Oklahoma Children's Hospital

OU Health

# Obstetric Hemorrhage

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# Objectives

- Define antepartum hemorrhage complications.
- Discuss risk factors and the implications for patient care.
- Prioritize nursing interventions during an obstetric hemorrhage.

# Antepartum Hemorrhage

# Antepartum Hemorrhage

- Abnormal Placentation
  - Placenta Previa
  - Placenta Accreta Spectrum (PAS)
  - Velamentous Cord Insertion
  - Succenturiate Lobe
  - Vasa Previa
- Placental Abruption
- Uterine Rupture
- Trauma

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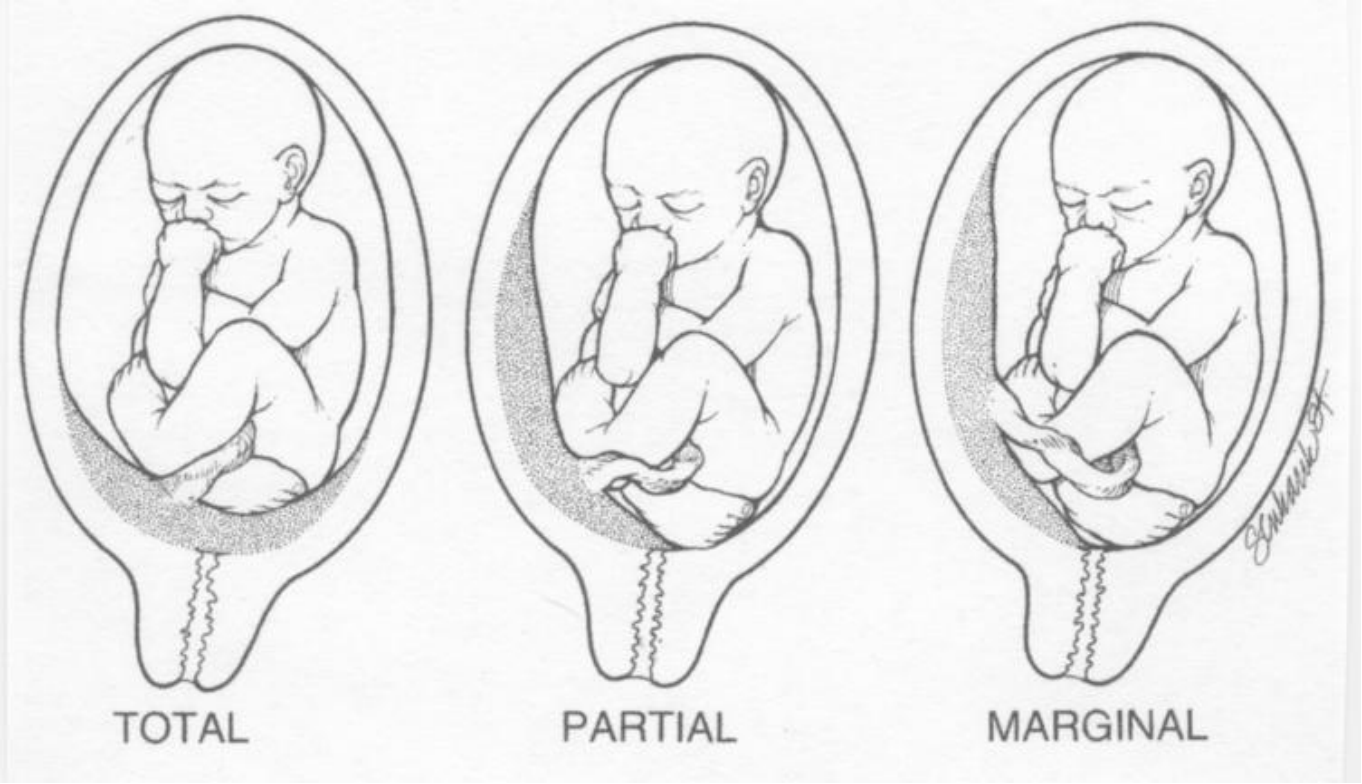
# Placenta Previa

- Abnormal implantation of the placenta over the cervical os



# Risk Factors

- Previous placenta previa
- Previous cesarean (↑ w/ each CD)
- Endometritis
- Abortion
- Shortened intervals between pregnancies
- Advanced maternal age
- Multiple gestation
- Multiparity
- African American or Asian race
- Substance abuse

# Clinical S/S & Diagnosis

- Bright red PAINLESS bleeding
- Intermittent or constant
- After a bleeding episode, can spot bright red or dark brown blood

- Diagnosis: Ultrasound

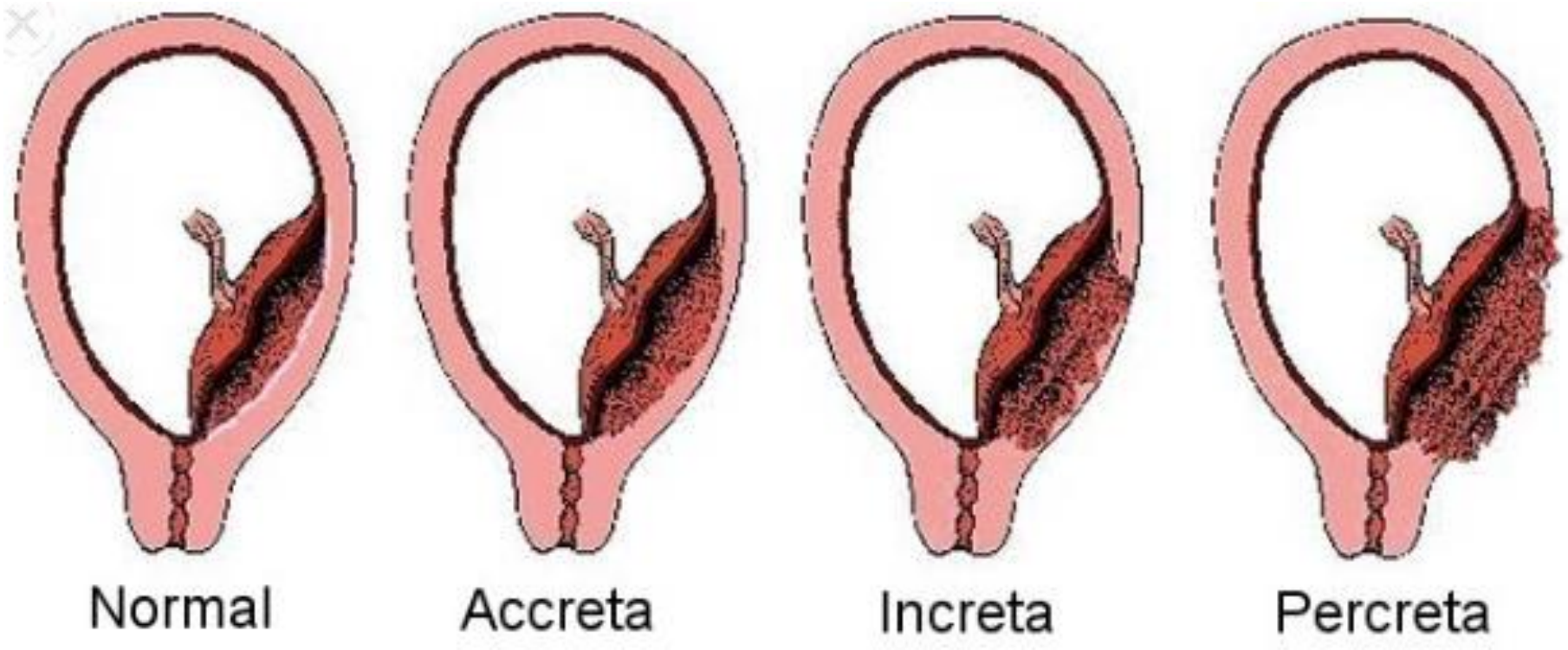
# Management

- Maternal condition vs gestational age
- Bleeding episode -> inpatient hospitalization is required
- “Bedrest”/pelvic rest
- Maintain IV access
- Maintain cross matched blood
- Fetal heart rate monitoring
- Steroids/Magnesium for fetal benefit

