to touch baby until body is born to umbilicus.)
- C. Maintain suprapubic pressure during descent to aid delivery and to keep head flexed.
- D. Wrap a warm, dry towel around the baby as soon as the body is born. Once the body is delivered and head remains in the birth canal time is of the essence. A patent airway for the baby must be secured within 3-5 minutes to avoid brain anoxia.
- E. Gently extract legs if not delivered spontaneously.
- F. Depress buttocks and rotate baby so back is upward, then deliver body.
- G. With downward traction and rotation, deliver the arms.
- H. The baby should spontaneously reposition to Occiput Anterior (OA) position (spine anterior). This must be encouraged if not spontaneous. This can be performed by manually turning the baby until the spine is anterior.

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- I. Place the index and middle fingers of one hand over the posterior aspect of the head. The other hand should be placed on the infant's head until the mouth is delivered over the perineum. If possible, having another person to hold the infant's body and arms makes this maneuver easier.



- J. Maintain suprapubic pressure to guide the head through the pelvis and maintain flexion.
- K. Then with further suprapubic pressure, the head is delivered by flexion over the perineum. If time permits, suction mouth and nose as face presents on perineum to provide an open airway.
- L. Delivery of the head should be slow enough to prevent rapid compression/decompression of the brain and fast enough to prevent anoxia.
- M. Refer to "Delivery, Emergency - Immediate Care of the Newborn" and "Delivery, Emergency - Placenta" protocols.

Delivery, Emergency

SCOPE

Imminent vaginal delivery of a fetus in vertex position with no physician available. Additional information includes: Immediate care for the newborn, NRP and STABLE guidelines, delivery of the placenta, and postpartum care of the mother.

For clarification related to complications refer to “Delivery, Breech,” “Delivery, Shoulder Dystocia,” and “Postpartum Hemorrhage” protocols.

PROCEDURE

- A. Apply supplemental oxygen via NRB.
- B. Gather supplies including OB Kit, sterile gloves, and resuscitation equipment for mom and neonate.
- C. Obtain focused history, gestation age/due date, complication with pregnancy, number of fetuses, rupture of membranes.
- D. Start large bore IV and infuse Lactated Ringers at 125cc/hour unless otherwise indicated.
- E. Position patient in lithotomy position - Supine with legs separated and flexed towels/chucks placed under pelvis to raise the perineum.
- F. Don sterile gloves and PPE.
- G. Prep perineum with antibacterial scrub if time permits.
- H. Designate appropriate staff/personnel to prepare for and receive newborn. Prepare for neonatal resuscitation. Increase environmental temperature for neonate if possible.
- I. Assess perineum for bulging/drainage, crowning, presenting part, or prolapsed cord if present. Refer to “Maternal Prolapsed Uterine Cord” protocol.
- J. If NO presenting part or crowning - perform a SVE for dilation, station, effacement, and presentation. Refer to “Sterile Vaginal Exam SVE” protocol.
- K. Visualize amniotic fluid for meconium stain (MSAF). If meconium is present, see below.

Meconium stained AND a vigorous newborn – use bulb syringe to clear mouth and nose. Otherwise treat as regular newborn. Refer to “Delivery Emergency - Immediate Care of Newborn” protocol.

A meconium stained and newborn who is NOT vigorous needs to be resuscitated on radiant warmer immediately. Dry and stimulate newborn. Use bulb syringe first to clear mouth and nose THEN use PPV if newborn is not breathing or HR < 100bpm. Follow NRP Guidelines below.

- L. If Infant is in vertex position continue below. Refer to “Delivery, Breech” protocol. For complications, refer to “Delivery, Shoulder Dystocia” protocol. For labor dystocia at this phase, contact Medical Control.

Delivery, Emergency – Vertex Position

- A. Apply moderate pressure to the presenting part to prevent precipitous delivery. Deliver the head slowly to prevent tearing of the perineum and anal sphincter. If delivery is occurring precipitously, ask patient to pant through peak of her contractions and then rest and breath normally between contractions.
- B. Place flat of hand on exposed head. Once the head is delivered, external rotation occurs spontaneously. Support Head with hand and perineum with other hand.
- C. Do not rupture the membranes if they are still intact when the head is delivered. The baby can be delivered 'en caul'.
- D. Check along back of neck for nuchal cord. If the cord is around the neck, slip the cord over the head with finger. Check for second loop. If cord is tight, prohibits delivery and unable to reduce, double clamp the cord and cut between clamps.
- E. Wipe infant's face from forehead to chin and remove secretions. Use bulb syringe to suction mouth first then nares.
- F. Place one hand on each side of baby's head and exert gentle downward pressure until anterior shoulder emerges from under the symphysis pubis. Exert gentle upward pressure until posterior shoulder delivers. Refer to "Shoulder Dystocia" for complications.
- G. Perform rapid evaluation of newborn. Assess tone, term, and breathing or crying. Note time of delivery. Refer to "Delivery, Emergency - Immediate Care of Newborn" protocol. Begin actions with drying and stimulating newborn.
- H. After delivery of the infant, the umbilical cord must be double clamped and then cut between the clamps using sterile technique, leaving an approximately 6 – 7 inches from stump. NOTE: Delayed cord clamping up to 60 seconds is ok if baby has good cry and tone. Document time of cord clamping.
- I. Obtain red and purple top tubes of cord blood if possible.

