Purpose: To provide guidance to practitioners caring for pregnant women and newborn patients during a disaster
Disclaimer: This guideline are not meant to be all inclusive, replace an existing policy and procedure at a hospital or substitute for clinical judgment. These guidelines may be modified at the discretion of the healthcare provider.

Initial Management of All Obstetrical (OB) Patients

- Stabilize ABCs (Airway, Breathing, Circulation)
- For OB trauma patients, stabilize the patient's condition and provide treatment according to trauma guidelines before evaluating the fetus. (See pg. 60 for further care). Be aware of the following caveats:
    - Use rapid sequence induction with cricoid pressure and gastric decompression when oral intubation is required
    - Use closed-tube thoracotomy at a higher intercostal space when treating pneumothorax
    - Place patients who are > 20 weeks gestation in the left lateral position, left lateral tilt, right lateral position or right lateral tilt (while maintain spinal precautions as applicable) to maximize venous return
- Triage:
    - Determine:
        - Number of weeks gestation
        - If the presenting complaint due to the pregnancy
        - If the presenting complaint unrelated to the pregnancy but affects the pregnancy
        - If the presenting complaint affects the pregnancy
    - Triage all pregnant women that are >20 weeks gestation based on the level of severity of patient's complaint related to or that affects the pregnancy to determine level of perinatal services needed:
        - Emergent: (In need of Level III Perinatal Center care) (background read thru for each perinatal center under each section)
            - Cardio-pulmonary failure/arrest
            - Eclampsia
            - Active hemorrhage/heavy bleeding
            - Fetal parts or foreign bodies protruding from vagina
            - Diabetic coma/DKA
            - Altered level of consciousness
            - Multiple gestation (greater than twins) in active labor
            - Active labor in mothers with <30 weeks gestation
            - Laboring mother with known antenatal fetus defect (i.e. cardiac, pediatric surgery)
            - Pre-eclampsia or Hemolysis, Elevated Liver Enzymes, and Low Platelets (HELLP) syndrome
            - Other life threatening conditions to mother or fetus
        - Urgent: (In need of Level II-E Perinatal Center care)
            - Active labor in mothers with >30 and <35 weeks gestation
            - Multiple gestation (no more than twins) in active labor
            - Decreased fetal movement
            - Abdominal pain
            - Preterm rupture of membranes >30 and <35 weeks gestation
            - Obesity

        - Non-urgent: (In need of Level I or Level II Perinatal Center care)
            - Active labor in mothers with >35 weeks gestation
            - Preterm rupture of membranes >35 weeks gestation
            - Rule out rupture of membranes (ROM)
            - Stable gestational hypertension
- Perform a complete assessment of pregnant patient at time of presentation (See *Initial Assessment of the Pregnant Patient* for checklist)
- For all OB patients:
    - Establish large bore IV access
    - Obtain lab exams (if available): CBC with differential, Type and RH or Type and Screen, and HIV
    - Obtain prenatal care records (if available)
- Consult Pediatric Care Medical Specialist for assistance with care of the acutely and critically ill patient (mother and child); to individualize the care of patient; if patient needs to be transferred; and as needed for further support and consult.

Management for Common Life Threatening Obstetrical Conditions

Identifying Preeclampsia and/or Eclampsia

ASSESS	NORMAL	MODERATE	SEVERE/ECLAMPSIA
Awareness	Alert/Oriented	Agitated, confused, drowsy, difficulty speaking	Unresponsive, seizure activity
Headache	None	Mild headache, nausea, vomiting	Unrelieved headache
Vision	None	Blurred or impaired	Temporary blindness
Systolic BP (mmHg)	100-139	140-159	≥ 160
Diastolic BP (mmHg)	50-89	90-105	≥ 105
Heart rate	61-110	111-129	≥ 130
Respirations	11-24	25-30	< 10 or > 30
SpO_2 (%)	≥ 95	91-94	≤ 90
Shortness of breath	None	Present	Present
Pain (abdomen or chest)	None	Nausea, vomiting, chest pain, abdominal pain	Nausea, vomiting, chest pain, abdominal pain
Urine output (mL/hr)	≥ 50	30-49	≤ 30 (in 2 hours)
Proteinuria	Trace	+1, +2, ≥ 300/24 hours	> +3; ≥ 5 gm/24 hours
Platelets	> 100	50-100	< 50
AST/ALT	< 70	> 70	> 70
Creatinine	< 0.8	0.9-1.2	> 1.2
Magnesium Sulfate Toxicity	DTR +1; Respirations 16-20	Depression of patellar reflexes	Respirations <12

