



OBSTETRIC HEMORRHAGE

Labor & Delivery and
Maternal Core Curriculum
Fellowships

OBJECTIVES

Learning Objectives:

- Define obstetric hemorrhage
- Discuss risk factors of obstetric hemorrhage
- Identify signs and symptoms of obstetric hemorrhage
- Explain response to obstetric hemorrhage

HOW CAN WE DO BETTER?

70% of maternal deaths related to postpartum hemorrhage are preventable!

Contributing factors related to:

- Readiness
- Recognition
- Response
- Reporting/Systems Learning

Readiness

- Implementing and Sustaining Maternal Quality and Safety and Performance Improvement for OB Hemorrhage
- Use of risk factor assessment
- Management of Iron Deficiency Anemia
- Inherited Bleeding Disorders
- Planning for Pt's who may decline blood products
- Assessment for Placenta Accreta Spectrum Disorders
- Implementing Hemorrhage carts, kits & trays
- Drills & Simulation
- Considerations for small &

Recognition

- Active Management of the third stage of labor
- Definition, Early Recognition & rapid response for hemorrhage using triggers
- Best Practice techniques to assess quantitative cumulative blood loss

Response

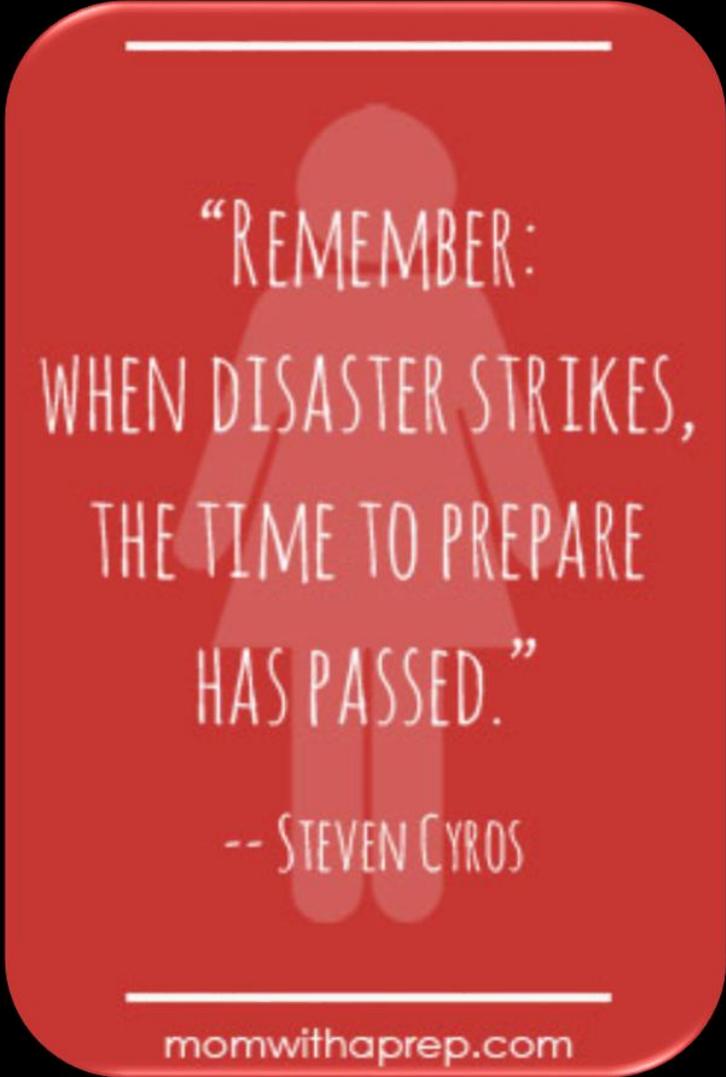
- Medications for prevention & treatment of postpartum hemorrhage
- Blood product replacement
- Uterine tamponade for postpartum hemorrhage
- Uterine Artery Occlusion and Embolization
- Communication with and Supporting Women, Birthing People and Families after an Obstetric Hemorrhage

Reporting/ Systems Learning

- Debriefs & Multidisciplinary case review guidelines
- Using outcome metrics for hemorrhage related QI projects