Delivery, Emergency – Immediate Care of the Newborn

- A. Perform rapid evaluation of newborn. Assess tone, term, and breathing or crying.
- B. Dry and stimulate newborn.
- C. Maintain good airway position (sniffing).
- D. Using bulb syringe clear secretions from mouth then nose if needed and ensure thermoregulation (i.e., new dry blanket, hat, radiant or chemical warmer). Stimulate again if needed.
- E. If newborn continues to have apnea, gasping, or HR < 100/min proceed with NRP starting with PPV, SpO2 monitor placed on right wrist, and ECG monitor on newborn.
- F. If newborn has labored breathing or persistent cyanosis at one-minute mark do the following:
 - 1. Reposition and clear airway.
 - 2. SpO2 monitor on right wrist
 - 3. EKG monitor.
 - 4. Have PPV ready and available.
- G. Utilize the MR. SOPA acronym for trouble shooting assisted breathing for the newborn.

	Corrective Steps	Actions
M	Mask adjustment.	Reapply the mask. Consider the 2-hand technique.
R.	Reposition airway.	Place head neutral or slightly extended.
<i>Try PPV and reassess chest movement.</i>		
S	Suction mouth and nose.	Use a bulb syringe or suction catheter.
O	Open mouth.	Open the mouth and lift the jaw forward.
<i>Try PPV and reassess chest movement.</i>		
P	Pressure increase.	Increase pressure in 5 to 10 cm H ₂ O increments, maximum 40 cm H ₂ O.
<i>Try PPV and reassess chest movement.</i>		
A	Alternative Airway	Place an endotracheal tube or laryngeal mask.
<i>Try PPV and assess chest movement and breath sounds.</i>		

- H. Complete rapid evaluation again. IF newborn has poor tone or poor breathing/crying after MR SOPA interventions follow NRP Algorithm. See
- I. If newborn has good tone and good cry follow STABLE guidelines.

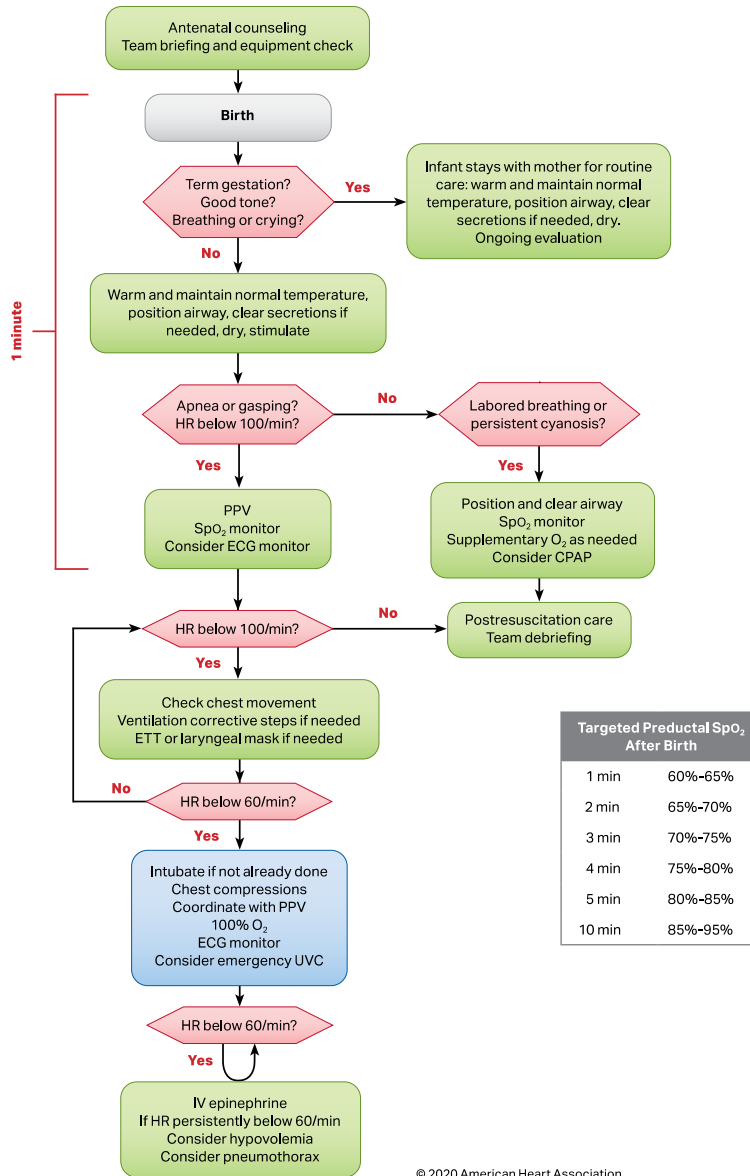
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J. Assess APGAR scores at 1, 5, and 10 minutes as able.

Sign	0 points	1 Point	2 points
Heart rate	Absent	Below 100bpm	Above 100bpm
Respiratory effort	Absent	Weak cry	Good strong cry
Muscle tone	None or floppy	Some flexion of extremities	Active motion. Extremities well flexed
Reflex irritability	No response	Grimace	Cry
Color	Blue or Pale	Body pink extremities blue	Pink

Delivery, Emergency – NRP

Neonatal Resuscitation Algorithm



Delivery, Emergency – STABLE

SCOPE

STABLE is considered after infant has been resuscitated utilizing NRP guidelines.