Normal:
Monitor patient for changes in condition as per hospital protocol

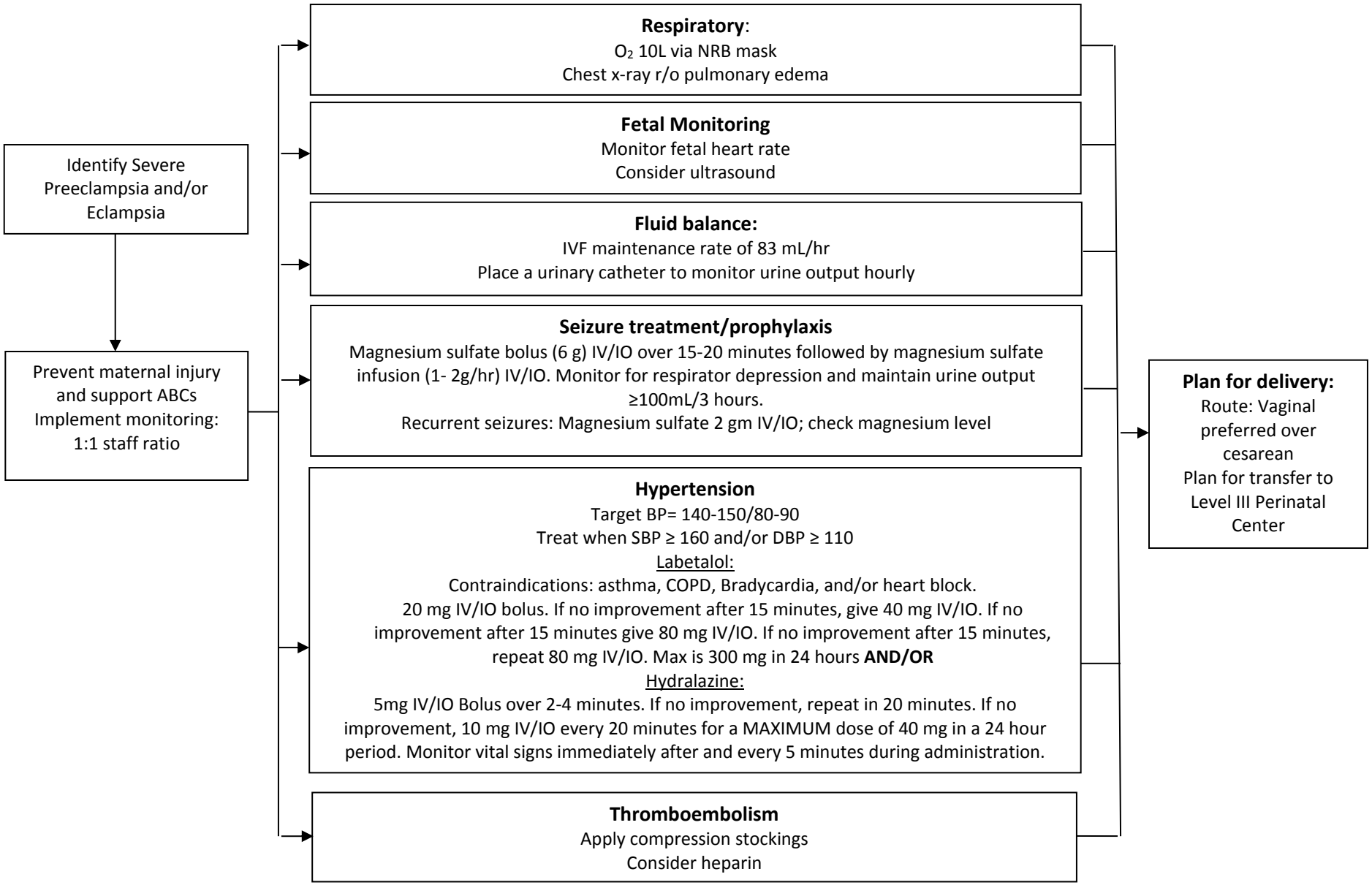
Moderate:
Consult Pediatric Care Medical Specialist to assist with arranging transfer of patient to higher level perinatal center

Positive Trigger	Treatment
1 of any type	Increase assessment frequency Notify provider
≥ 2 of any type	Order labs/tests Consider Magnesium Sulfate Provide supplemental O_2

Severe/Eclampsia:

- Central imaging is not necessary for the diagnosis and management of most with eclampsia but is indicated in patients with focal neurologic deficits or prolonged coma.
- Eclampsia can occur during the antepartum, intrapartum and postpartum period.
- Consult Pediatric Care Medical Specialist to assist with arranging transfer of patient to higher level perinatal center.
- See next page for Treatment

Treatment of Severe Preeclampsia and/or Eclampsia



Post-Partum Maternal Hemorrhage: Recognition and Treatment

	Class I	Class II	Class III	Class IV
Est. Blood Loss (EBL)*	~ 900 mL	~ 1200-1500 mL	~ 1800-2100 mL	> ~ 2400 mL
Pulse	<100	> 100	> 120	> 140
Respirations	14-20	20-30	30-40	> 35
Blood Pressure	Normal	Orthostatic changes	Overt hypotension	Overt hypotension
Mental Status	Anxious	Anxious	Anxious and Confused	Confused and Lethargic
Urine Output	≥ 30 mL/hr	20-30 mL/hr	5-15 mL/hr	Anuria
Cap Refill	Normal	>2 seconds	>2 seconds Cold & clammy	>2 seconds Cold & clammy
Fluid Replacement (3:1 Rule)	Crystalloids	Crystalloids	Crystalloids & blood	Crystalloids & blood
Labs	**CBC; PT/PTT; Fibrinogen; T&S versus T&C; FDP; Platelets; D-dimer**			
Product Replacement	**Crystalloids →Transfuse PRBCs →Transfuse other (FFP, Cryo, Plts)**			
Bleeding Abatement	**Massage →Uterotonics →Surgery →Packing/Tamponade/Embolization**			

