POSTPARTUM HEMORRHAGE

Definition: > 500 cc blood loss immediately after vaginal delivery or
>1000 cc in first 24 hours after delivery excessive bleeding leading to symptoms of hypotension

Incidence: Up to 18% of all deliveries, most common cause of maternal morbidity in developed countries

Risk Factors:	Prenatal	Intrapartum
	Preeclampsia	Prolonged 3rd stage (>30 min)
	Previous PPH	Left mediolateral episiotomy
	Multiple gestations	Midline episiotomy (less risk)
	Previous C-section	Arrest of descent
	Asian/Hispanic descent	Lacerations
	Nulliparity	Augmented labor
	Grand multiparity	Magnesium Sulfate
		Chorioamnionitis

Specific Causes: "The Four T's" (ALSO Course Mneumonic)
Tone: Uterine atony (70-90% of PPH)
Tissue: Retained placenta, placenta accreta
Trauma: Uterine inversion, rupture, lacerations, hematomas, episiotomy
Thrombin: Coagulopathies

Active Management of the Third Stage of Labor:A Preventation Strategy:
- Administration of pitocin after or soon after delivery of anterior shoulder (before placental delivery)
- Controlled cord traction
- Decreases the incidence of postpartum hemorrhage by 68%

Level A evidence (Active Management of Third Stage):
- Decreases number of postpartum hemorrhages, NNT 12
- Does not increase the risk of retained placenta
- Oxytocin (Pitocin) is first choice for prevention of postpartum hemorrhage
- Misoprostol (Cytotec) can be used when other meds not available
- Misoprostol (Cytotec) may be used for treatment of pph, but has more side effects

Management of postpartum hemorrhage:
- Remember basic ABC's; get additional help
- Start two large bore IV's and prepare for/give fluid resuscitation
- Massage uterus (bimanual massage)
- Address suspected cause

Pharmacologic Agents for Uterine Atony

Agent	Route	Dose	Onset of Action	Contraindication	Side Effects
Oxytocin (Pitocin)	IM (IV)	10 U to 20 U 40 units/liter @ 250 ml/hr	3-5 mins < 3 mins	Few, if any when given as described	Water intoxication, hypotension when given IV, hypertension
Prostaglandin F_2 15-methyl (Hemabate)	IM or intramyometrial	0.25 mg to 2.0 mg May repeat 4X 15-30 mins	< 5 mins	Active cardiac, renal, pulmonary, or hepatic disease, asthma	Nausea, vomiting, diarrhea, flushing, hypertension
Ergotremine (Methergine)	IM/PO	0.2 mg	2 to 5 mins	Hypertension, toxemia, hypersensitivity	Hypertension, nausea, vomiting, dizziness, headache, diaphoresis, temporary chest pain, dyspnea
Misoprostol (Cytotec)	Rectal	800-1000 mg	3 mins		Nausea, vomiting

Uterine Atony: Most common cause of PPH
Management: Immediately massage uterus, establish 2 large bore IV's
Give meds for uterine atony (previous page)
If pitocin induction, continue pitocin while waiting for placental delivery may decrease PPH risk

Retained Placenta: (failure to deliver placenta 30 minutes after birth)
Management:

- Pitocin IV or IM (causes upper segment contraction) OR
- Inject pitocin in cord vein (10 units in 20 cc NS in syringe)
- Firm traction on cord with suprapubic pressure (only if uterus is contracted)

Manual Extraction:

- Use long glove (goes to elbow)
- Establish IV access
- Pain control: Fentanyl 50 mcg/ Versed 2mg IV (watch respirations/have anesthesiologist involved)
- Find the cleavage plane, and deliver the placenta intact when possible, examining the placental for missing fragments
- Prepare for hemorrhage--massage uterus immediately

Surgical Removal of retained placenta:

- Use banjo curette for sharp curettage (OB Consult)
  Have adequate anesthesia, blood on hand and proper personnel
- Consider prophylaxis 24 hours with Augmentin
- Placenta accreta/percreta/increta occur 1/2500, mortality up to 26% without surgical intervention

Birth Trauma:

- If uterus not atonic and bleeding continues, inspect for lacerations/hematomas
- Repair lacerations immediately
- Hematomas >3 cm incised/evacuated; bleeding vessels may need ligation

Uterine Inversion:

- May be seen immediately as bluish gray mass, but sometimes not noted until vaginal exploration
- Replace immediately when possible by using fundal pressure in the long axis of the vagina. Use one hand to hold the cervix open with fingers while pushing with the palm. Use the other hand to palpate the fundus from above.
- If contraction ring has formed, try general anesthesia for relaxation; may need incision of contraction ring/laparotomy

Uterine Rupture:

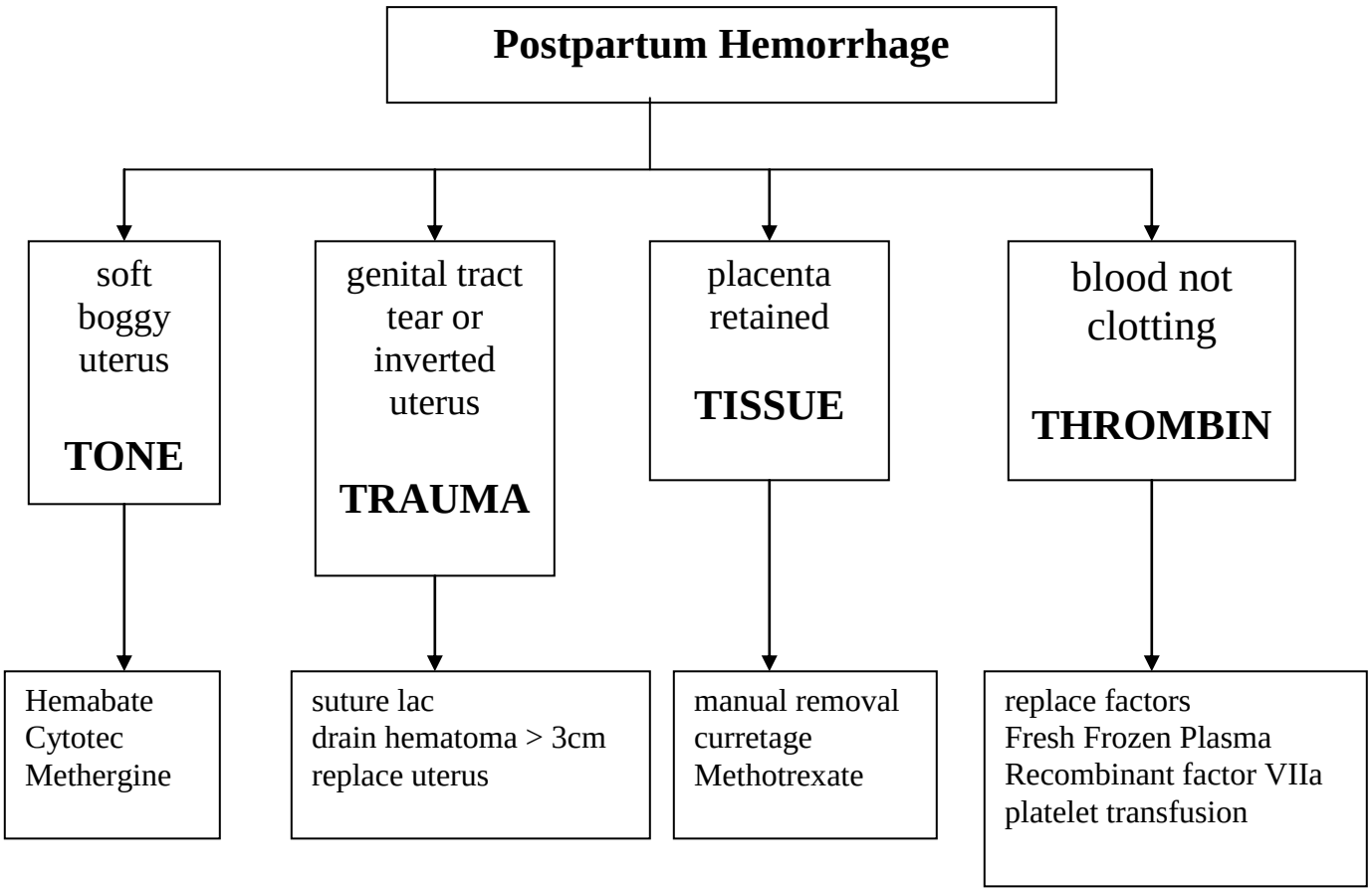
- 1/2,500 deliveries. Associated with history c-section, uterine surgery, oxytocin, abdominal trauma, parity≥ 4, epidural, abruption, breech version/extraction
  - Manage volume loss. Consider direct aortic compression and ante flexion
  - Elevation and compression of the uterus
  - Need definitive surgery

Coagulopathy:

- Rare, but should be suspected if lack of clotting noted
- Underlying Causes: ITP, vonWillebrand's, liver disease, severe hypertensive disorders, placental abruption, intrauterine fetal demise, amniotic fluid embolism, sepsis, massive hemorrhage from any cause
- Labs: CBC, platelets, PT/PTT/INR, fibrinogen, fibrin-split products, antithrombin 3 levels. Do clot test while waiting (red top tube taped to wall--should clot rapidly; if no clotting, consider empiric treatment).

Treatment Guidelines for coagulopathy (transfer to ICU):

- Maintain fibrinogen > 100 mg/mL
  - FFP increases fibrinogen 10mg/100 mL per unit FFP
  - Cryoprecipitate can be used if fibrinogen < 50 (expect rise 2-5mg/100mL per bag of cryoprecipitate)
- Maintain platelet count > 50,000
  - Platelet packs increase count 5000-10,000 per unit
- Correct a prolonged PT or PTT with fresh frozen plasma
  - One unit FFP given for every 4-5 U PRBC or whole blood



REFERENCE:
ALSO Course
American Family Physician, March 15, 2007