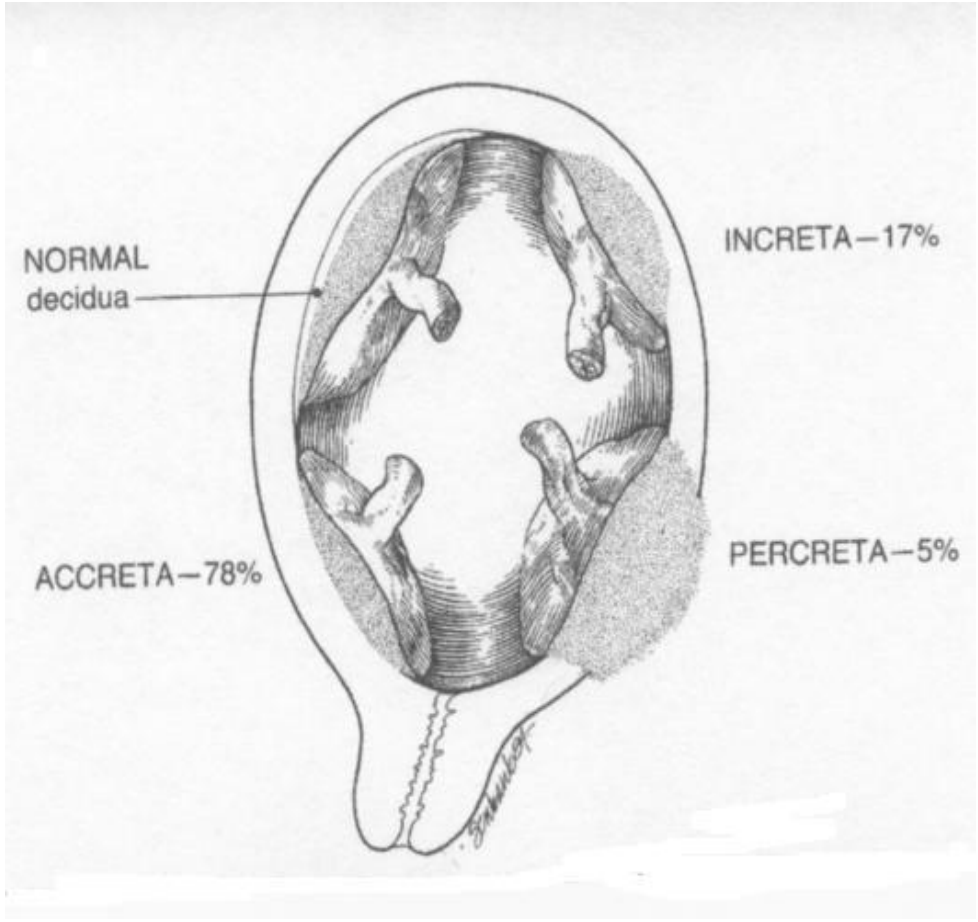
# Placenta Accreta Spectrum

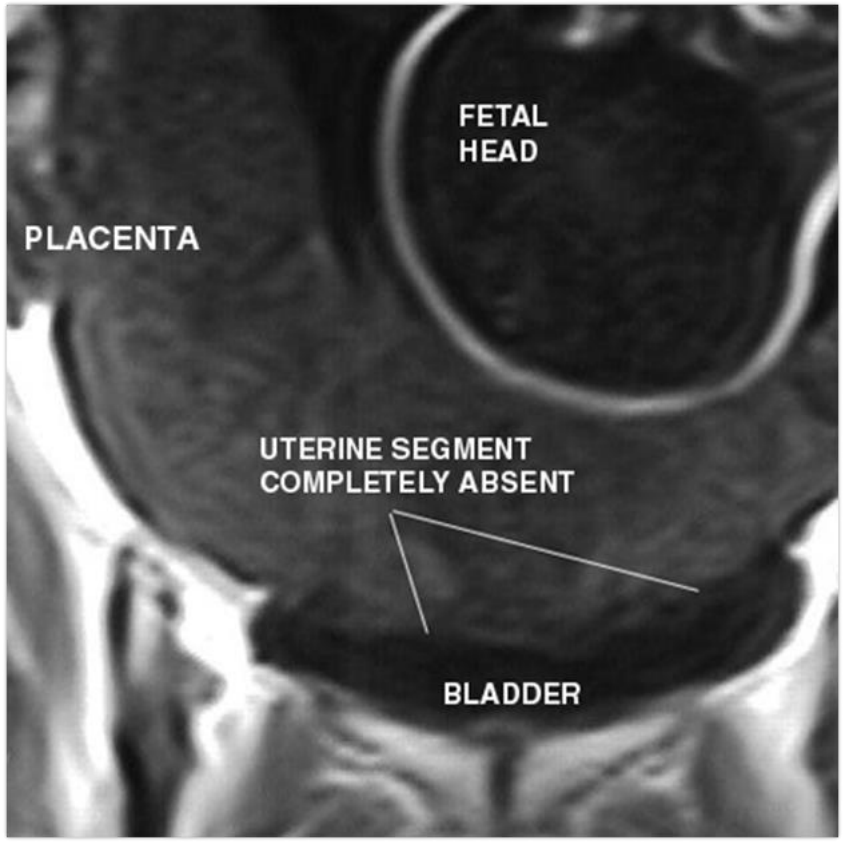
- **Placenta Accreta**
- **Placenta Increta**
- **Placenta Percreta**
  - Differentiated based on the depth of invasion
  - The placenta attaches too deeply into the uterine wall
  - Previously, Morbidly Adherent Placenta (MAP)
  - Associated with *significant* morbidity and life-threatening to mother & and neonate

# Placenta Accreta Spectrum



# Placenta Accreta Spectrum



# Accreta, Increta, & Percreta

https://www.youtube.com/watch?v=x3EMTQQjoA0

Watch On Your Own

# Risk Factors

- THIN Endometrium:
  - Previous cesarean (↑ w/ each CD)
  - Curretage: lining of uterus is scraped away
  - Myomectomy: procedure for removal of fibroids
  - Placenta Previa: lower uterus has thinner walls
- Aggressive trophoblasts—too aggressive in their implantation
- Other: IVF, AMA, multiparity, smoking, short interval CD -> pregnancy

# Diagnosis & Management

Diagnosis:

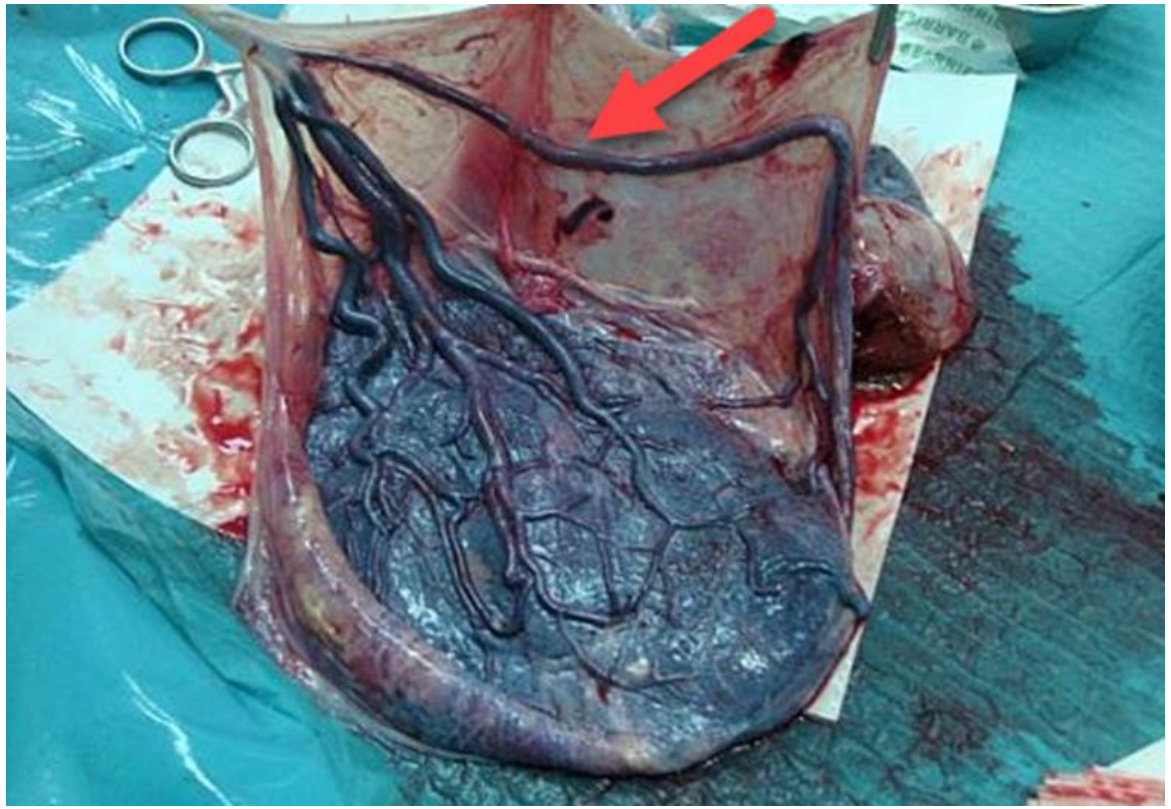
- Ultrasound
- MRI: if suspected
- Diagnosed at delivery when placenta will not detach from uterine wall