READINESS

Be prepared to respond to a
hemorrhage with every OB
patient

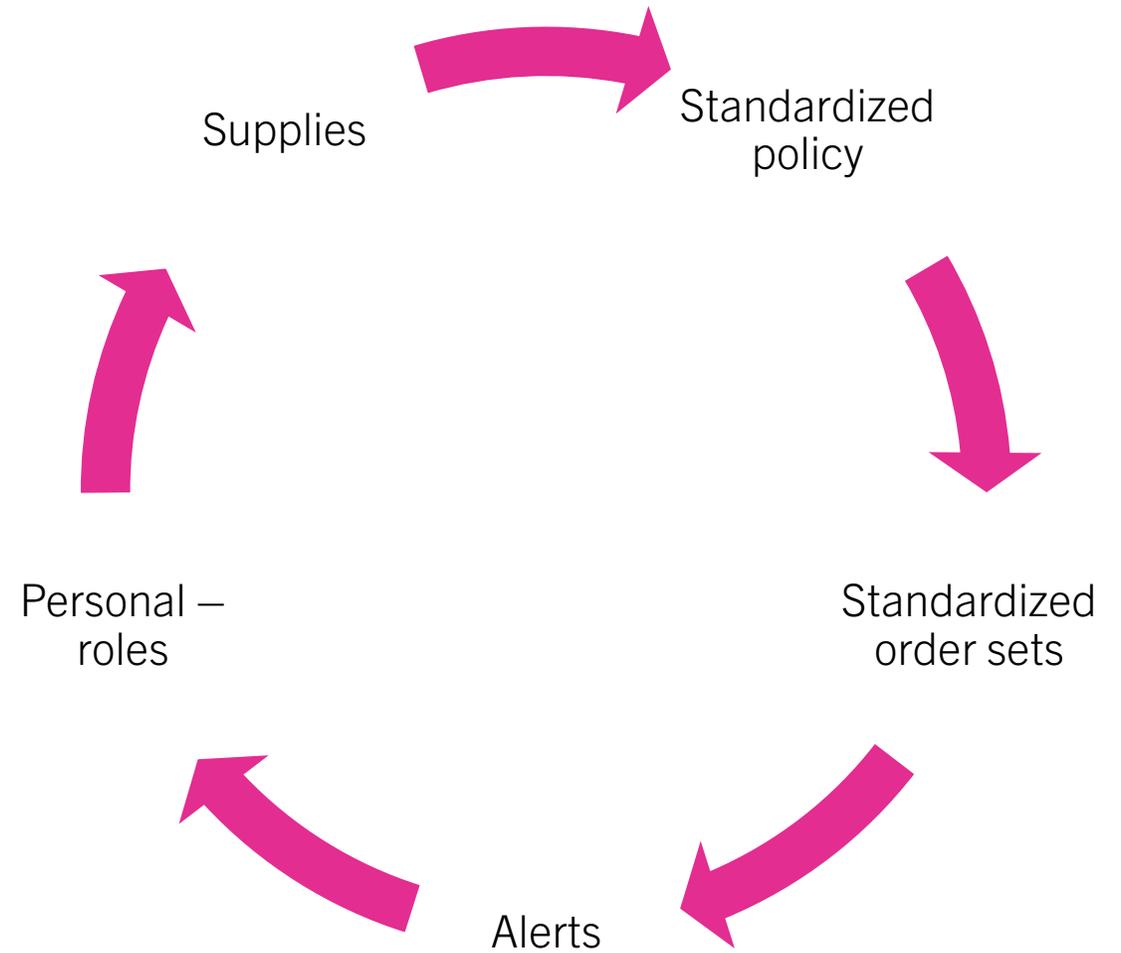


“REMEMBER:
WHEN DISASTER STRIKES,
THE TIME TO PREPARE
HAS PASSED.”

-- STEVEN CYROS

momwithaprep.com

HEMORRHAGE BUNDLE



RISK FACTORS FOR HEMORRHAGE

ADMISSION and LABOR RISK FACTORS <small>8,17-20,25,29</small>		
LOW RISK	MEDIUM RISK	HIGH RISK
MONITOR FOR HEMORRHAGE <i>Routine obstetric care</i>	NOTIFY CARE TEAM <i>Personnel that could be involved in response are made aware of patient status and risk factors</i>	NOTIFY CARE TEAM MOBILIZE RESOURCES <i>Consider anesthesia attendance at birth</i>
<i>Specimen on hold in blood bank</i>	<i>Type and screen</i>	<i>Type and cross, 2 units on hold</i>
No previous uterine incision	Prior cesarean(s) or uterine surgery	Placenta previa, low lying placenta
Singleton pregnancy	Multiple gestation	Suspected/known placenta accreta spectrum
≤ 4 vaginal births	> 4 vaginal births	Abruption or active bleeding (greater than show)
No known bleeding disorders	Chorioamnionitis	Known coagulopathy
No history of PPH	History of previous postpartum hemorrhage	History of > 1 prior postpartum hemorrhage
	Large uterine fibroids	HELLP Syndrome
	Platelets 50-100,000	Platelets < 50,000
	Hematocrit < 30% (Hgb < 10)	Hematocrit < 24% (Hgb < 8)
	Polyhydramnios	Fetal demise
	Gestational age < 37 weeks or > 41 weeks	2 or more medium risk factors
	Preeclampsia	
	Prolonged labor/Induction (> 24 hours)	

ADDITIONAL BIRTH and ONGOING POSTPARTUM RISK FACTORS*		
ROUTINE CARE	INCREASED SURVEILLANCE POSTPARTUM CARE TEAM ASSESSES RESPONSE READINESS	
	Cesarean during this admission – <i>especially if urgent/emergent/2nd stage</i>	Active bleeding soaking > 1 pad per hour or passing a ≥ 6 cm clot
	Operative vaginal birth	Retained placenta
	Genital tract trauma including 3 rd and 4 th degree lacerations	Non-lower transverse uterine incision for cesarean
	Quantitative cumulative blood loss 500-1000 mL with a vaginal birth	Quantitative cumulative blood loss ≥ 1000 mL or treated for hemorrhage
		Received general anesthesia
		Uterine rupture