PROCEDURE

- A. **Sugar:** Warm the heel for best results, nadir is 60-90 minutes.
 - 1. Goal blood glucose is > 50.
 - 2. Consider glucose gel in infants > 35 weeks.
 - 3. Treatment for hypoglycemia is D10W only (2ml/kg slow IV push).
 - 4. Maintenance IV fluids in first 24 hours D10W 80ml/kg/day.

- B. **Temperature:** Newborn infants are at high risk for hypothermia.
 - 1. Consider increasing ambient temperature.
 - 2. Utilize chemical thermal mattress in extreme temperatures.
 - 3. Skin to skin with mother promotes thermal regulation.

- C. **Airway:** Newborns are respiratory driven. The most important intervention in newborn resuscitation is PPV and infants with continued low saturations or grunting respirations will respond to mask CPAP alone with PEEP of at least 6cm H₂O pressure.
 - 1. Starting pressures for PPV are 20-25/6 with a rate of 40-60 breaths per minute.
 - 2. Start resuscitation in room air if possible or 30% oxygen if infant < 35 weeks.
 - 3. Newborns receiving supplemental oxygen should never saturate 100%. Titrate FiO₂ to maintain saturations 92-98% for infants > 35 weeks and 88-95% for infants < 35 weeks.
 - 4. Remember with fetal hemoglobin, initial saturations are only 60% and will gradually improve with opening of alveoli and clearing of fetal lung fluid. **Newborns have 10 minutes to achieve saturations of 85%. Be patient.**

- D. **Blood pressure:** Target blood pressure for newborns is mean BP = gestational age.
 - 1. Volume expansion is normal saline only (10ml/kg)

- E. **Lab work:** Assess for prenatal and neonatal risk factors.
 - 1. Obtain blood culture aseptically and begin antibiotics after culture obtained.

- F. **Emotional support:** Explain plan of care and reason for transport to the family.

Delivery, Emergency – Placenta

SCOPE

Undelivered placenta with active bleeding with no physician available

PROCEDURE

- A. Provide gentle downward traction to the cord while applying suprapubic support. Do not pull on the cord too aggressively.
- B. Mix Oxytocin 20 units in 1000ml Lactated Ringers and begin infusing at 100ml/hr AFTER delivery of newborn but PRIOR to delivery of the placenta. Titrate to bleeding and fundal firmness after delivery of placenta. Oxytocin 10 units IM may be used if no IV available.
- C. Watch for signs of separation:
 - 1. Slight gush of blood.
 - 2. Lengthening of cord.
 - 3. Change in uterine shape from flat to globular.
- D. Allow and encourage patient to push gently.
- E. When placenta emerges, gently ease out membranes.
- F. After delivery of placenta, inspect to ensure no fragments detached and remained in uterus.
- G. Massage fundus to express clots and assess/stimulate uterine firmness.
- H. If placenta is retained (> 30 min. after delivery of baby) and patient has minimal bleeding, delivery of the placenta can wait until arrival at receiving facility.
- I. Refer to “Maternal Postpartum Hemorrhage” protocol for clinically significant bleeding or greater than 250ml of blood loss.
- J. Start with firm fundal massage and increase Oxytocin. Treat aggressively.
- K. Place Foley to monitor urine output. Mark fundal height to monitor for concealed bleeding.
- L. **If placenta or placental fragments are retained WITH significant bleeding**, the flight crew may need to manually remove placenta. Contact LifeMed Physician/OB Medical Control.

Delivery, Emergency – Postpartum Care of the Mother

- A. Inspect perineum for laceration/bleeding. Apply pressure to decrease bleeding.
- B. Continue recovery care as:
 - 1. Perform uterine massage for 5 minutes after delivery of placenta before moving to q15 minute fundal checks.
 - 2. VS, fundal height checks and uterine massage q15 minutes x4 then q1 hour if stable.
 - 3. Record blood loss.
 - 4. Facilitate bonding and breastfeeding if possible.

Diabetes, Pregnant Diabetic

SCOPE

Pregnant patient with Diabetes Mellitus (DM) or Gestational Diabetes Mellitus (GDM).

PROCEDURE

- A. Assess patient, including history (age or gestation of onset, control measures, normal blood glucose range, time of last meal and last insulin dose, most recent blood glucose).
- B. Assess fetal well-being.
- C. Initiate IV with Lactated Ringers at 125ml/hr. Gestational diabetics or other with endocrine disorders, may require glucose containing IV fluids. Ensure adequate hydration.
- D. Maintain optimum uterine perfusion/oxygenation with patient in side-lying position.
- E. Apply oxygen as necessary via NRB.
- F. Obtain baseline glucose and potassium levels.
- G. Obtain blood glucose levels via reagent strip as indicated (q1 hour if unstable, q4-6 hours if stable, prior to scheduled insulin dose, q2 hours post-prandial if not NPO). Most transported patients will be NPO and therefore not require insulin. Management goal is blood sugars 80-120mg/dl. Discuss individualized therapy with LifeMed Alaska Medical Control prior to transport.
- H. Avoid the use of betamimetics for tocolysis in insulin dependent diabetics if blood sugars are > 200mg/dl. Discuss with Medical Control.
- I. If the patient presents in diabetic ketoacidosis or coma, refer to Adult protocols for known diabetic.

Dysfunctional Labor

SCOPE

Any patient exhibiting inadequate progress in labor.