Management:

- If known, scheduled cesarean-hysterectomy
- Leave placenta in place, remove uterus & cervix
- Delivery at tertiary care center with access to large quantities of blood products, specialty providers, & ICU

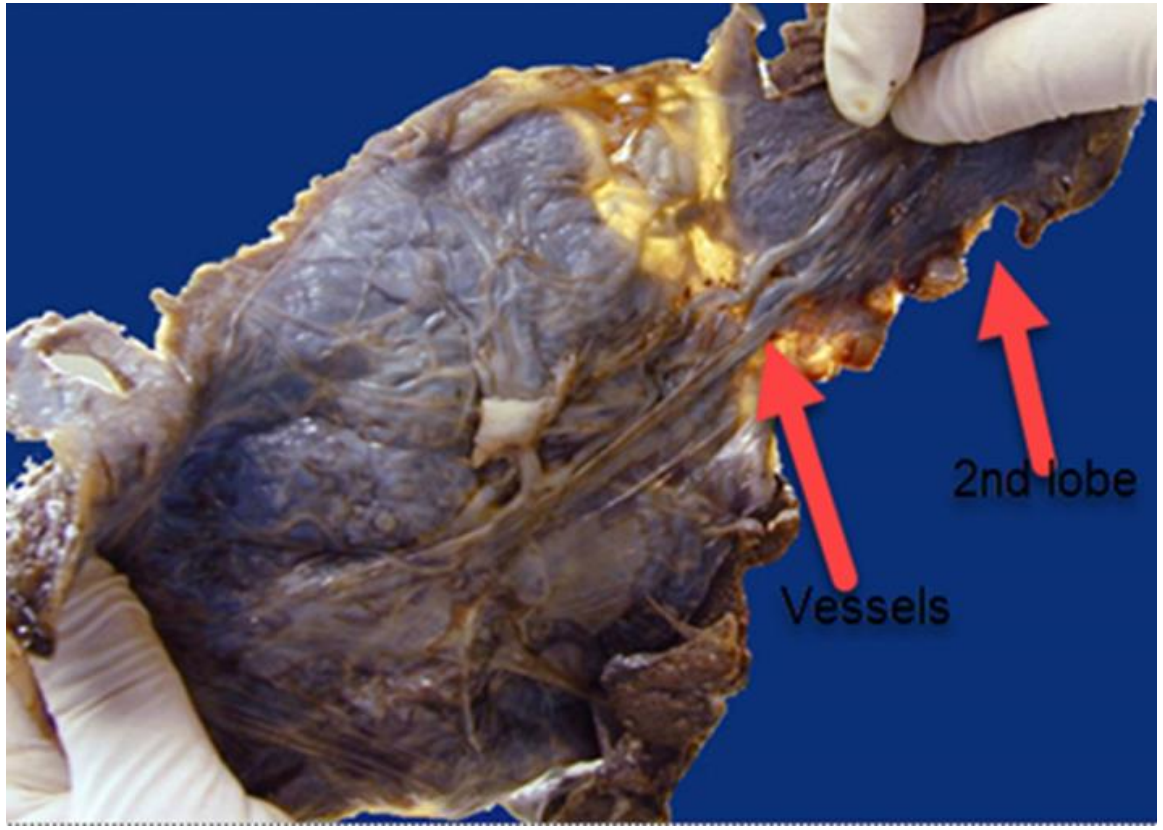
# Velamentous Cord Insertion

- Insertion of the umbilical cord into the fetal membranes
  - Vessels run between the chorion and amnion without protection of Warton's jelly
  - Vulnerable to rupture!



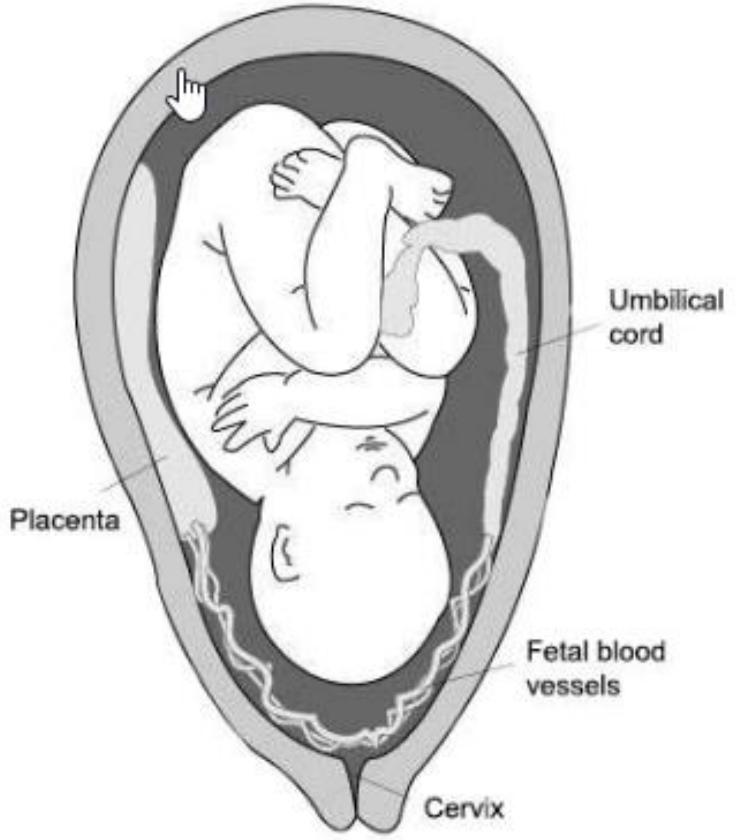
# Succenturate Lobe

- Smaller, accessory placental lobe
  - Separate from the main disc of the placenta.
  - Vessels run between lobe and placenta.
  - Vulnerable to rupture!