HEMORRHAGE SUPPLIES - MWH

HEMORRHAGE CART - LD



HEMORRHAGE CART – MB, HROB, GYN

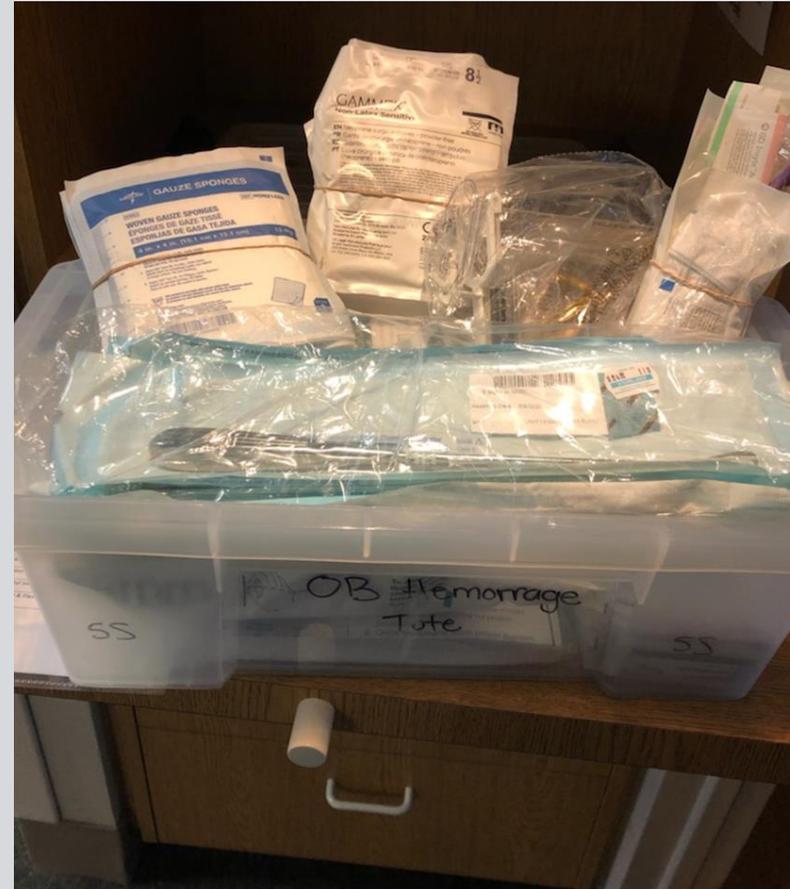
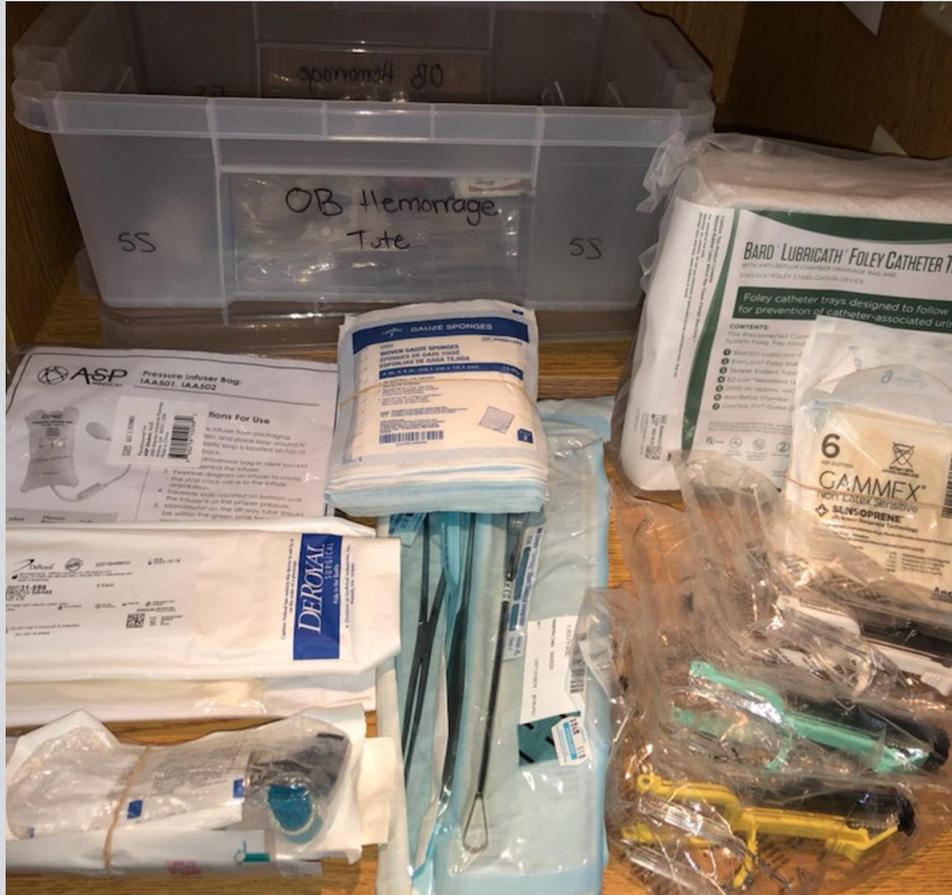