PROCEDURE

- A. Assess fetal well-being. Refer to “Fetal Assessment” protocol.
- B. Assess uterine activity and status of membranes.
- C. Perform a SVE for dilation, effacement, station, and presentation. Refer to “Sterile Vaginal Exam SVE” protocol.
- D. Tocolysis may be considered for use with physician consent.
- E. Be prepared for delivery enroute. Refer to “Delivery, Emergency” protocol.
- F. For pain related to strong uterine contractions, may administer Fentanyl 50-100 mcg q1-2 hours as first line analgesic. NOTE: Fentanyl is poor labor analgesic but has shorter duration therefore shorter effect on fetus.

OR

Administer Morphine Sulfate 1-2 mg IV q1-2 hours PRN for pain.

- G. Continue to assess mother and fetus for change in blood pressure or change in FHM.

Nausea / Vomiting

SCOPE

Patient with complaint of nausea/vomiting.

PROCEDURE

- A. Establish and maintain adequate airway and ventilation.
- B. Correct underlying problem if possible (i.e., cabin temperature, pain management).
- C. If nausea/vomiting persists: Administer Ondansetron 8mg IV q6 hours PRN or Promethazine 12.5mg SIVP and up 25mg in 6 hours if needed for persistent vomiting.
- D. Document response to drug therapy in nurses' notes along with fetal tracing response.
- E. Maintain IV 18-gauge catheter with Lactated Ringers at 125cc/hr.
- F. Consider performing iSTAT lab for electrolyte levels.
- G. For Serum K+ lower than 3.5mEq/L replete with Potassium Chloride 10mEq/100ml and infuse over 1 hour.

Pain / Anxiety Management

SCOPE

Pain in general or related to labor. Anxiety related to the process of transport, illness, or complication.

PROCEDURE

- A. Attempt to treat cause of pain (i.e., reposition).
- B. **Avoid opioids IF possible** when delivery is likely within 2 hours.
- C. For pain related to strong uterine contractions, administer Fentanyl 50-100mcg q1-2 hours as first line analgesic. NOTE: Fentanyl is poor labor analgesic but has shorter duration therefore shorter effect on fetus.

OR

Morphine 1-4mg IV q5 –10 minutes PRN up to a maximum of 8mg.

- D. DO NOT TREAT with Toradol after 34 weeks gestation.
- E. Monitor Blood Pressure q15 minutes with administration of opioids or more frequently as necessary.
- F. Administer Naloxone for respiratory depression related to narcotic overdose.
- G. For pain/anxiety unrelieved by a calm environment and explanation of equipment and procedures, contact LifeMed Alaska Medical Control.

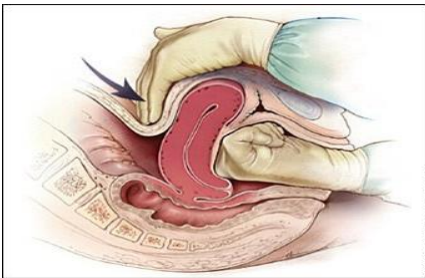
Postpartum Hemorrhage

SCOPE

Clinically significant blood loss greater than 250ml during childbirth or change in vital signs greater than 15% with the postpartum patient.

PROCEDURE

- A. Insert large bore IV if not present. Place second IV if staff is available.
- B. Replace blood output with 3ml of LR/1ml blood loss or start with 500ml bolus of LR up to two liters of fluid.
- C. Administer oxygen to patient via NRB at 10-15LPM/min targeting oxygen saturations > 95%.
- D. Ensure all tocolytics (i.e., Terbutaline, Nifedipine, and Toradol) are discontinued.
- E. Mix Oxytocin 20 units in 1000ml Lactated Ringers. After delivery of the placenta, may titrate the Oxytocin wide open or on pump at 999ml/hr until bleeding is controlled and then titrate down to keep bleeding under control. Oxytocin 10 units IM may be used if no IV available.
- F. Deliver the placenta completely. Apply constant downward traction on cord and pressure on pubic symphysis to avoid uterine inversion. Refer to "Delivery, Emergency - Placenta" protocol.
- G. If placenta cannot be removed or fragments remain, contact Medical Control.
- H. Apply vigorous massage of the fundus and if uterus remains boggy consider bimanual uterine compression. Continue to apply firm pressure, as this will buy time and tamponade the bleeding.



- I. Insert Foley catheter to empty bladder to facilitate uterine tone.
- J. If hemorrhage continues despite increased titration of Oxytocin and vigorous fundal massage: Review the 4 T's of PPH.
 1. Tone – The majority is due to poor uterine contraction.
 2. Tissue – Retained placental tissue bleeds and impairs tone.
 3. Trauma – Lacerations to the perineum, cervix, or uterine rupture.
 4. Thrombus – DIC, coagulopathy, can occur early or be iatrogenic.

- K. Medications to be used at sending facility in this order if available:
1. TXA, Misoprostol, and Methergine are CONTRAINDICATED if fetus is still in utero.
 2. TXA: Administer TXA 1gram - dilute in 100ml of NS over 10 minutes per protocol.
 3. Methergine: Methergine 0.2mg IM If not hypertensive one time. May give second dose if had positive response q2 hours.
 4. Misoprostol: Misoprostol 600mcg oral or 800mcg rectal if unable to take oral.
- L. Prepare for blood transfusion if available and hemorrhage continues to be life threatening. Refer to "Blood Transfusion" protocol.