# Vasa Previa

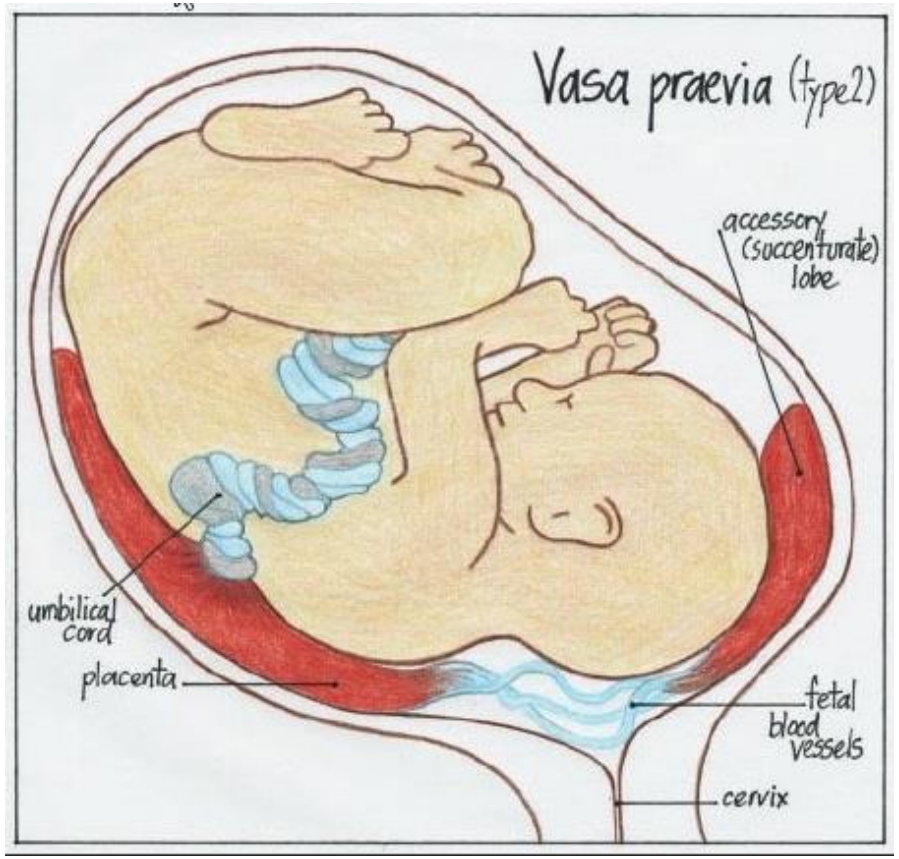
- Result of velamentous insertion or succenturiate lobe.
- Vessels traverse the membrane, *crossing the cervical os* before reaching the placenta.
- If SROM/AROM, fetus may exsanguinate in minutes.




Vasa Previa

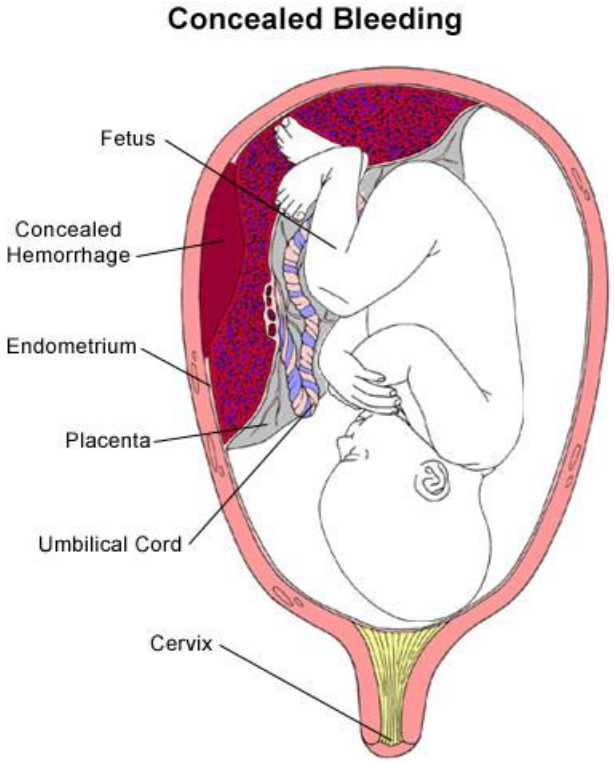
# Vasa Previa

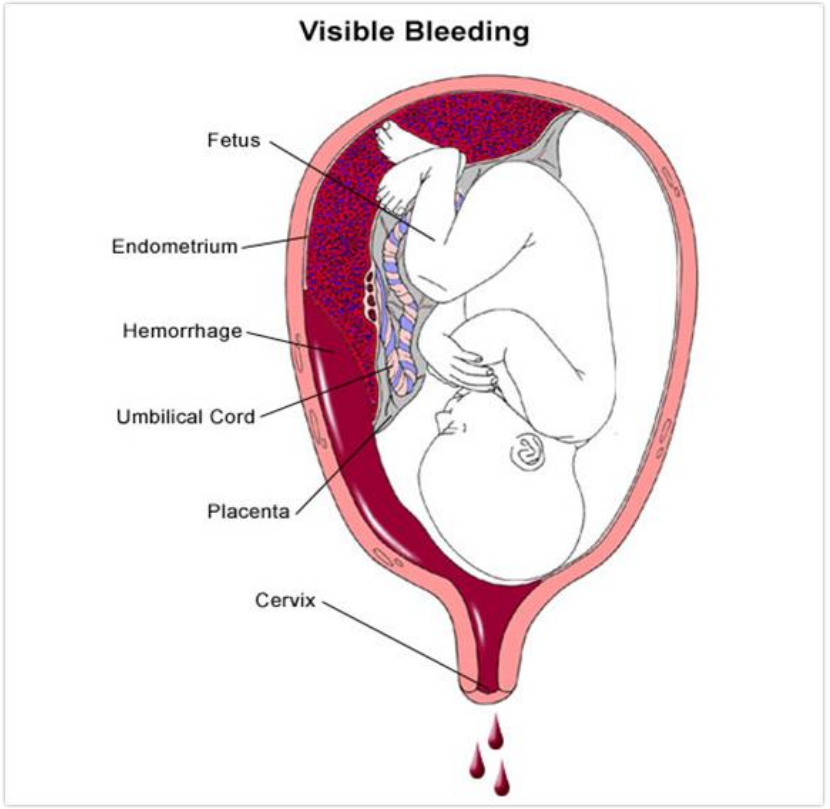
- Presence of bright red blood at time of ROM & Non-reassuring FHTs should ALERT nurse to potential Vasa Previa!
  →EMERGENCY CD
- US imaging, using color doppler often enables prenatal diagnosis, thus improving outcomes
  - 96% vs <50%



# Placenta Abruption

- Premature separation of the normally implanted placenta



# Placenta Abruption

| Grade I |
| --- |
| ▪Slight vag bleeding or concealed<br>▪Some uterine irritability<br>▪FHR normal<br>▪Maternal BP & fibrinogen normal |

| Grade II |
| --- |
| ▪External bleeding mild – mod or may be concealed<br>▪Tetanic contractions<br>▪FHR may show compromise<br>▪Maternal BP maintained, P↑, R↑<br>▪Fibrinogen ↓ (150-250mg/dl) |

| Grade III |
| --- |
| ▪Bleeding is moderate to severe – or may be concealed<br>▪Tetanic & painful uterus<br>▪Maternal hypotension & hypovolemia – quickly lead to shock<br>▪Significant fetal compromise or death<br>▪Fibrinogen ↓(<150mg/dl)<br>▪Thrombocytopenia & factor depletion |

# Risk Factors

- Hypertension
- Prior CD
- Blunt abdominal trauma
- Multiparity
- Smoking
- Cocaine use
- Rapid decompression of the uterus
- IUPC
- PPROM
- Uterine anomalies or fibroids
- Prior abruption

# Clinical S/S & Diagnosis

- Sudden-onset, intense uterine pain
- Tenderness
- Rigid abdomen
- Vaginal bleeding
  - ~ 10% concealed
- Fetal distress
- Low amplitude, high frequency contractions

Diagnosis:

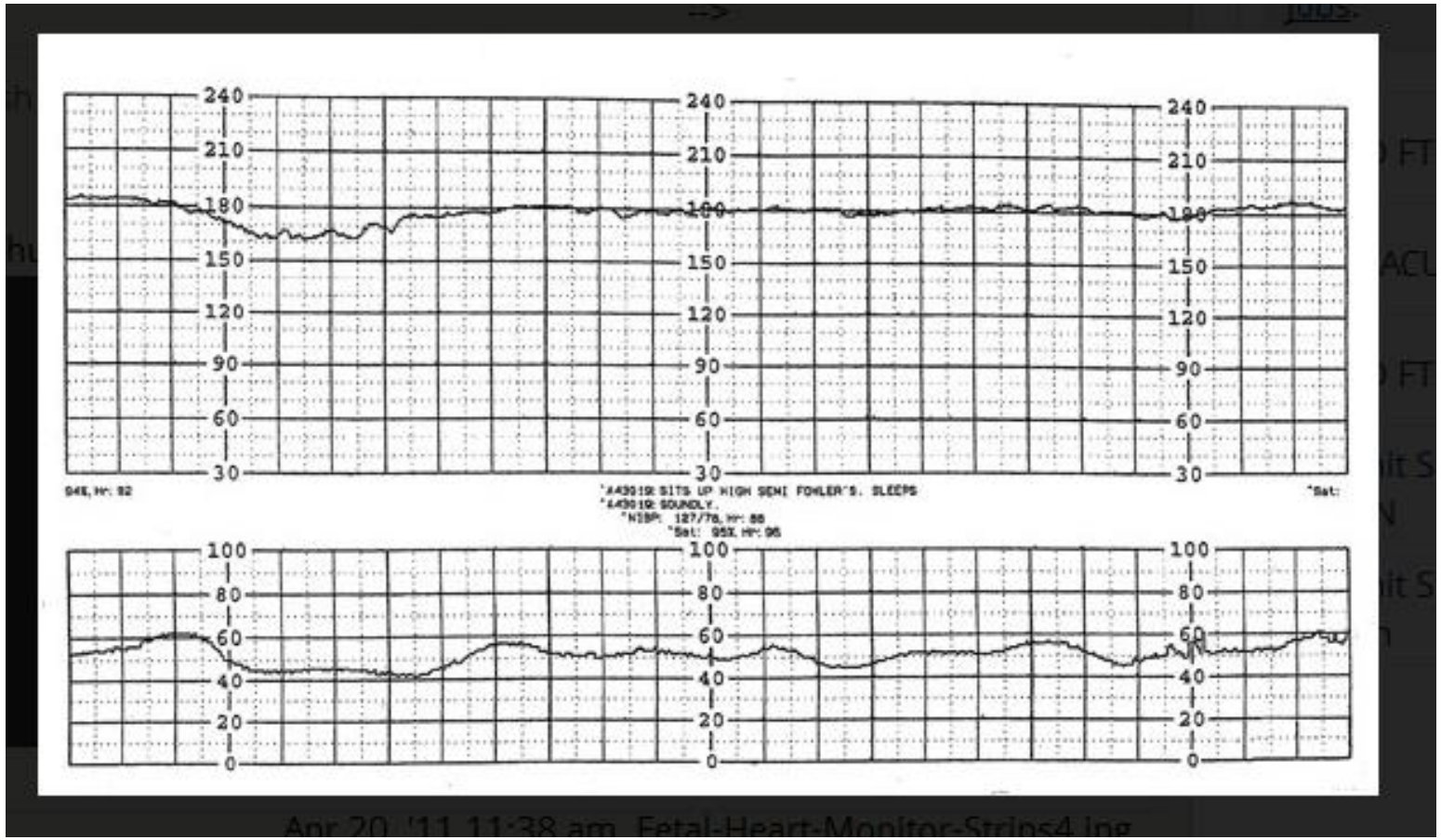
- Based on history, physical exam & lab studies
- Examination of placenta at birth or by pathologist
- Ultrasound is not diagnostic for abruption

# Management

- Maternal & fetal status vs gestational age
- If fetal compromise, severe hemorrhage, coagulopathy, poor labor progress or increasing uterine resting tone → Cesarean
- If mother hemodynamically stable and fetal FHR tracing reassuring, or fetus is demised → Vaginal birth may be attempted
- IV access, place 2 lines if possible
- Blood products and LR infused as necessary
- Monitor closely for DIC

# “Abruption Pattern”

High frequency, low amplitude contractions, tetanic



# Uterine Rupture

- Actual separation of the uterine myometrium or previous uterine scar
- Often extrusion of the fetus or fetal parts into the peritoneal cavity.
- Often sudden & catastrophic

# Risk Factors

- Previous uterine surgery
- High dose Oxytocin or Prostaglandin use
- Tachysystole
- Hypertonus
- Grand multiparity
- Blunt or penetrating abdominal trauma (MVA, battery, fall, etc)
- Midforceps rotation
- Maneuvers within the uterus
- Obstructed labor
- Abnormal fetal lie
- Previous terminations of pregnancy
- Vigorous pressure on the uterus at birth

# Clinical S/S

- Sudden FHR decelerations (most common)
- Sudden cessation of labor
- Uterine or abdominal pain (even w/ epidural)
- Asymmetric uterine shape
- Ability to palpate fetal parts through the abdominal wall
- Loss of fetal station
- Vaginal or intra-abdominal bleeding
- Signs of shock (syncope, hypotension, pallor, N/V, tachycardia)

# Management

- Maternal hemodynamic stabilization
- Immediate Cesarean
- Prepare for blood transfusion
- Possible need for hysterectomy

# Trauma During Pregnancy

- Most common source of trauma in pregnancy is MVA or domestic violence
- Falls are common
- Morbidity/mortality depends on injury sustained and trimester of pregnancy.

# Trauma During Pregnancy

- MVA: Head, spinal cord, and thoracic injuries are most common
  - Seat belts with shoulder harness & air bags reduce injuries!
- Trauma patients are evaluated and stabilized in the ER
  - A perinatal nurse is often called to help evaluate fetal status.
- Continuous FHR monitoring for 4-24 hours to rule out fetal compromise – often the first indication of maternal compromise.

# Postpartum Hemorrhage

# Postpartum Hemorrhage

- Leading cause of preventable maternal mortality!
- AIM Obstetric Hemorrhage Patient Safety Bundle
  - Readiness- Every Unit/Team
  - Recognition & Prevention – Every Patient
  - Response – Every Event
  - Reporting & Systems Learning – Every Unit
  - Respectful, Equitable, & Supportive Care – Every Unit/Provider/Team Member

# Postpartum Hemorrhage

- Cumulative blood loss of greater than or equal to 1000mL **OR**
- Blood loss accompanied by s/s of hypovolemia within 24 hours after the birth process
  - Vaginal blood loss ≥500mL is abnormal
- Goal is to intervene early with abnormal bleeding and PREVENT a PPH
- S/S Hypovolemia:
  - Subjective: pallor, lightheadedness, weakness, palpitations, diaphoresis, restlessness, confusion, air hunger, syncope
  - Objective: hypotension, tachycardia, oliguria, low oxygen saturation

# Postpartum Hemorrhage

- Primary PPH—within 24 hours of delivery
  - 80%+ cases caused by uterine atony
- Secondary PPH—24 hours to 12 weeks after delivery
  - Infection, subinvolution of placental site, retained placenta, inherited coagulation defects
- Postpartum Assessments are vital to recognizing problems and complications!
- Patient education is one of the most important postpartum care activities! – what is normal and when to seek care!

# Readiness – Every Unit/Team

- Develop a PLAN:
  - PPH Response Team
  - Standardized, facility-wide, stage-based management plan
  - Emergency release and massive transfusion protocol for blood products
  - Protocol for patients declining blood products
  - Review policies to identify & address root causes

# Readiness – Every Unit/Team

- Maintain Hemorrhage Cart
- Ensure immediate access to 1st & 2nd line PPH medications
- Conduct multidisciplinary simulations

# Recognition & Prevention – Every Patient

- Assess & Communicate: Clinical condition & PPH risk factors
  - Minimally: admission, peripartum period, transition to postpartum care
- Measure and Communicate: Quantitative Blood Loss
- Actively manage 3rd stage of labor
- Ongoing patient education on PPH risk factors, causes, & early warning signs

# Risk Assessment

| Admission Hemorrhage Risk Factor Evaluation | |
|---|---|
| **Low Risk (Type and Screen)** | **High Risk (Type and Crossmatch)** |
| Multiple gestation | Placenta previa or low-lying placenta |
| Hemoglobin < 10.0g/dL | Suspected placenta accreta spectrum |
| Chorioamnionitis | Platelets <100,000 |
| History of previous PPH | Active bleeding on admission |
| Large uterine fibroids | Known coagulopathy |

## Ongoing Risk Assessment

☐ **Evaluate for development of new risk factors in labor**:
- 2nd stage labor >2 hours
- Oxytocin use >24 hours after initiation
- Chorioamnionitis
- Magnesium sulfate treatment

☐ **Increase risk level as necessary**

☐ **Treat multiple risk factors as High Risk**

Evaluate for ***Risk Factors*** (see below).

Any women with no risk factors is classified Low Risk.