Side View

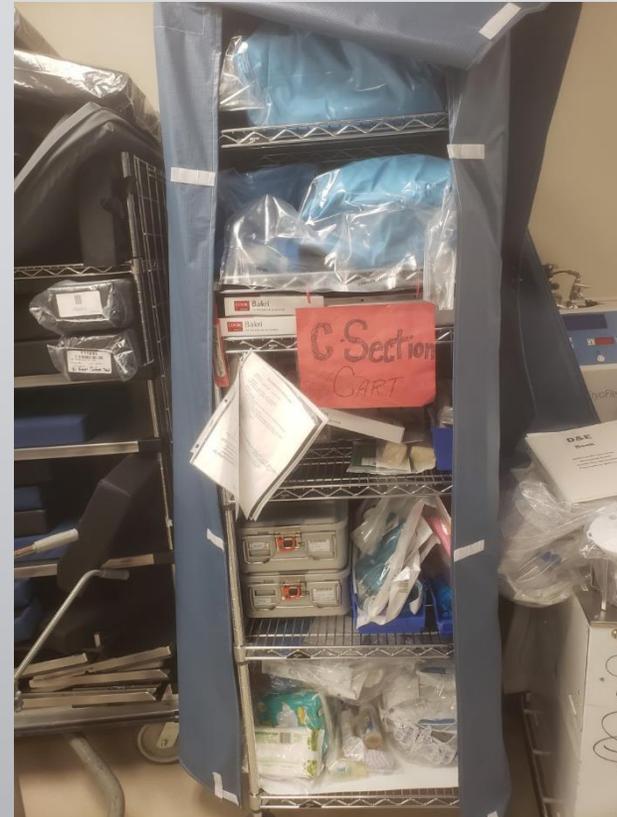


Front View

HEMORRHAGE SUPPLIES – 84TH ST CAMPUS



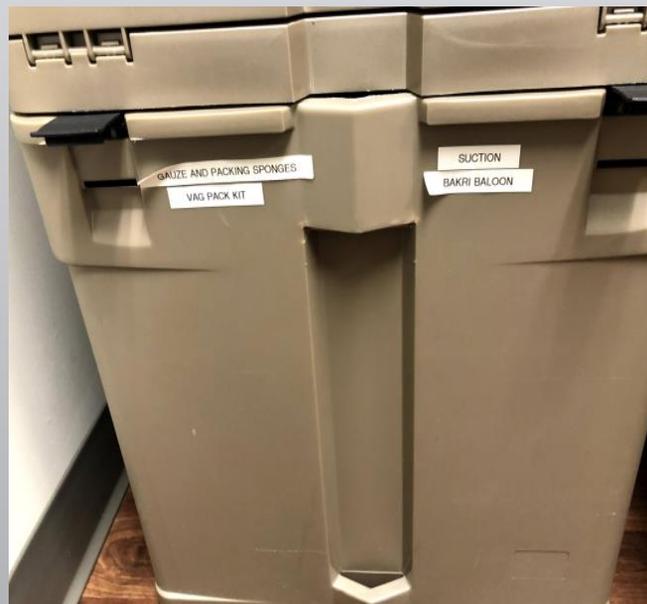
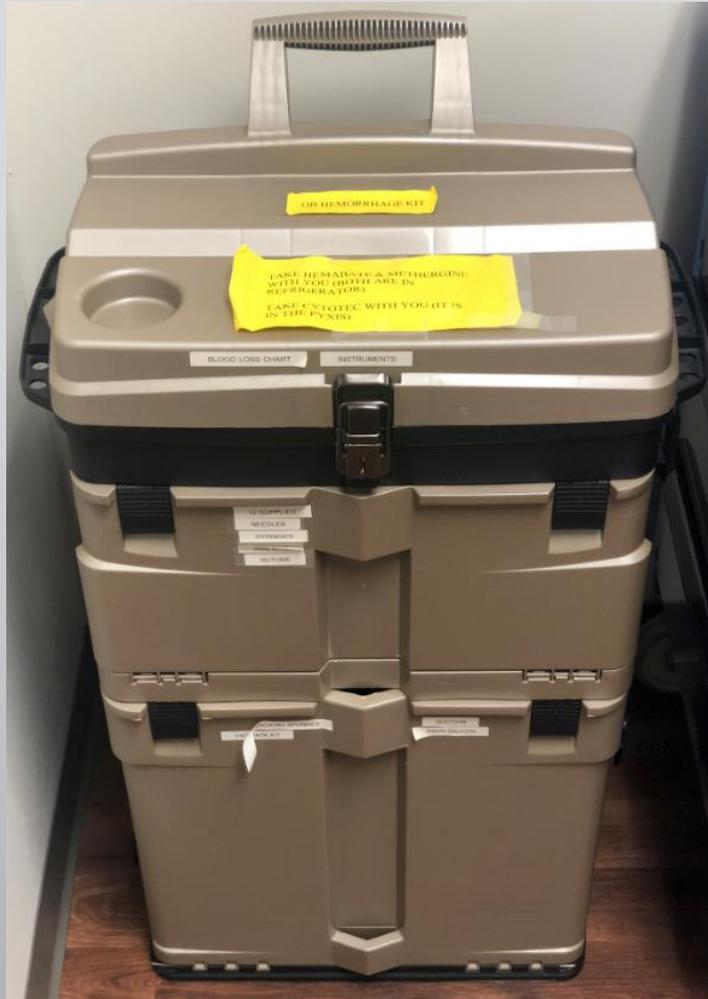
HEMORRHAGE SUPPLIES – 84TH ST SURGERY



HEMORRHAGE SUPPLIES – METHODIST FREMONT HEALTH



METHODIST JENNIE EDMUNDSON



SUGGESTED SUPPLIES

Appendix E: Checklist: Carts, Kits and Trays

OB Hemorrhage Cart: Recommended Supplies	
<ul style="list-style-type: none"> ▶ IV start supplies ▶ Angiocaths ▶ IV tubing ▶ IV extension set ▶ Blood product transfusion tubing ▶ Blood warmer tubing ▶ Urinary catheter kit with urometer ▶ Flashlight ▶ Lubricating jelly ▶ Assorted sizes sterile gloves ▶ Lab tubes: CBC, coagulation studies, etc. ▶ Venipuncture supplies ▶ Pressure infuser bags ▶ Chux ▶ Peri-pads ▶ Vaginal packing (consider arm banding to indicate packing used) ▶ Hemorrhage balloon and supplies ▶ Skin marker 	<ul style="list-style-type: none"> ▶ Syringes ▶ Needles ▶ Tegaderm ▶ 2x2 gauze ▶ Adhesive bandages ▶ Alcohol swabs ▶ Paper tape ▶ Cloth tape ▶ Manual BP cuff ▶ Stethoscope ▶ Povidone iodine ▶ Personal Protection Equipment (PPE) ▶ Operating room towels ▶ Sterile speculum ▶ Diagrams depicting various procedures (e.g., B-Lynch, uterine artery ligation, balloon placement) ▶ IV fluids for administration and hemorrhage balloons as your institution permits

Recommended Instruments	
<ul style="list-style-type: none"> ▶ Set of vaginal retractors (long right angle); long weighted speculum ▶ Sponge forceps (minimum: 2) ▶ Sutures (for cervical laceration repair and B-Lynch) 	<ul style="list-style-type: none"> ▶ Banjo curettes, several sizes ▶ Long needle holder ▶ Uterine forceps

Binder Contents	Associated Equipment
<ul style="list-style-type: none"> ▶ Cart content list ▶ Quick reference documents (dry weights, QBL guide, etc.) ▶ Consent forms ▶ Blood Bank forms ▶ Advanced GYN surgeon on-call schedule 	<ul style="list-style-type: none"> ▶ Bright task light on wheels ▶ Ultrasound machine

OB Hemorrhage Medication Kit:

Available in the L&D and Postpartum automated dispensing cabinet/refrigerator

Consider kit labeling to include:

Carboprost (Hemabate) - "Avoid with Asthma"

Methylergonovine (Methergine) - "Avoid with Hypertension"

- ▶ Oxytocin (Pitocin) 10-40 units per 500-1000 mL NS, 2 pre-mixed bags
- ▶ Oxytocin (Pitocin) 10-unit vial, 2 vials
- ▶ Methylergonovine (Methergine) 0.2 mg/mL, 1 ampule*
- ▶ 15-methyl PGF₂α (Hemabate, carboprost) 250 mcg/mL, 1 ampule*
- ▶ Tranexamic Acid (TXA) 1000 mg/10 mL vial, 1-2 vials** (also available as 1000 mg/100 mL IVPB)
- ▶ Misoprostol (Cytotec) 200 mcg tablets, 5 tabs

*Carboprost requires refrigeration. Methylergonovine injection is stable for only 14 days outside of refrigeration conditions.