Pre-eclampsia – Gestational Hypertension

SCOPE

For patients with gestational hypertension and pre-eclampsia patients.

PROCEDURE

- A. Review pertinent obstetrical history including gravidity, parity, and previous complications.
- B. Place fetal heart monitor and assess fetal well-being.
- C. Assess breath sounds and evaluate edema.
- D. Assess for CNS irritability (e.g., blurred vision, headache, apprehension, hyperreflexia).
- E. Assess for end organ involvement (e.g., decreased urine output, decreased uteroplacental perfusion, epigastric pain).
- F. Review available records (e.g., CBC, Liver function tests, serum creatinine, DIC panel, Mg level, urinalysis, recent weight gain, last 8 hour I&O).
- G. Assess labor pattern if appropriate.
- H. Start 18 gauge (or largest possible) IV catheter and administer Lactated Ringers to keep total IV at < 125 cc/hr unless otherwise indicated.
- I. Administer Magnesium Sulfate bolus of 4gm load over 20-60 minutes, then start a maintenance rate of Magnesium Sulfate at 2gm per hour. Monitor BP Q5 min during loading dose.
- J. Administer Labetalol 20mg IV over 2 minutes and repeat q10 minutes PRN (up to 120mg) for continued hypertension (systolic BP > 160mmHG or diastolic BP > 110mmHG) after giving Magnesium Sulfate.
- K. For continuing hypertension that is unresponsive to Labetalol administer Hydralazine 5mg IVP as frequently as q20 minutes for diastolic BP > 110 (lower diastolic BP to 90-100mmHG only to avoid hypoperfusion of the uterus.) Do not exceed 20mg in a one-hour period.
- L. Insert Foley catheter and assess urine output hourly.
- M. Check BP q15 minutes and DTR q1 hour if stable, more frequently with abnormal findings.
- N. Consider loading patient with head forward in aircraft if CNS irritability is greater than risk of cervical dilation, keep in lateral position.
- O. Have suction set-up immediately available.
- P. Decrease environmental stimulation if possible (decrease noise and dim lights). Provide hearing protection.
- Q. Monitor for seizures and treat according to “Maternal Seizure” protocol PRN.

R. Calmly reassure patient.

Premature Labor / Premature Rupture of Membranes (PROM)

SCOPE

Regular, frequent uterine contractions and documented cervical change before the 37th week of gestation.
Evidence of leakage of amniotic fluid with or without labor.

PROCEDURE

- A. Place fetal heart monitor and assess fetal well-being, uterine activity, status of membranes, time of ROM, color of fluid and method used to confirm ROM. Note any odor or abnormal discharge.
- B. Perform SVE if membranes are unruptured. If PROM call LifeMed Alaska Medical Control prior to doing cervical/vaginal exam.
- C. Review pertinent labs/ultrasound/chart (e.g., CBC, electrolytes, fetal lung profile, cultures, and fetal position).
- D. Obtain IV access and administer LR at 125ml/hr unless otherwise indicated.
- E. Administer tocolytics if patient does NOT have history of arrhythmias or QT prolongation. First line is Terbutaline 0.25mg SQ
- F. Initiate IV antibiotics if not already done.
- G. If < 37 weeks gestation or known GBS + or ruptured >12 hrs.
 - 1. Penicillin G 5mil IV x1.
 - 2. If Penicillin G not available, then Ampicillin 2gm IV q6 hours. Ensure patient has received total 2gm IV.
 - 3. If allergic to Penicillin / Ampicillin use Clindamycin 900mg IV q8 hours.
 - 4. Obtain cultures prior to antibiotics if possible.
- H. If > to 23 weeks or < 37 weeks, administer Betamethasone 12mg IM x2 q24 hours (if available. Discuss with LifeMed Alaska Medical Control prior to administration.
- I. Document temperature prior to departing facility and upon admission.
- J. If delivery enroute appears probable, remain at referring facility, prepare for and assist with delivery and resuscitation of newborn.

Prolapsed Umbilical Cord

SCOPE

Umbilical cord seen outside the vulva or felt on careful vaginal exam of cervix.

PROCEDURE

- A. Administer oxygen via NRB mask.
- B. Don sterile glove and place hand in vagina and push the presenting part up and away from the umbilical cord to relieve cord compression.
- C. Avoid palpating or handling cord to prevent vasospasm.
- D. Do not remove fingers until relieved by attending obstetrician at receiving facility.
- E. Place patient in knee/chest or Trendelenburg position with hips elevated and head low.
- F. Place Foley catheter. Instill 250 ml of fluid and clamp Foley catheter to leave fluid dwelling.
- G. Continue to monitor FHR if possible.
- H. Administer Terbutaline 0.25mg SQ PRN to prevent fetal distress secondary to uterine contractions compressing the umbilical cord.
- I. Notify LifeMed Alaska Medical Control.
- J. Consider landing at nearest facility with C-section capabilities.
- K. Notify receiving facility to prepare for stat C-section.

Pulmonary Edema

SCOPE

Shortness of breath, dyspnea, orthopnea, rales on auscultation, jugular distension and tachycardia.