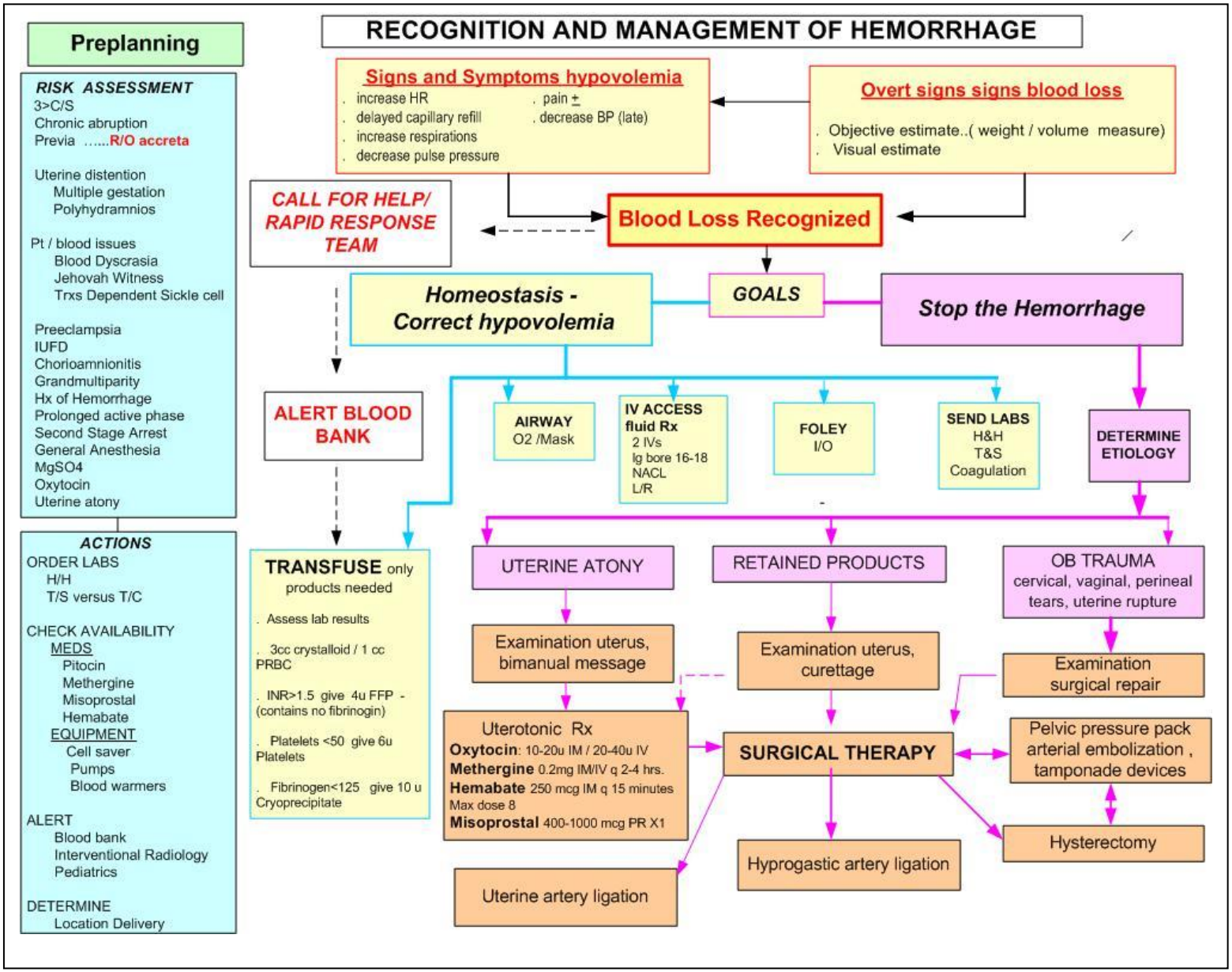
***Estimating Blood Loss (EBL): Guide to objective measurement of blood loss**

1 cup = 250 mL
= 5 cm clot (orange)
= 1 unit of PRBCs
12 oz soda can=355 mL
2 cups = ~500 mL
= 10 cm clot (softball)
= 2 units of PRBCS
Floor spills:
20" (50 cm) = 500 mL
30" (75 cm) = 1000 mL
40" (100 cm) = 1500 mL
Ideal method is weighing:
1g of blood = 1 mL