**While manufacturer endorses room temperature storage, military data is supportive of refrigeration, which is helpful in the creation of kits.

Oxytocin and methylergonovine are considered 'Special Handling' for the health care worker (Hazardous Drug—Potential Reproductive Risk). Provide institution-specific PPE and disposal guidelines and appropriate ancillary labeling.

SUGGESTED OR SUPPLIES

Hysterectomy Tray:

<ul style="list-style-type: none"> ▶ 4 Mosquito, curved, 5" ▶ 4 Towel Clips, Backhaus (perforating) 5 ¼" ▶ 2 Clamp, Mixer 9" ▶ 2 Clamp, Tonsil ▶ 2 Clamp, Allis, Extra-long 10" ▶ 2 Clamp, Allis 6" ▶ 2 Clamp, Babcock 8" ▶ 2 Clamp, Babcock 6 1/4" ▶ 2 Clamp, Lahey 6" ▶ 2 Clamp, Heaney-Rezak, straight, 8" ▶ 2 Kocher, straight, 8" 	<ul style="list-style-type: none"> ▶ 6 Forceps, Heaney, curved 8 1/4" ▶ NH, Mayo Hegar 8" ▶ 4 Sponge Stick 9 1/2" ▶ 1 Scissor, Jorgensen, curved 9" ▶ 1 Scissors, bandage 7" ▶ 1 Scissors, curved dissecting, Metzenbaum ▶ 1 Scissors, Mayo, curved ▶ 1 Scissors, sharp/blunt, straight 5 ½" ▶ 1 Scissors, Curved Metzenbaum 12" ▶ 1 Scissors, Mayo straight 11" ▶ 1 Scissors, Mayo curved 11"
<ul style="list-style-type: none"> ▶ 8 Kelly, curved 5 3/4" ▶ 2 Kelly, straight 5 3/4" ▶ 8 Pean, curved, 6 1/4" 	<ul style="list-style-type: none"> ▶ 1 Knife Handle #3 ▶ 1 Knife Handle #4 ▶ 1 Knife Handle #3 long
<ul style="list-style-type: none"> ▶ 2 Forceps, Debakey 9 1/2" ▶ 1 Forceps, Tissue with teeth 9 3/4" ▶ 1 Forceps, Russian 8" ▶ 1 Forceps, smooth 8" ▶ 1 Forceps, Ferris Smith ▶ 2 Forceps with teeth 6" ▶ 1 Forceps, Russian 6" ▶ 2 Forceps, Adson with teeth ▶ 1 Forceps, Tissue, smooth 7" 	<ul style="list-style-type: none"> ▶ 1 Retractor, Kelly, large ▶ 1 Retractor, Deaver, large 3" x 12" ▶ 1 Retractor, Deaver, medium ▶ 2 Retractor, medium/large Richardson ▶ 1 Retractor, Balfour blades ▶ 2 Retractor, Goulet 7 1/2" ▶ 1 Suction, Yankauer Tip ▶ 1 Suction, Pool Tip

Cystoscopy Tray:

- ▶ 1 Cystoscope 30 degree, 4mm, 30cm
- ▶ 1 Cystoscope 70 degree, 4mm, 30cm
- ▶ 1 Cystoscope sheath, 22fr
- ▶ 1 Cystoscope obturator, 22fr
- ▶ 1 Cystoscope bridge
- ▶ 1 Luer lock tubing connector with stopcock
- ▶ 1 Luer lock tube connector
- ▶ 2 Sealing caps

This appendix was adapted from the Improving Health Care Response to Obstetric Hemorrhage: A California Quality Improvement Toolkit, funded by the California Department of Public Health, 2015; supported by Title V funds.

RECOGNIZE

Hemorrhage is a
symptom, NOT a
diagnosis!



DEFINITION

Traditional:

- Vaginal delivery blood loss \geq 500ml
- C-section delivery blood loss \geq 1,000ml

ACOG Standardized:

- Blood loss \geq 1,000ml regardless if vaginal or c/s delivery
- *Any* blood loss associated with s/s hypovolemia within 24 hours of delivery
- Blood loss of 500-999ml = abnormal finding and should be monitored closely

CLASSIFICATION

PRIMARY

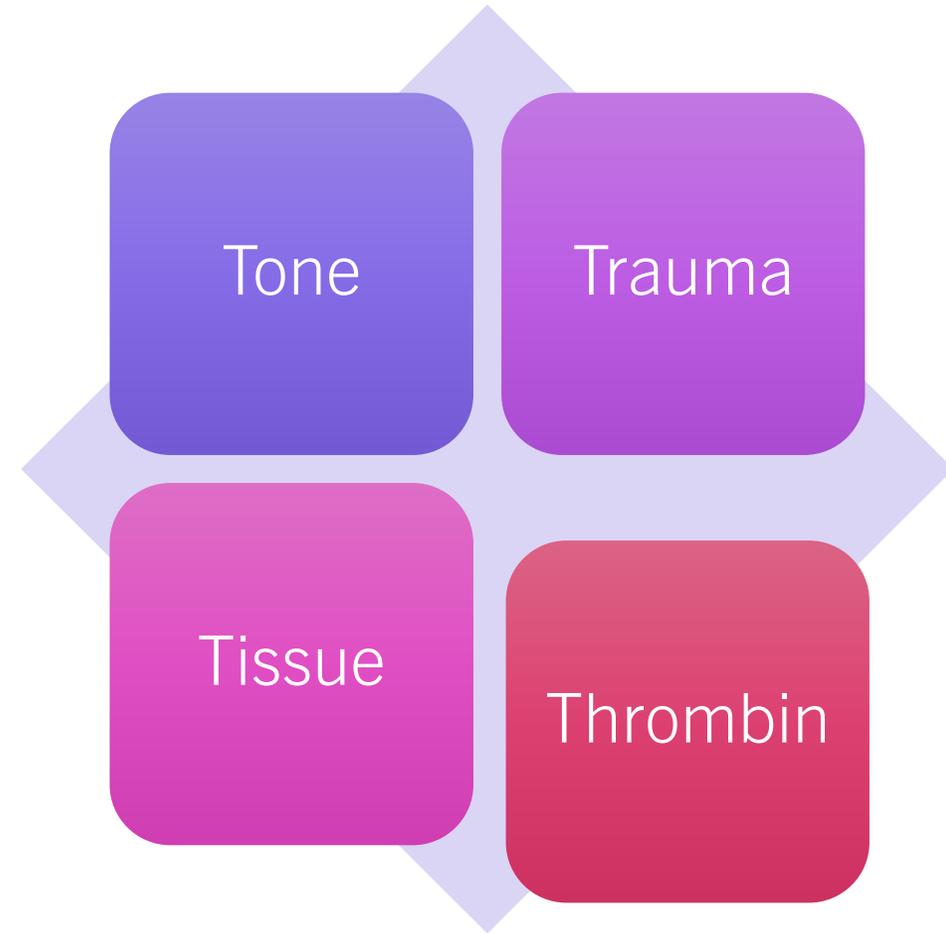
- Early onset
- Occurring within 24 hours after delivery