***If Low Risk:***

☐ Type & Screen

***If High Risk:***

☐ Type & Crossmatch 2 units PRBC

☐ Notify OB Anesthesia

***Identify women who decline blood products:***

☐ Notify OB provider for plan of care

☐ Notify OB anesthesia

☐ Review Consent and Informed Refusal Forms

***Risk level may be increased at the discretion of the attending providers for factors not listed.***

# Quantitative Blood Loss

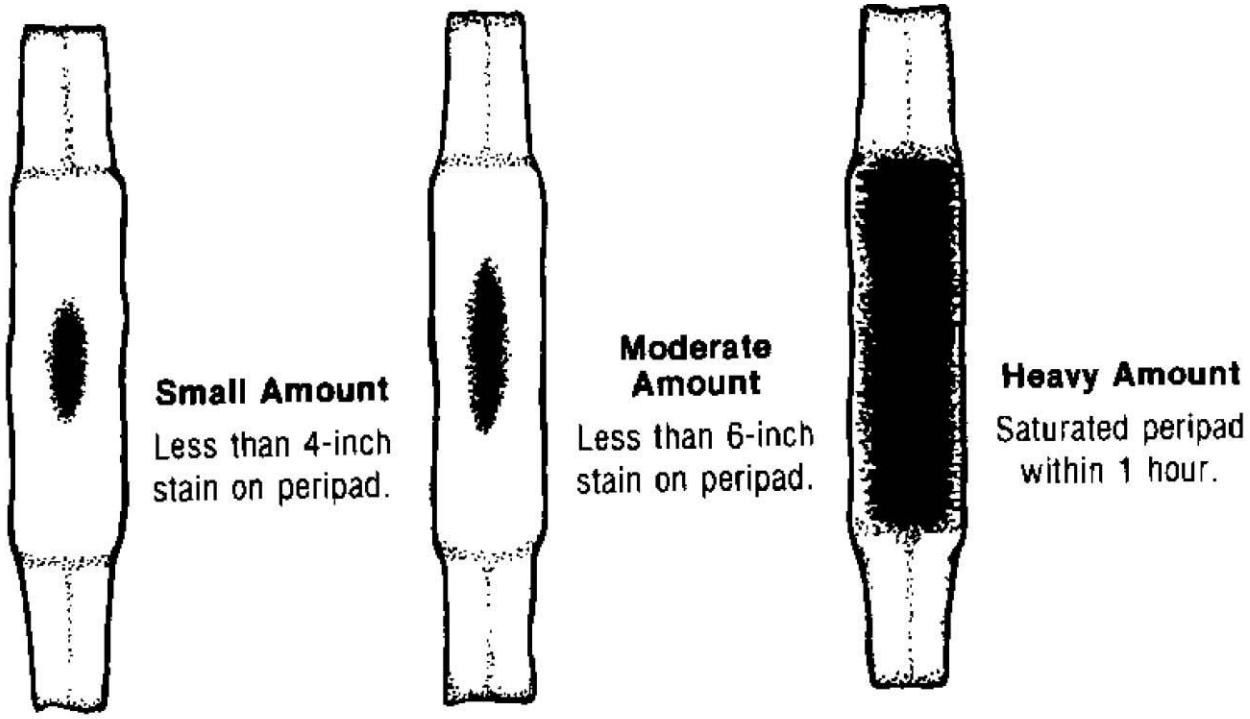
- Routine QBL is standard of care & can save lives!
- QBL only after excessive blood loss misses early recognition!
- QBL is the expectation for EVERY BIRTH!
- QBL is a collaboration between providers, nurses, & scrub techs.

# Quantitative Blood Loss

- Calibrated under-buttocks drape
- Dry weight list of commonly used items
- Scale to weigh blood soaked items
- Easy documentation

# Quantitative Blood Loss

- Visual estimation of blood loss, “glance and guess” is not accurate and should not be used in any delivery.
- Small amounts OVER estimated
- Large amounts UNDER estimated



# Response- Every Event

- Utilize standardized, stage-based, obstetric hemorrhage emergency management plan including:
  - Advanced planning and preparation
  - Mobilize PPH emergency response
  - Evaluating for PPH etiology
  - Administer evidence-based medications &or non-pharmacologic treatment
  - Activate appropriate resources as necessary
- Provide trauma-informed support to patients, support persons & staff for all PPH, emergencies, birth events, and follow-up.

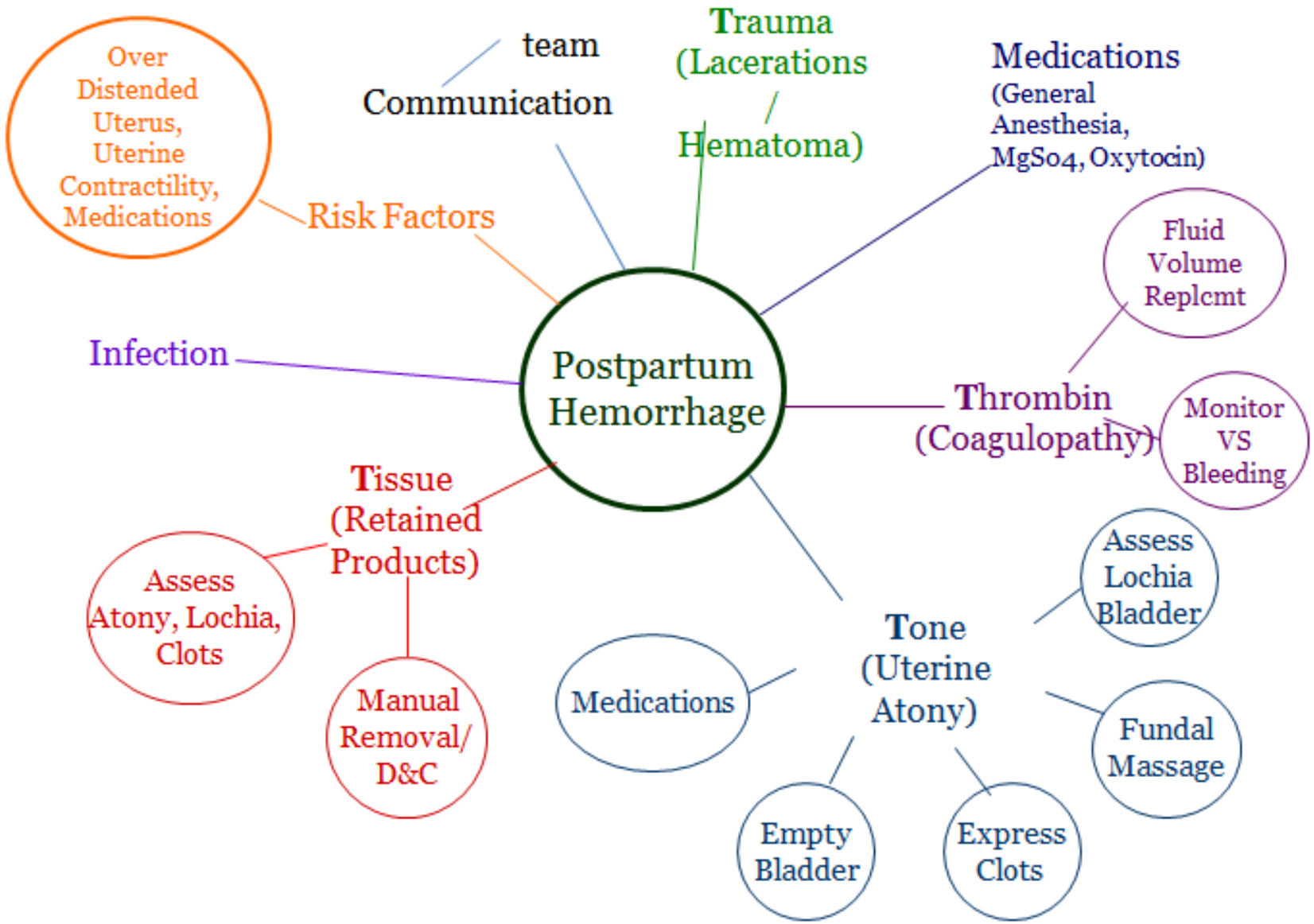
# Response- Every Event

- Activate PPH Emergency Response at FIRST sign of abnormal bleeding
- Stage-based interventions
  - Stage 0: All Births
  - Stage 1: QBL > 1000mL or persistent VS abnormality
  - Stage 2: Continued bleeding, VS instability, and <1500 mL
  - Stage 3: QBL >1500, >2u PRBC given, unstable VS, suspicion for DIC