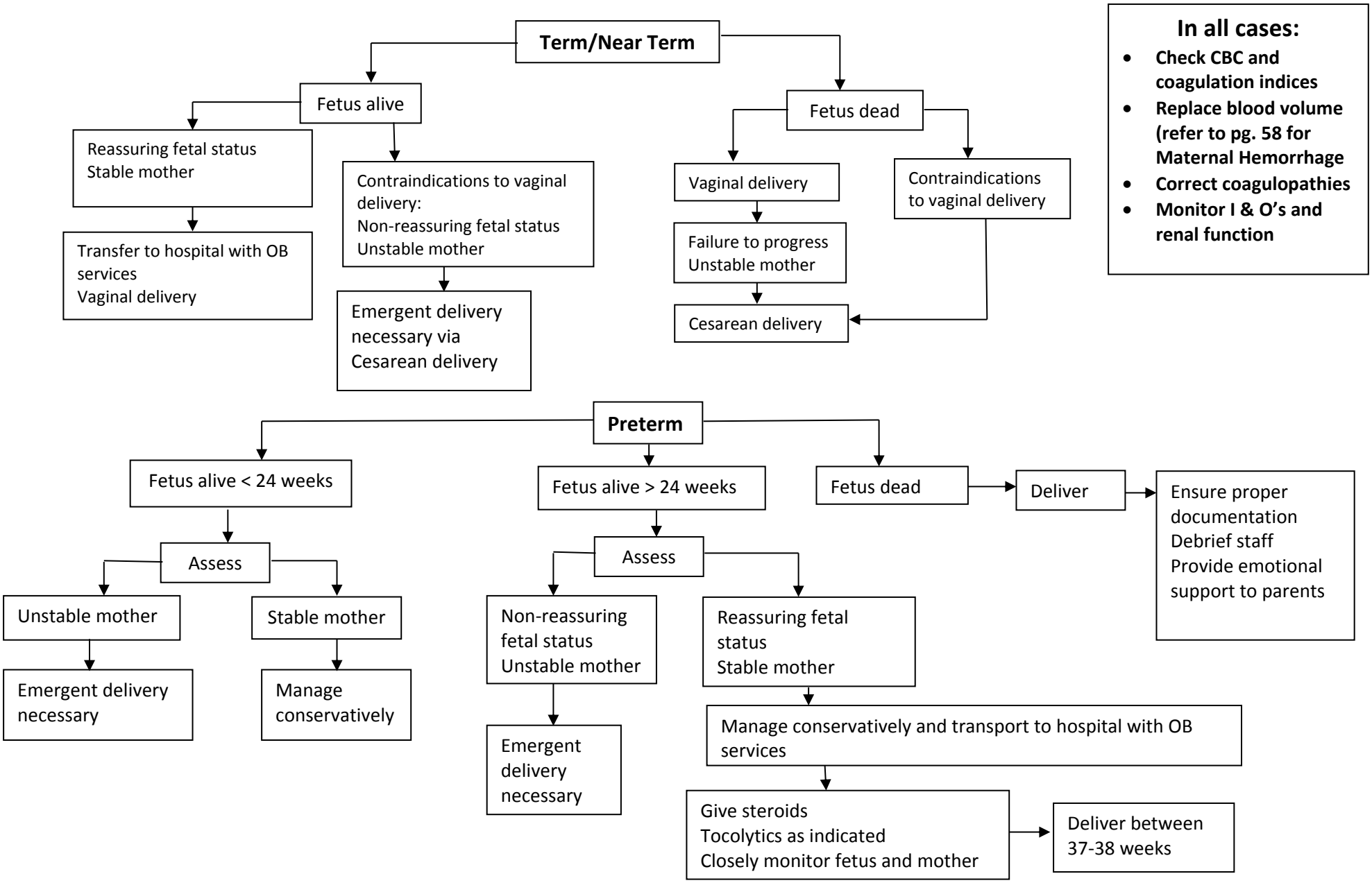
Blood product replacement consideration:

- If the fetus has not been delivered: use O negative or cross matched products

Post-Partum Maternal Hemorrhage: Recognition and Treatment (continued)