PROCEDURE

- A. Maintain adequate airway.
- B. Have patient sit upright and administer oxygen via NRB at 10LPM/min. (Intubate if indicated).
- C. If systolic BP > than 90, administer Morphine Sulfate IV 2-5mg in 5-30 minute increments. Titrate to relief dyspnea. Monitor BP, FHR.
- D. Administer Furosemide 10-40mg IV for persistent signs of pulmonary edema, repeat dose cautiously to achieve desired effect. Monitor FHR.
- E. **Assess urine output and monitor by placing Foley catheter and monitoring hourly UO.**
- F. Assess patient for underlying pre-eclampsia, consult with physician if able, Refer to “Pre-eclampsia – Gestational Hypertension” and “Magnesium Sulfate” protocols.
- G. If on IV betamimetics or Magnesium Sulfate, discontinue. Limit IV fluids to 125cc/hour or less.

Seizure, Maternal

SCOPE

Seizure activity in the gravid patient with evidence of gestational hypertension, pre-eclampsia or history of primary seizure disorder.

PROCEDURE

- A. Maintain open airway via jaw thrust, nasal or oral airway. Suction secretions. Administer oxygen per NRB at 10L/minute. Provide PPV via bag/mask as needed (e.g., apnea or inadequate respiration, saturation < 80% in high flow O2), secure airway as needed and strongly consider intubation.
- B. Consider placing NG tube to prevent aspiration.
- C. If patient is actively seizing administer Magnesium Sulfate 4gm from premixed Magnesium Sulfate bag over 6 min. To do this, set rate at 999ml/hr with a volume to be infused of 100ml.
- D. After administering Magnesium Sulfate to patients with known or suspected pre-eclampsia who are not already on Magnesium Sulfate, if they are still seizing, administer another Magnesium Sulfate bolus of 2 GRAMS over 3 minutes. Set the rate at 999ml/hr with a volume to be infused of 50 ml.
- E. Continue the drip at maintenance rate of Magnesium Sulfate at 2gm/hour or 50ml/hr.
- F. If seizure continues, bolus with additional 2gm Magnesium Sulfate over 3 minutes. Set rate at 999ml/hr and a volume to be infused of 50ml. Bolus can be repeated and Contact Medical Control at this point if able.
- G. If hypertension persists after initiating Magnesium Sulfate drip consider Labetalol 20mg IV over 2 minutes and repeat q10 minutes PRN (up to 120mg) or Hydralazine 5mg IVP as frequently as q20 minutes for diastolic BP > 110 (lower diastolic BP to 90-100mmHG only to avoid hypoperfusion of the uterus.) **Do not exceed 20mg of hydralazine in a one-hour period.**
- H. If there is no response to seizure after Magnesium Sulfate, administer Phenobarbital 100mg IV q20 minutes.
- I. Continue to monitor the fetus, if possible, after seizures are controlled.
- J. **STRONGLY CONSIDER INTUBATION AT THIS POINT IF NOT ALREADY PERFORMED.**

Magnesium Sulfate - Dosing Reference Table				
Double check concentration prior to administration. Only use table for conc. of 1gm/25 ml such as 40gm in 1 Liter or 20gm in 500ml.				
Maintenance rates	Set rate at	Bolus doses	Set Rate at	Set Volume to be Infused
2gm/hour	50/ml hr.	2gm (3 mins)	999ml/hr	50ml
4 gm/hour	100ml/hr	4gm (6 mins)	999ml/hr	100ml

Sterile Vaginal Exam (SVE), Maternal

SCOPE

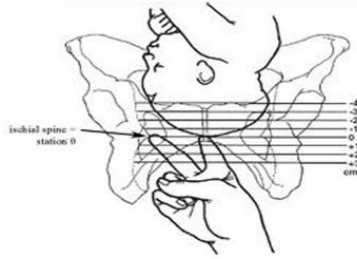
Sterile vaginal exams (SVE) are to be performed to determine progress and status of labor as evidenced by dilation and effacement of the cervix, presenting part, station of the fetus, status of the membranes, and consistency and position of the cervix.

PROCEDURE

- A. Contraindications for SVE include patients with PROM, vaginal bleeding or premature labor. These patients are not to be examined unless they have received order from MD or OB Medical Control.
- B. Explain procedure to patient and assist into modified lithotomy position. Have patient lay supine then instruct them to, “bring your heels toward your butt then let your knees fall to the sides.”
- C. Don sterile gloves.
- D. Lubricate the gloved index finger and middle finger of your dominant hand.
- E. Notify the patient that you are going to begin the exam.
- F. Inspect vulva for ulcers, abnormal discharge, lesions, or other abnormalities.
- G. Carefully separate the labia using the thumb and index finger of your non-dominant hand.
- H. Gently insert your dominant index finger and middle finger into the vagina.
- I. Enter the vagina with your palm facing laterally and then rotate 90 degrees so that your palm is facing upwards.
- J. Examine the Cervix to assess station of the baby, dilation, and effacement. See images below for guides.
- K. The consistency of the cervix is described as “soft” if it feels mushy, “moderate” if it feels as if there is some give or stretch to the cervix, or “firm” if it feels like the end of your nose.

(Illustration on next page)

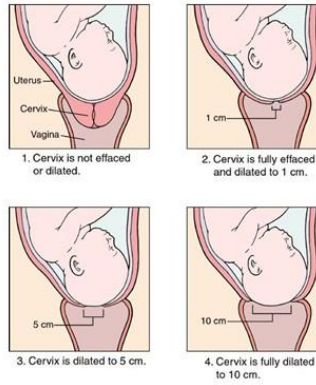
Assessing Fetal Station



Cervical Dilation



Cervical Effacement and Dilatation During Labor



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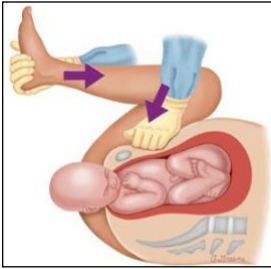
Shoulder Dystocia

SCOPE

Normal maneuvers fail to deliver the shoulders of the baby.