SECONDARY

- Late onset
- Occurs from 24 hours of delivery to 12 weeks postpartum
- Occurs in approximately 1% of deliveries

**ETIOLOGIES &
RISK FACTORS:**

THE 4 T'S



UTERINE ATONY/POOR UTERINE TONE

- Overdistention of the uterus related to multiple gestation, polyhydramnios, macrosomia
- Prolonged (>24hrs) or precipitous(<3hrs) labor
- Prolonged delivery of placenta
- Retained placental fragments
- Oxytocin augmentation or induction of labor
- Grandmultiparity (>5 babies)
- Obesity
- Use of anesthesia, magnesium sulfate, calcium channel blockers (nifedipine), tocolytics (terbutaline)
- Preeclampsia
- Asian or Hispanic heritage
- Operative birth (vacuum or forceps)
- Placenta previa or accrete syndrome
- Placental abruption

GENITAL TRACT TRAUMA

- Nulliparity
- Epidural anesthesia
- Precipitous childbirth (<3 hrs)
- Macrosomia
- Operative birth (vacuum or forceps)
- Use of oxytocin
- Hematoma

RETAINED PLACENTAL TISSUE

- Previous uterine surgery
- Incomplete delivery of placenta
- Partial separation of the placenta during massage of the fundus before spontaneous placental separation

RETAINED PLACENTAL TISSUE

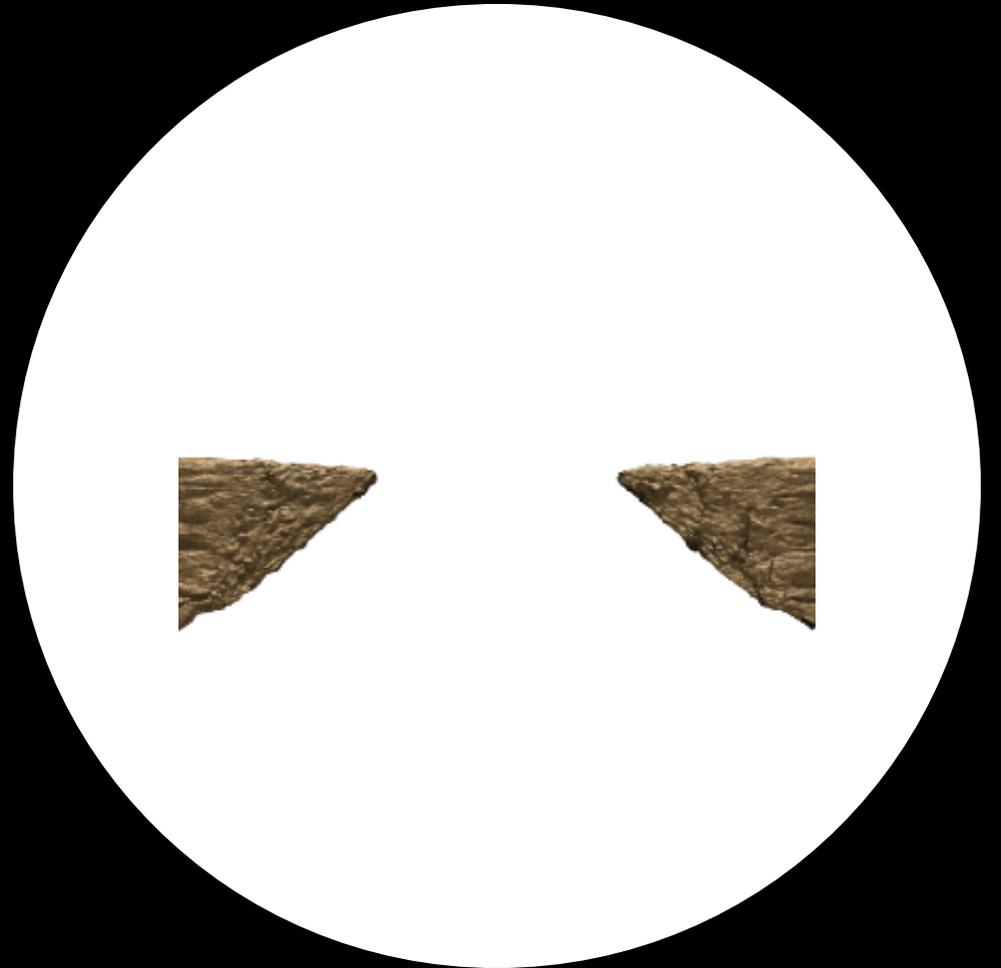
- Previous uterine surgery
- Incomplete delivery of placenta
- Partial separation of the placenta during massage of the fundus before spontaneous placental separation

ABNORMAL COAGULATION - THROMBIN

- Inherited clotting factor deficiencies (von Willebrand disease, thrombocytopenia)
- Current anticoagulation therapy
- DIC - may be a *cause* or a *result* of postpartum hemorrhage

OB HEMORRHAGE VS. MEDICAL TRAUMA

Obstetrical patients tend to “*fall off the cliff*” rather than progressing through measurable stages of hypovolemic shock.