Placenta Abruption

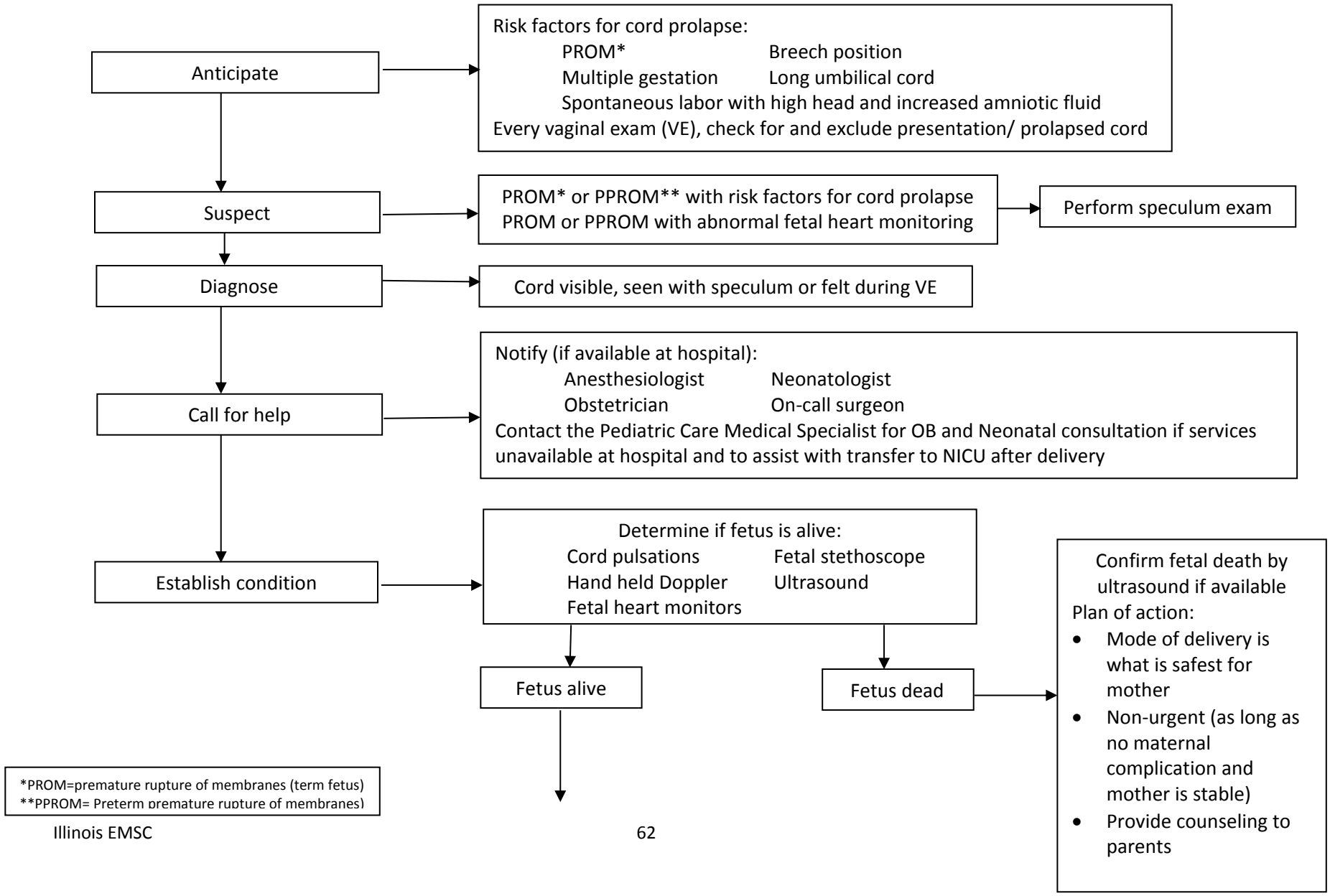


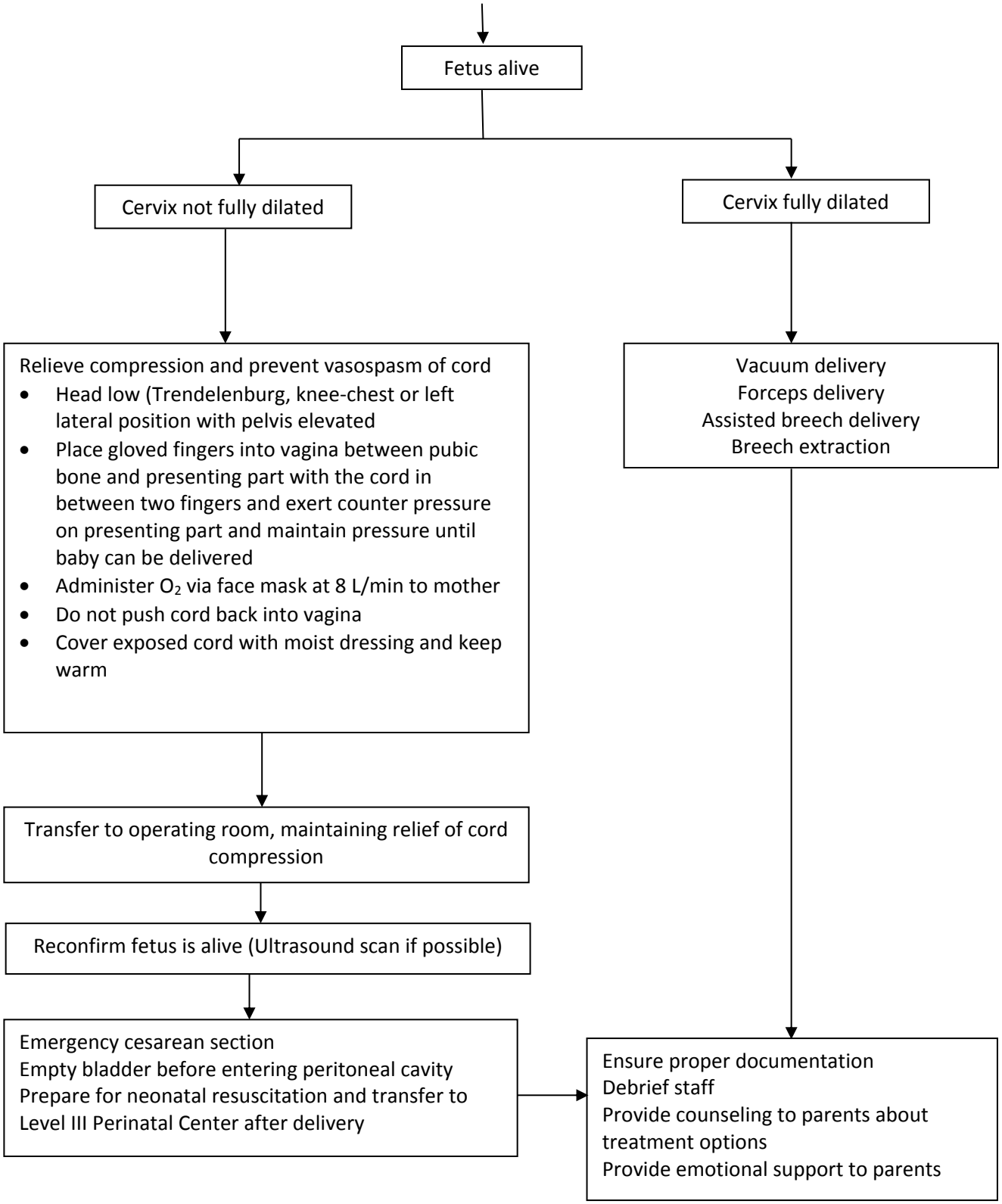
Trauma

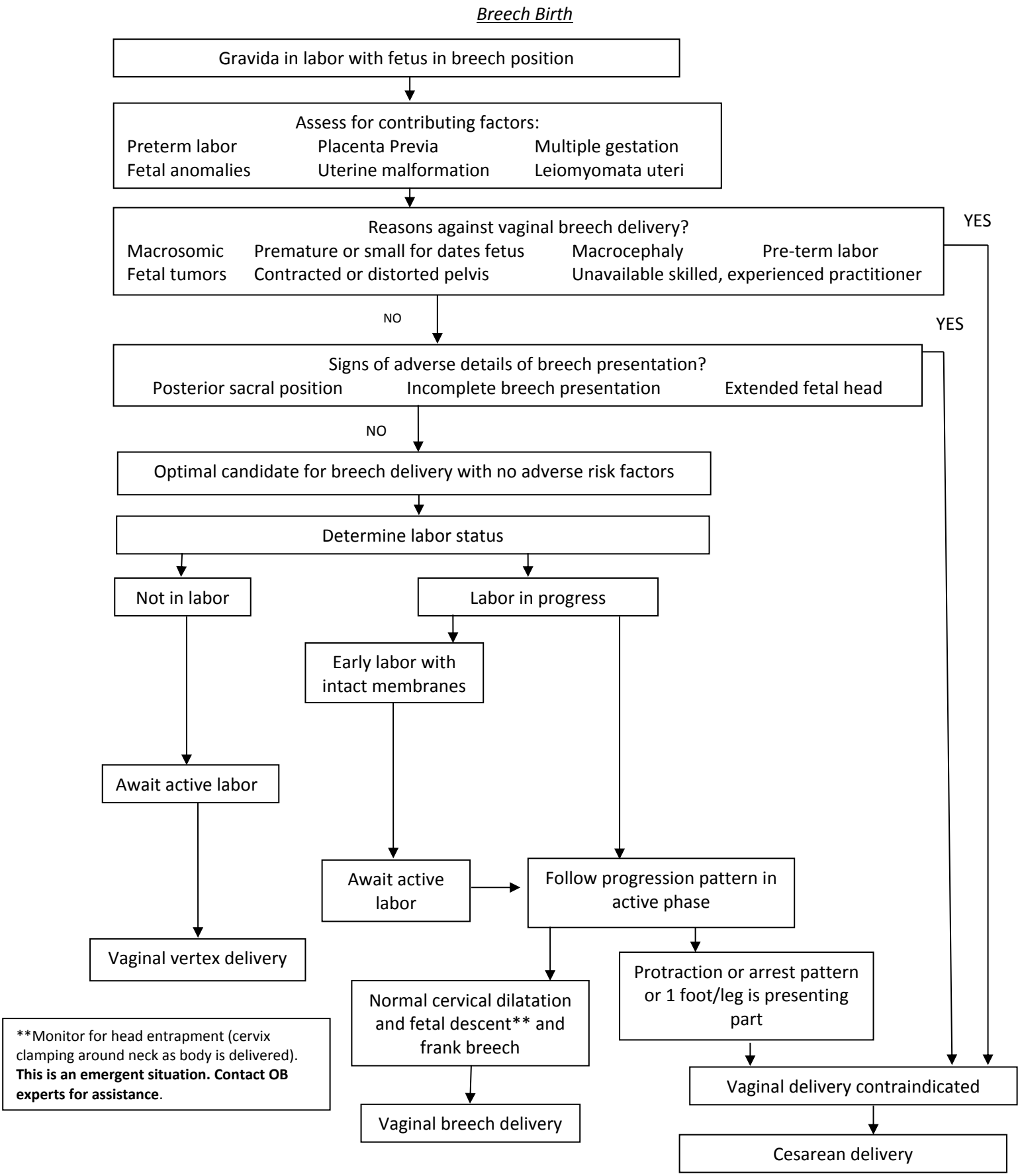
Prenatal Trauma Management (ACEP)	
Consideration	**Treatment**
General concepts	• Medications, tests, treatments and procedures required to stabilize the mother should not be withheld because of pregnancy. • Evaluate for possible pregnancy – related causes for an accident (i.e. seizure secondary to eclampsia) • Maternal physiologic changes may delay signs of shock ○ Monitor urine output and fetal heart tracing patterns to provide early warning signs instead of only the mother's pulse and BP • Consult Pediatric Care Medical Specialist for assistance with care of the acutely and critically ill patient, to individualize the care of patient, if patient needs to be transferred and as needed for further support and consult.
Positioning	• Place any pregnant patient > 24 weeks gestation in left lateral decubitus position to avoid hypotension. Right lateral decubitus position is also acceptable. • If patient is on a backboard, tilt it toward the left or place a wedge under right side • If patient's BP Is unstable or concerns exist regarding cervical spine injury, patient should be log-rolled with her neck being stabilized
Hypotension	• Administer IV fluids and consider blood transfusion
Hypertension	• Criteria for definition: > 140 systolic and > 90 diastolic; • Treat > 160 systolic and > 110 diastolic with labetalol 10-20 mg IV bolus
Fetal/Uterine Monitoring	• Initiate fetal monitoring for viable fetus as soon as mother is stabilized (if available and trained personnel available to stay with patient) • If fetal monitoring unavailable, check fetal heart tones via doppler • A viable fetus should be placed on continuous monitoring until under the care of the obstetrician. • Electronic fetal heart and uterine monitoring in pregnant trauma patients > 20 weeks gestation may detect placental abruption • Continuous monitoring can be discontinued after 4 hours if there are no fetal heart rate abnormalities, uterine contractions, bleeding or uterine tenderness
Vaginal Bleeding	• Treat heavy vaginal bleeding the same as hypovolemic shock • Massive continual vaginal bleeding may require emergency cesarean delivery • Obtain OB consultation • Administer RhIG to Rh negative patients
Lab tests	• CBC (monitor hemoglobin/platelet count) • Type and Screen (monitor for Rh negative) • Kleihauer-Betke • Coagulation panel (INR, PTT, fibrin degradation, fibrinogen, i-COOMBS)