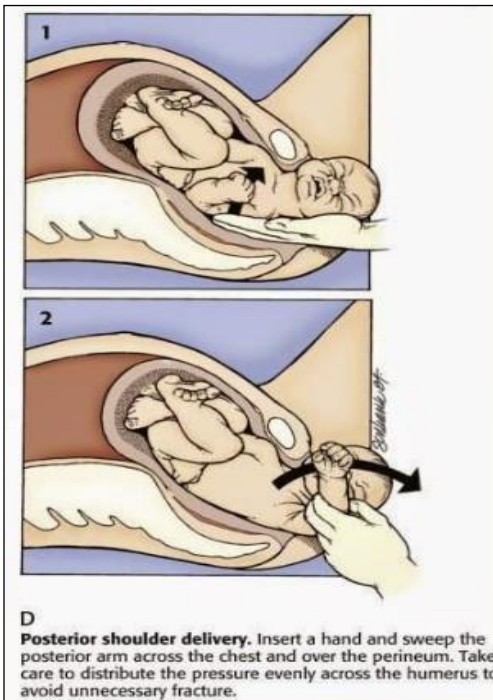
INSTRUCTIONS

Have patient pull knees to shoulders (up and out). (McRoberts maneuver)



- A. Apply suprapubic pressure.
- B. Attempt to deliver shoulders using gentle downward (toward maternal buttocks) traction on the head without forced rotation or angulation. The traction must be continuous for 4-5 seconds. If unsuccessful after two efforts, proceed to one of next steps.
 1. **Extraction of anterior shoulder:** Place hand deep in vagina behind anterior shoulder. With next contraction rotate the axis of the shoulders to an oblique diameter of the pelvis. Apply firm downward traction on the head while assist applies firm suprapubic pressure (ant/post). If this is unsuccessful, proceed to next step.
 2. **Extraction of posterior shoulder:** Place hand deep in vagina behind posterior shoulder of fetus. Locate antecubital fossa of posterior arm and, using the pressure of a finger, attempt to flex the arm. Sweep the forearm across the baby's chest and face and extract the arm. The anterior shoulder should deliver spontaneously. If not, rotate the baby 180 degrees so the anterior shoulder is now posterior and extract using the same maneuver.

(Illustration on next page)



Third Trimester Bleeding

SCOPE

Vaginal bleeding, other than bloody show in the gravid female.

PROCEDURE

- A. Assess fetal well-being using FHM or Doppler. Refer to “Fetal Assessment” protocol.
- B. Sterile Vaginal Exam (SVE) is CONTRAINDICATED with third trimester bleeding and baby in utero unless with MD order. If ordered to perform exam, Refer to “Sterile Vaginal Exam (SVE)” protocol.
- C. Assess for possible cause of hemorrhage (e.g., placental previa, placental abruption, uterine rupture, ectopic pregnancy, as well as status of membranes).
- D. Assess uterine tenderness and relaxation.
- E. Utilize pads or chucks pad to assess for volume of blood loss and number of episodes.
- F. Review available labs (e.g., Hct, Hgb, DIC panel, T+C).
- G. Review ultrasound reports to rule-out placenta previa.
- H. Assess urine output, and place Foley catheter.
- I. Mark fundal height.
- J. Start large bore IV (x2 if active bleeding). Infuse LR at rate necessary to maintain reassuring FHR, and urine output greater than 30cc/hour. Start at 250ml/hr.
- K. If patient is actively bleeding with a Hct less than 21%, transfuse per protocol.
- L. NOTE: TXA, Misoprostol and Oxytocin are CONTRAINDICATED if fetus is still in utero.
- M. Tocolysis may be contraindicated with abruption.
- N. Active bleeding +/- fetal distress may be a contraindication to transport. Call Medical Control for further direction.

MATERNAL MEDICATION

Ketoralac - Toradol

SCOPE

This is **NEVER** used as pain management medication in the OB patient. When administered to the OB patient Ketorolac will be ordered by Medical Control and is not part of any protocol or stand-alone order. If it is ordered by Medical Control it will be used as a tocolytic to inhibit uterine contractions.

PROCEDURE

- A. Contraindications include concomitant use of other NSAIDs or other blood thinners, renal insufficiency, or patients with coagulopathy or bleeding disorders.
- B. Side effects include coagulation disorders, prolonged bleeding, and GI ulcers. Use with caution in asthmatics.
- C. If given to pregnant patient in third trimester, may cause premature closure of ductus arteriosus.
- D. Dosing for the OB patient will be specified by MD but it is supplied in 60mg/2ml. This is given as a SIVP.

Magnesium Sulfate

SCOPE

Magnesium Sulfate may be used for pre-eclampsia and for fetal neurological protection during preterm labor. For dosing during seizures Refer to “Seizures, Maternal” protocol.