PHYSIOLOGIC CHANGES IN PREGNANCY AND POSTPARTUM

Compensate normal blood loss after birth:

- ↑ Blood volume during pregnancy
- Physiologic anemia of pregnancy
- Auto transfusion of blood from placenta to maternal circulation after birth
- Hypercoagulable state
- Uterine contraction constricts blood vessels to promote hemostasis

Subtle changes
or no changes

Excessive free
flow

Expression of
clots with
uterine massage

Saturating a
large peripad in
 ≤ 1 hour

Slow, constant
trickle over
extended period

No lochia/dry
pads

Dizziness

Pallor

Potential
increased heart
rate

EARLY SIGNS

Hypotension

Tachycardia

Narrowing
pulse
pressure

Thirst

Restlessness

Decreased
oxygen
saturation

Tachypnea

Decreased
urinary
output

Decrease in
Hgb and Hct

LATE SIGNS

RECOGNITION

Table 1: Clinical signs of hypovolemia

Amount of blood loss	Clinical signs ¹⁴
1000 mL	Slight change in blood pressure, heart rate may be normal, palpitations, respiratory rate normal, dizziness, normal urine output. Normal pulse pressure, normal base deficit.**
1500 mL	Narrowed pulse pressure* , tachycardia, increasingly diaphoretic and weak, base deficit -2 to -6 mEq/L**
2000 mL	Developing hypotension, narrowed pulse pressure, marked tachycardia (> 110), tachypnea (RR > 24), pale, extremities cool, restlessness with mental status changes, decreased urine output, base deficit -6 to -10 mEq/L**
≥ 2500 mL Severe hemorrhagic shock	Profound hypotension, worsening tachycardia and tachypnea, negligible urine output or anuria, altered level of consciousness, base deficit > -10 mEq/L**

*Pulse pressure is the difference between the systolic and diastolic blood pressure. With hemorrhage, a rise in the diastolic pressure reflects vasoconstriction and narrows the pulse pressure. This can be one of the key findings in early stages of hemorrhage.^{7,15}

**The base deficit is a measurement of acidemia as a result of poor peripheral tissue oxygenation from hypovolemia.¹⁴

This table was adapted from the *Improving Health Care Response Obstetric Hemorrhage: A California Quality Improvement Toolkit*, funded by the California Department of Public Health, 2015; supported by Title V funds.

HYPOVOLEMIC SHOCK

- Inadequate oxygen delivery and tissue perfusion
- Caused by volume depletion from blood loss
- The onset of shock may not initially be accompanied by hypotension due to the body's attempt to compensate for a decrease in intravascular volume by vasoconstriction and preferential shunting of arterial blood to vital organs such as the heart and brain



COMPENSATORY MECHANISMS OF MATERNAL HYPOVOLEMIC SHOCK

Peripheral Redistribution	Depleted Central Perfusion	Perfusion of Vital Organs
Blood volume is moved centrally and proximally to vital organs (>1,500 ml blood loss)	<ul style="list-style-type: none">• Includes perfusion to uterine artery and placenta• Loss of urinary function and weakened femoral pulses (>25-30% blood loss)	Brain, lungs, heart are perfused at the expense of all other organs (>40% blood loss)

SYMPTOMS OF MATERNAL HYPOVOLEMIC SHOCK

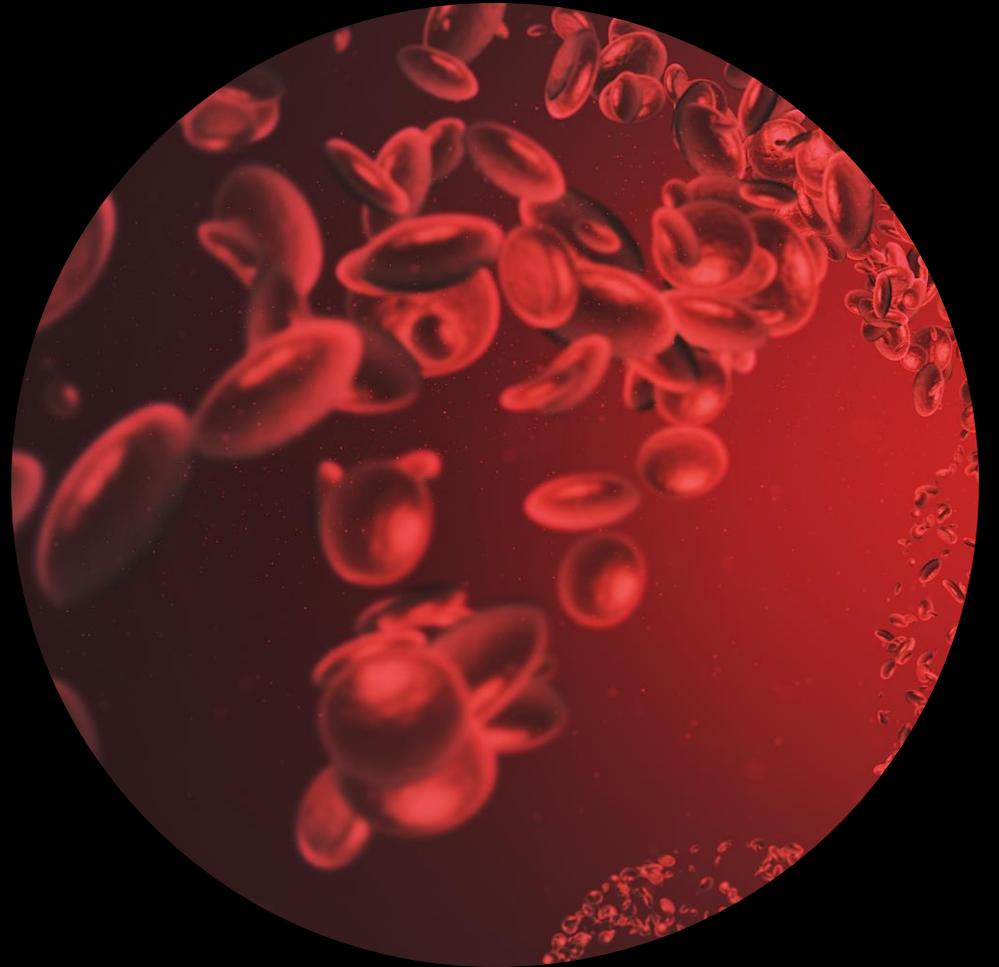
Peripheral Redistribution	Depleted Central Perfusion	Perfusion of Vital Organs
<ul style="list-style-type: none"> • ↑ pulse rate • ↑ respirations 	<ul style="list-style-type: none"> • Orthostatic BP • Narrowing pulse pressure <ul style="list-style-type: none"> • ↑ diastolic BP • Cool, clammy skin • Delayed capillary refill • Oliguria or anuria 	<ul style="list-style-type: none"> • ↑↑↑ pulse rate • ↓↓ BP • Altered LOC • Cardiopulmonary arrest