Diagnostics	• Diagnostic procedures to evaluate potentially serious traumatic injuries should not be withheld for fetal concerns. Order exams for the same indications as non-pregnant trauma patients ○ A complete trauma exam with CT scanning will not approach radiation levels that adversely affect the fetus. • Consider ultrasound to replace x-ray when possible • Shield abdomen, pelvis and neck when possible
Treatments: IV Fluids	• Larger fluid requirements when hypotensive • Avoid administering large amounts of IVF containing Dextrose which can cause glucose regulation difficulties in neonates if delivery is imminent
Treatments: Intubations and RSI	• Same as non-pregnant patients
Treatments: Medications	Analgesia: • Acute trauma pain control with narcotics can be given in any trimester as needed • Inform OB of doses and times if fetal delivery is imminent Antibiotics: • Ceftriaxone or clindamycin Antiemetics: • Metoclopramide or Zofran
Treatments: Oxygen	Provide high concentrated O_2
Treatments: Rh negative patients	RhIG 1 ampule (300g) IM
Treatments: Seizures	• Eclamptic: magnesium sulfate 6 g IV/IO load over 15-20 minutes • Non-eclamptic: lorazepam 1-2 mg/min IV/IO
Treatments: Tetanus	Safe in pregnancy
Treatments: Transfusions	CMV antibody negative; Leukocyte reduced
CPR/ACLS	Left lateral decubitus; no response after 4 minutes of CPR, consider cesarean for viable fetus
Maternal Death	Consider immediate cesarean delivery for a viable fetus in any patient who cannot be resuscitated Consider immediate cesarean delivery in cases of brain death in mother with intact cardiovascular system if fetal compromise is present Consider maintaining life support management until fetus is at an acceptable level of maturity for delivery

Prolapsed Cord




Fetus alive
Cervix not fully dilated
Cervix fully dilated
Relieve compression and prevent vasospasm of cord
• Head low (Trendelenburg, knee-chest or left lateral position with pelvis elevated
• Place gloved fingers into vagina between pubic bone and presenting part with the cord in between two fingers and exert counter pressure on presenting part and maintain pressure until baby can be delivered
• Administer O_2 via face mask at 8 L/min to mother
• Do not push cord back into vagina
• Cover exposed cord with moist dressing and keep warm
Vacuum delivery
Forceps delivery
Assisted breech delivery
Breech extraction
Transfer to operating room, maintaining relief of cord compression
Reconfirm fetus is alive (Ultrasound scan if possible)
Emergency cesarean section
Empty bladder before entering peritoneal cavity
Prepare for neonatal resuscitation and transfer to Level III Perinatal Center after delivery
Ensure proper documentation
Debrief staff
Provide counseling to parents about treatment options
Provide emotional support to parents


Breech Birth
Gravida in labor with fetus in breech position
Assess for contributing factors:
Preterm labor
Placenta Previa
Multiple gestation
Fetal anomalies
Uterine malformation
Leiomyomata uteri
Reasons against vaginal breech delivery?
Macrosomic
Premature or small for dates fetus
Macrocephaly
Pre-term labor
Fetal tumors
Contracted or distorted pelvis
Unavailable skilled, experienced practitioner
YES
NO
YES
Signs of adverse details of breech presentation?
Posterior sacral position
Incomplete breech presentation
Extended fetal head
NO
Optimal candidate for breech delivery with no adverse risk factors
Determine labor status
Not in labor
Labor in progress
Early labor with intact membranes
Await active labor
Await active labor
Follow progression pattern in active phase
Vaginal vertex delivery
Normal cervical dilatation and fetal descent** and frank breech
Protraction or arrest pattern or 1 foot/leg is presenting part
**Monitor for head entrapment (cervix clamping around neck as body is delivered). This is an emergent situation. Contact OB experts for assistance.
Vaginal delivery contraindicated
Vaginal breech delivery
Cesarean delivery

Shoulder Dystocia

Shoulder dystocia:

Anterior shoulder of the baby becomes impacted against the symphysis pubis preventing the shoulders from descending through the pelvis.

Possible Risk Factors:

Antenatal	*Intrapartum*
Previous shoulder dystocia	Prolonged first stage
Fetal macrosomia	Prolonged second stage
Maternal diabetes	Labor augmentation
Maternal obesity	Instrumental delivery
Postdate pregnancy	Precipitate birth
Short stature	Uterine hyperstimulation

Complications:

Maternal	*Neonatal*
Ruptured uterus	Brachial plexus injury
Postpartum hemorrhage	Fractured clavicle
Perineal tears	Birth asphyxia
Emotional trauma	Neonatal death

Identify shoulder dystocia

Turtle sign (chin retracts and depresses the perineum)
Head when delivered may be tightly applied to vulva
Anterior shoulder fails to deliver with routine traction
Failure of fetal head to restitute
Failure of shoulders to descend

→ Discourage pushing

Notify (if available at hospital):
Anesthesiologist Neonatologist Obstetrician On-call surgeon
Contact the Pediatric Care Medical Specialist for OB and Neonatal consultation if services unavailable at hospital and to assist with transfer to NICU after delivery

↓

McRoberts Maneuver (abduct and hyper flex legs against abdomen)