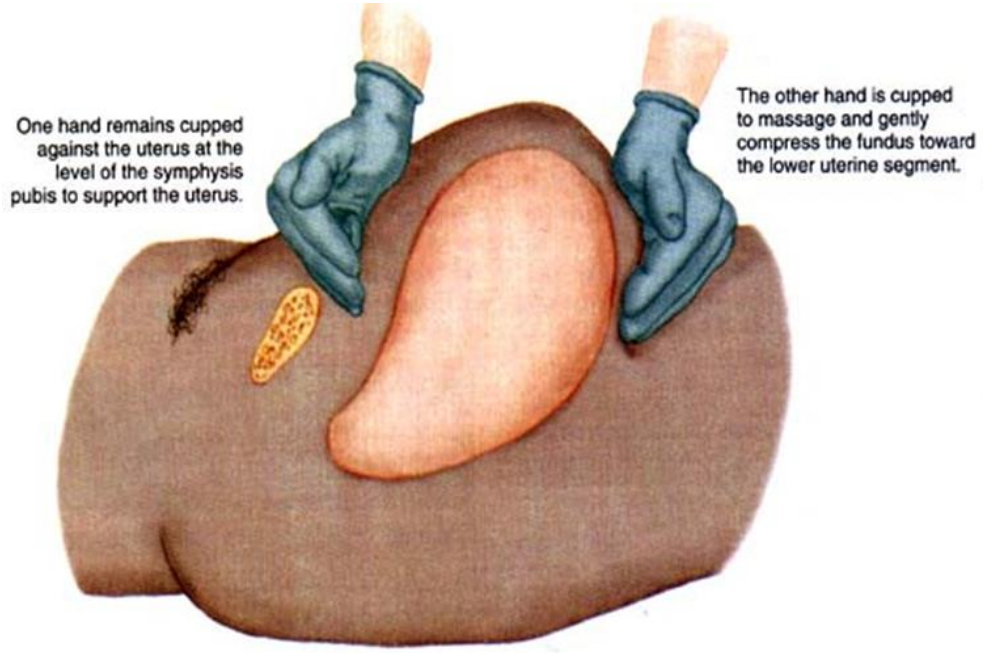
# Response- Every Event

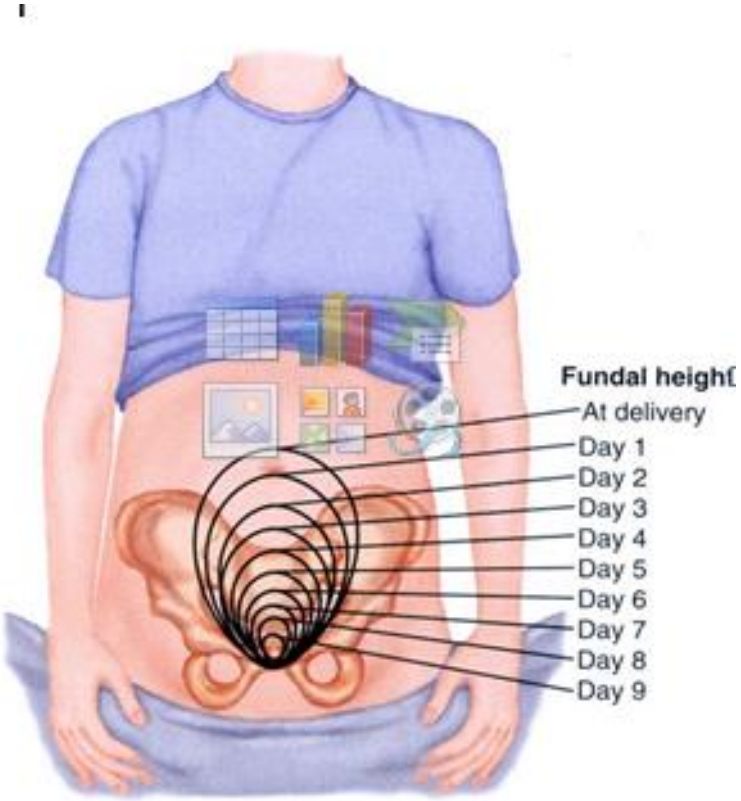
Treat the Problem

- Tone—Uterine atony (80%)
- Tissue—Retained products of conception
- Trauma—Lacerations/hematoma
- Thrombin—Maternal blood disorder/DIC


Over Distended Uterus, Uterine Contractility, Medications
Risk Factors
team
Communication
Trauma (Lacerations
Hematoma)
Medications (General Anesthesia, MgSo4, Oxytocin)
Infection
Postpartum Hemorrhage
Fluid Volume Replcmt
Thrombin (Coagulopathy)
Monitor VS Bleeding
Tissue (Retained Products)
Assess Atony, Lochia, Clots
Manual Removal/ D&C
Tone (Uterine Atony)
Assess Lochia Bladder
Medications
Fundal Massage
Empty Bladder
Express Clots

# Response- Every Event



# Response- Every Event

- Uterine massage
- Pain management
- VS
- IV fluids
- Type & Cross for blood
- QBL
- Empty bladder & place catheter
- Monitor urine output
- Keep warm
- Large bore IV access (possibly 2)
- Elevate patient legs, HOB flat
- Oxygen
- Labs: CBC, CMP, Coag panel
- Medications as ordered
- Non-pharmacologic interventions
- Surgical interventions
- Massive Transfusion Protocol

# Response- Every Event

Shock:

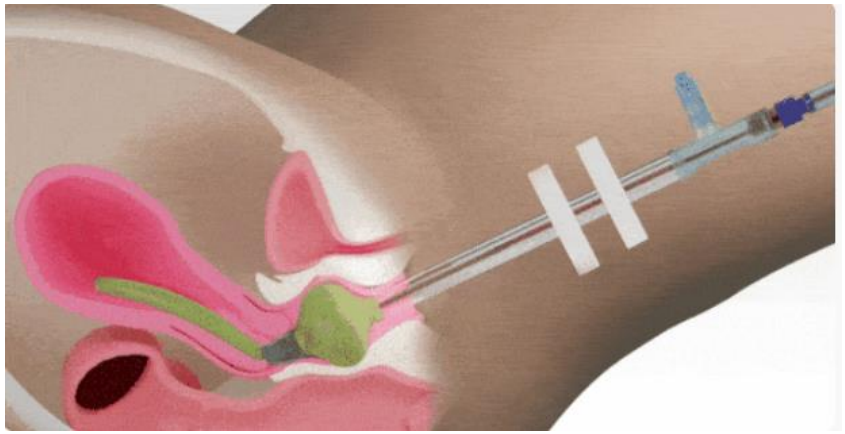
- Early Signs: Tachypnea & Tachycardia- BP is *constant or slightly decreased*
- Late Signs: ↓ **BP**, altered mental status, level of consciousness changes, oliguria, pale, cool, clammy skin, poor turgor, pale mucous membranes
- Hypovolemic shock occurs at 30-40% blood loss
- Disseminated Intravascular Coagulation (DIC): oozing

# Response- Every Event

- Oxytocin:  IV (10-80 units per 1000 mL NS) or IM (10 units)
- Methergine:  IM (0.2mg every 2-4 hours)
- Hemabate:  IM (250 mcg every 15-90 mins; max 8 doses)
- Cytotec (Misoprostol):  Rectally (800 – 1000 mcg) OR Orally (time of onset is much quicker than rectally)
- Dinopostone:  Suppository (20mg rectal or vaginal every 2 hours)
- TXA (Tranexamic Acid):  requires preparation in solution for IV administration.  Dosage = 1 g IV; a second dose may be given if bleeding continues after 30 mins.