PROCEDURE

- A. Assure IV patency.
- B. Explain expected effects/side effects to patient.
- C. Document pulse, RR, BP and deep tendon reflexes.
- D. Obtain baseline monitor strips for FHR, continue to monitor.
- E. Assess renal output, consider a Foley catheter.
- F. IV of Lactated Ringers, liter titrated to keep total fluids at 125cc/hour or less unless otherwise indicated.
- G. To administer Magnesium Sulfate bolus:
 1. Use premixed bag of Magnesium Sulfate [1gm/25 ml] for 4-gram bolus over 20-60 minutes.
 - 4gm in 20 min. Administer at rate of 1gm/5 min (or set pump at 300ml/hr).
 - 4gm in 60 min. Administer at rate of 1gm /15 min (or set pump at 100ml/hr).
 - Assess for maternal/fetal side effects
 - Recheck DTRs and RR after each hour and PRN.
- H. To administer maintenance rate:
 1. Use premixed Magnesium Sulfate bag available.
 - Set IV pump at 25ml/hour to administer 1gm/hour.
 - Or, set IV pump at 50ml/hour to administer 2gm/hour
 - Assess for maternal/fetal side effects
 - Monitor DTRs q4 hours if stable, and RR q15 min.
- I. Review magnesium level if available. Request magnesium level if signs of magnesium toxicity are present.
 1. Therapeutic = 4.0 – 6.0mg/dL. Consider goal of 4-5mg/dL for babies less than 26 weeks gestation.
 2. Loss of DTRs = 10mg/dL
 3. Respiratory Arrest = 12-15mg/dL

- J. Discontinue magnesium sulfate infusion if RR < 12, urine output < 30cc/hr (or < 100cc in 4 hours), or significant change in sensorium or difficulty breathing.
- K. Administer Calcium Gluconate immediately for acute signs of magnesium sulfate toxicity. Give 1gm of 10% calcium gluconate (10ml) of 2-5 minutes. Can repeat q1 hour PRN.
- L. Have resuscitative and suction equipment readily available.
- M. Transport may be contraindicated if signs of toxicity present.

Nifedipine

SCOPE

Preterm labor. Labor with cephalopelvic disproportion, prolapsed cord, or malpresentation and transfer to facility with C-section capabilities required. Fetal distress secondary to uterine hypertonicity.

PROCEDURE

- A. Explain expected effect/side effects to patient.
- B. Ensure adequate hydration (UO 50-75ml/hr).
- C. Administer LR IV at 125ml/hr.
- D. Administer oxygen via NRB at 10L/min.
- E. Assess maternal EKG for ectopy and assess for signs of pulmonary edema.
- F. Check maternal blood pressure, use with caution if SBP < 100mmHg. Do not administer if SBP < 90mmHg or if clinical signs of hypotension or hypoperfusion are present.
- G. Give 10-30mg then another 20mg in 90 minutes, then q3-8 hours to a maximum of 180mg/day.
- H. Continue to reassess patient for side effects.
- I. Continue to monitor fetus.
- J. Do NOT use nifedipine concurrently with magnesium sulfate.

Oxytocin - Pitocin

SCOPE

Used to increase uterine contractions to assist with delivery of fetus as well as increase uterine tone post-delivery to prevent ongoing bleeding. Refer to “Delivery, Emergency – Placenta” and “Post-Partum Hemorrhage” protocols.

PROCEDURE

- A. Mix 20 units Pitocin in 1L Lactated Ringers.
- B. If no IV available may give 10 units IM.
- C. This is often given off a pump in the hospital. For delivery of the placenta start with 100ml/hr after delivery of the fetus (if not already on) and before delivery of the placenta.
- D. Increase as needed to assist with delivery of the placenta and ensure adequate uterine tone.
- E. If mother progresses to post-partum hemorrhage or greater than 250ml of blood loss than turn drip to 999ml/hr and apply vigorous fundal massage.
- F. Refer to “Post-Partum Hemorrhage” protocol if bleeding continues.
- G. Once bleeding is controlled can begin to titrate rate down.
- H. Side Effects include cardiac arrhythmias, PVC’s, HTN, nausea/ vomiting, anaphylaxis.
- I. NOTE: Can cause fetal CNS damage and fetal seizures if delivery is not imminent.
- J. CONTRAINDICATIONS: Fetal distress without imminent delivery.

Terbutaline

SCOPE

Preterm labor. Labor with Cephalopelvic Disproportion (CPD), prolapsed cord, or malpresentation and transfer to facility with C-section capabilities required. Fetal distress secondary to uterine hypertonicity. Refer to “Fetal Distress” or “Premature Labor/PROM” protocols.

PROCEDURE

- A. Explain expected effect/side effects to patient.
- B. Ensure adequate hydration (UO 50-75cc/hour).
- C. Administration LR IV at 125cc/hour.
- D. Assess maternal EKG for ectopy and assess for signs of pulmonary edema.
- E. Check maternal pulse, use with caution if HR > 120, do not administer if HR > 140.
- F. Terbutaline 0.25mg SQ may be given one time as a standing order if there is no history of cardiac disease.
- G. Terbutaline can be repeated q30 minutes if HR < 140 and there are no complications. Call Medical Control for repeat order after first administration.
- H. Assess patient for side effects.
- I. Continue to monitor fetus and avoid fetal tachycardia with sustained rate > 180bpm.
- J. Follow “Pulmonary Edema” protocol if needed.
- K. For sustained maternal SVT > 140bpm WITH SOB or other symptoms discuss with LifeMed Alaska Medical Control to administer Labetalol as antagonist.