↓

Suprapubic pressure (apply pressure in a downward, lateral direction just above the maternal symphysis pubis to push the posterior aspect of the shoulder towards fetal chest)

↓

Consider episiotomy if it will make internal maneuvers easier

↓

Try either maneuver first, depending on clinical circumstances and clinician experience

Deliver posterior arm ↔ Internal rotation maneuvers:

↓

If all above maneuvers fail to release the impacted shoulder, consider placing patient in all fours position or repeat the above

↓

Secondary Maneuvers:
Cleidiotomy: deliberate fracture of clavicle
Zavanelli Maneuver: restoring fetus into uterus and performing a cesarean section (contraindicated if a nuchal cord has been previously clamped and cut)
Symphysiotomy: contact Pediatric Care Medical Specialist

→

Ensure proper documentation
Debrief staff
Provide counseling to parents on treatment options
Provide emotional support to parents

Group B Strep

Group B Streptococcus (GBS): a gram-positive organism, known to colonize the lower GI tract, with the potential for secondary spread to the genitourinary tract and subsequent transmission to the fetus during delivery. GBS is a leading cause of serious neonatal infection with case-fatality rate reported to be as high as 20% in newborns.

Inquire about GBS status during initial assessment of all laboring patients that present to hospital.
Complete a vaginal and rectal GBS screening cultures at 35 – 37 weeks' gestation for **ALL** pregnant women [unless patient had GBS bacteriuria during the current pregnancy or a previous infant with invasive GBS disease]

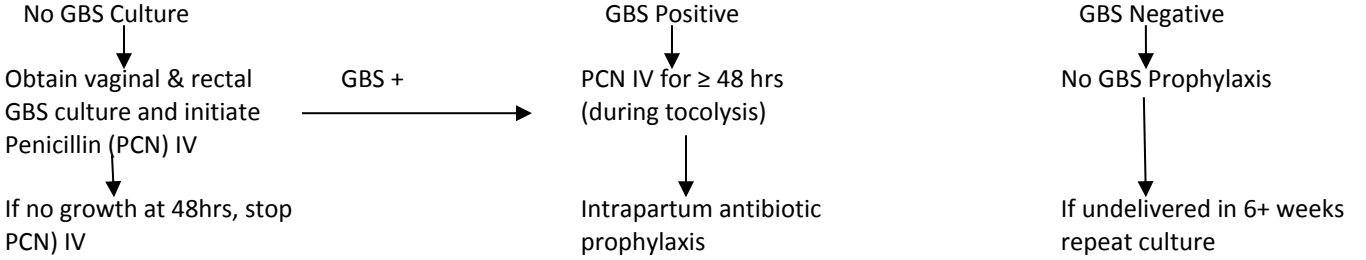
INTRAPARTUM PROPHYLAXIS INDICATED

- Previous infant with invasive GBS disease
- GBS bacteriuria during current pregnancy
- Positive GBS screening culture during current pregnancy (unless a planned cesarean delivery, in the absence of labor or amniotic membrane rupture, is performed)
- Unknown GBS status (culture not done, incomplete or results unknown) and any of the following:
  - Delivery at < 37 weeks' gestation*
  - Amniotic membrane rupture > 18 hours
  - Intrapartum temperature > 100.4˚F/ 38.0˚C

INTRAPARTUM PROPHYLAXIS NOT INDICATED

- Previous pregnancy with a positive GBS screening culture (unless a culture was also positive during the current pregnancy)
- Planned cesarean delivery performed in the absence of labor or membrane rupture (regardless of maternal GBS culture status)
- Negative vaginal and rectal GBS screening culture in late gestation during the current pregnancy, regardless of intrapartum risk factors

*If onset of labor or rupture of amniotic membranes occurs at <37 weeks' gestation and there is a significant risk for preterm delivery (as assessed by the clinician), follow the algorithm below for GBS prophylaxis management.



RECOMMENDED REGIMENS FOR INTRAPARTAL ANTIMICROBIAL PRPHYLAXIS FOR GBS PREVENTION	
Recommended	Penicillin G, 5million units IV initial dose, then 2.5-3.0 million units every 4 hrs until delivery
Alternative	Ampicillin 2 grams IV initial dose, then 1 gram every 4 hrs until delivery
IF PENICILLIN ALLERGIC	
Low Risk for Anaphylaxis	Cefazolin 2 grams IV initial dose, and then 1 gram every 8 hrs until delivery
High Risk for Anaphylaxis	**GBS susceptible to clindamycin or erythromycin:** Clindamycin 900 milligrams every 8 hrs until delivery
	GBS resistant to clindamycin or erythromycin or susceptibility unknown: Vancomycin** 1 gram every 12 hours until delivery

Maternal Cardiopulmonary Arrest

If the mother suffers from cardiopulmonary arrest, follow Advance Cardiac Life Support guidelines. The following are additional guidelines for care of pregnant women in cardiopulmonary arrest:

- Displace the uterus either manually or by placing a hip roll under the patient's right hip. Left tilt is preferable, however, either side would benefit the patient if left tilt is not possible
- If present, remove fetal monitors before defibrillation or cardioversion. This also includes removing internal monitors.
- For patients with refractory ventricular fibrillation and pulseless ventricular tachycardia, the drug of choice is amiodarone.
- Delivery by post mortem emergent cesarean section should be accomplished within the **first 5 minutes** of the maternal code.

Management of Other Common Delivery Complications

For additional common delivery complications, consult the Pediatric Care Medical Specialist for assistance and guidance with both obstetrical and pediatric care.