# Response- Every Event

- Interventions:
  - Intrauterine tamponade balloon
  - Vacuum-induced PPH control device
  - Compression suture
  - Uterine packing
  - Selective artery embolization
  - Hysterectomy (last resort)



# Response- Every Event

Blood Products:

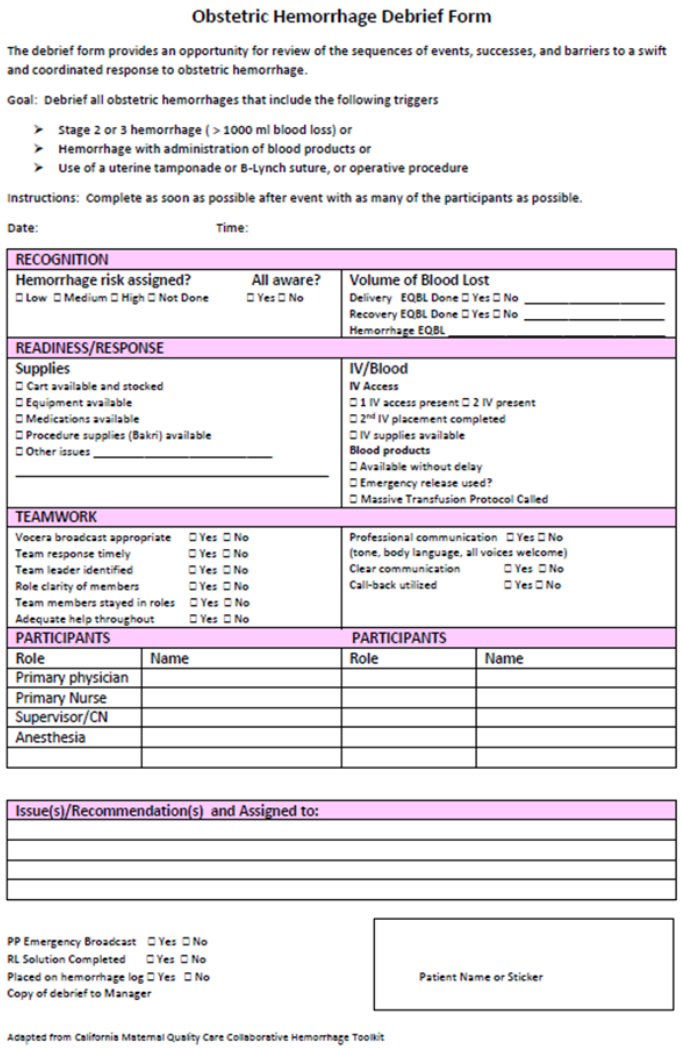
- Packed Red Blood Cells (PRBCs)
- Fresh Frozen Plasma (FFP)
- Platelets
- Cryoprecipitate (Cryo)

Resuscitate:

- 5 PRBC: 5 FFP: 1 Platelet
- Cryo for fibrinogen <200mg/dL
- After 8-10 u PRBC and coag factors, consider rFactor VIIa

# Reporting & Systems Learnings – Every Unit

- Establish a culture of multidisciplinary planning, huddles, & post-event debriefs
- Perform multidisciplinary reviews of serious complications
- Monitor outcomes & process measures
  - Include Race & Ethnicity measures
- Establish process for data reporting & data sharing



**Obstetric Hemorrhage Debrief Form**

The debrief form provides an opportunity for review of the sequences of events, successes, and barriers to a swift and coordinated response to obstetric hemorrhage.

Goal: Debrief all obstetric hemorrhages that include the following triggers

- Stage 2 or 3 hemorrhage ( > 1000 ml blood loss) or
- Hemorrhage with administration of blood products or
- Use of a uterine tamponade or B-Lynch suture, or operative procedure

Instructions: Complete as soon as possible after event with as many of the participants as possible.

Date: Time:

**RECOGNITION**

Hemorrhage risk assigned? ☐ Low ☐ Medium ☐ High ☐ Not Done — All aware? ☐ Yes ☐ No

Volume of Blood Lost
Delivery EQBL Done ☐ Yes ☐ No _____
Recovery EQBL Done ☐ Yes ☐ No _____
Hemorrhage EQBL _____

**READINESS/RESPONSE**

Supplies
☐ Cart available and stocked
☐ Equipment available
☐ Medications available
☐ Procedure supplies (Bakri) available
☐ Other issues _____

IV/Blood
IV Access
☐ 1 IV access present ☐ 2 IV present
☐ 2nd IV placement completed
☐ IV supplies available
Blood products
☐ Available without delay
☐ Emergency release used?
☐ Massive Transfusion Protocol Called

**TEAMWORK**

Vocera broadcast appropriate ☐ Yes ☐ No
Team response timely ☐ Yes ☐ No
Team leader identified ☐ Yes ☐ No
Role clarity of members ☐ Yes ☐ No
Team members stayed in roles ☐ Yes ☐ No
Adequate help throughout ☐ Yes ☐ No

Professional communication ☐ Yes ☐ No (tone, body language, all voices welcome)
Clear communication ☐ Yes ☐ No
Call-back utilized ☐ Yes ☐ No

| PARTICIPANTS | | PARTICIPANTS | |
|---|---|---|---|
| Role | Name | Role | Name |
| Primary physician | | | |
| Primary Nurse | | | |
| Supervisor/CN | | | |
| Anesthesia | | | |
| | | | |

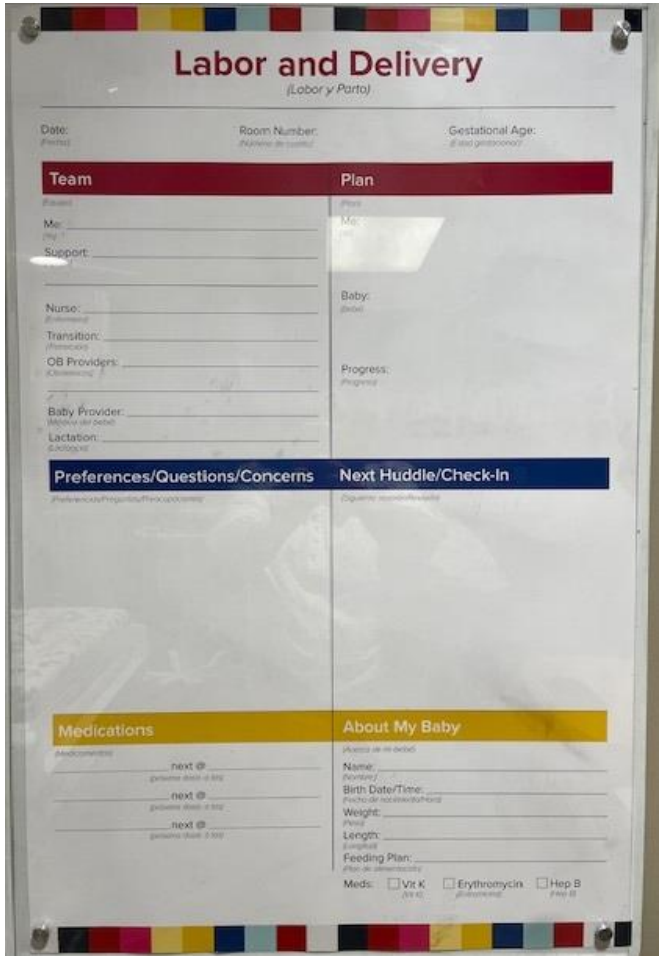
**Issue(s)/Recommendation(s) and Assigned to:**

PP Emergency Broadcast ☐ Yes ☐ No
RL Solution Completed ☐ Yes ☐ No
Placed on hemorrhage log ☐ Yes ☐ No
Copy of debrief to Manager

Patient Name or Sticker

Adapted from California Maternal Quality Care Collaborative Hemorrhage Toolkit

# Respectful, Equitable, & Supportive Care – Every Unit/Provider/Team Member




- Include patient and support persons as respected members of care team and participants in patient-centered huddles & debriefs
- Engage in open, transparent, empathetic communication with patients and support persons to understand diagnosis, options, & treatment plans that include consent

# Respectful, Equitable, & Supportive Care – Every Unit/Provider/Team Member

- “Hear Her”  CDC Campaign
  - "A woman knows their body best. Listening and acting upon their concerns during or after pregnancy could save a life.“
    Dr. Wanda Barfield, Director of CDC's Division of Reproductive Health
- Stop
  - If a woman does not feel well or believes something is wrong, stop - don’t explain away complaints
- Look
  - Conduct an examination
- Listen
  - Hear the woman’s concerns

# QBL Activity

# Questions?

# Thank you!

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