HYPOVOLEMIC SHOCK

- An obstetric patient may not demonstrate compensatory increase  rate during the early stages of shock which may mislead the practitioner into denial of the diagnosis and delay in the treatment
- Actual changes in vital signs may not occur until one third of the woman's blood volume is lost

SHOCK INDEX (SI)

- Heart rate \div SBP
- SI >0.9 indicated need for blood replacement



QUANTIFICATION OF BLOOD LOSS (QBL)

- Measuring (quantifying) each patient's blood loss is the most accurate way to monitor for OB hemorrhage:
 1. After delivery
 2. During the immediate postpartum time period
 3. And/or if the healthcare provider suspects increased blood loss at any point during the postpartum period
- QBL identifies *early* signs of postpartum hemorrhage
- Classifies the stage of hemorrhage and drives associated interventions



QBL IS
EVIDENCED
BASED
PRACTICE

- Utilizing QBL reduces skill-based errors related to OB hemorrhage by quantifying rather than estimating blood loss
- *Estimating blood loss* results in underestimation by 50% in weights

QBL METHOD

- Have a scale available on unit
- Weigh blood soaked items
- 1 gram = 1 milliliter
- Utilize a dry weight list
- Subtract dry weights from QBL



A large, vibrant pink starburst shape with multiple sharp points, centered on a light gray background. Inside the starburst, the text "Guess the EBL" is written in a clean, white, sans-serif font.

Guess the EBL

PERI PAD



Bed



1,000ml

Bed and Floor Spill



2,000ml

RESPOND



Determine
the
underlying
cause



Utilize
standardized
bundle &
algorithm to
determine
appropriate
interventions



Least
invasive
measures
should be
performed
first

OB HEMORRHAGE MANAGEMENT- STAGE 0 & 1

Appendix C: Obstetric Hemorrhage Care Guidelines: Table Format

	Assessments	Meds/Procedures	Blood Bank
Stage 0	All births		
<ul style="list-style-type: none"> • Risk assessment • Active management of 3rd stage 	<ul style="list-style-type: none"> • Prepare for every patient according to hemorrhage risk factors • Measure quantitative cumulative blood loss for every birth 	<ul style="list-style-type: none"> • Active Management of 3rd Stage • Oxytocin IV infusion or 10u IM 	<ul style="list-style-type: none"> • Medium Risk: T&S • High Risk: T&C 2 U • Positive Antibody Screen (prenatal or current, exclude low level anti-D from RhoGam): T&C 2 U
Stage 1	Triggers: CBL ≥ 500mL vaginal / ≥ 1000 mL cesarean with <i>continued bleeding</i> <u>or</u> Signs of concealed hemorrhage: VS abnormal <u>or</u> trending (HR ≥ 110, BP ≤ 85/45, O2 sat < 95%, shock index 0.9) <u>or</u> Confusion		
<ul style="list-style-type: none"> • Activate hemorrhage protocol • Rule out hemorrhage causes besides atony 	<ul style="list-style-type: none"> • Activate OB hemorrhage protocol and checklist • Notify charge nurse, OB/ CNM, anesthesiologist • VS, O2 Sat q5 min • Record quantitative cumulative blood loss q5-15 min • Careful inspection <u>with good exposure</u> of vaginal walls, cervix, uterine cavity, placenta. If intra-op, inspect broad ligament, posterior uterus and placenta. 	<ul style="list-style-type: none"> • IV Access: Minimum 18 gauge • Increase IV fluid (LR) and oxytocin rate • Fundal/bimanual massage • MOVE ON to 2nd level uterotonic if no response (see Stage 2 meds below) • Empty bladder: Straight cath or Foley with urometer 	<ul style="list-style-type: none"> • Convert to High Risk and take appropriate precautions <p>Consider T&C 2 Units PRBCs <i>where clinically appropriate if not already done</i></p>

OB HEMORRHAGE MANAGEMENT- STAGE 2 & 3

<p>Stage 2</p>	<p>Triggers: <i>Continued bleeding w/ CBL < 1500 mL or VS remain abnormal</i></p>		
<ul style="list-style-type: none"> • Sequentially advance through medications and procedures • Mobilize team and blood bank support • Keep ahead with volume and blood products • Determine source of bleeding including concealed hemorrhage 	<ul style="list-style-type: none"> • OB to bedside • Mobilize team: 2nd OB, OB Rapid Response, assign roles • Continue VS & record cumulative quantitative blood loss q5-15 min • Complete evaluation of vaginal wall, cervix, placenta, uterine cavity • Send additional labs including DIC panel • If in Postpartum: Move to L&D/OR • Evaluate for special cases: <ul style="list-style-type: none"> - Uterine inversion - Amniotic fluid embolism 	<ul style="list-style-type: none"> • 2nd Level Uterotonic: <ul style="list-style-type: none"> - Methylergonovine 0.2mg IM (<i>if no HTN</i>) <u>or</u> - Carboprost 250 mcg IM (<i>if no asthma</i>) <u>or</u> <i>Only if hypertensive and asthmatic</i> - Misoprostol 800 mcg SL • 2nd IV access (minimum 18 gauge) • Bimanual/uterine massage • TXA 1 gram - may repeat in 30 min • Vaginal: (typical order) <ul style="list-style-type: none"> - Move to OR - Repair any tears - D&C: r/o retained placenta - Place intrauterine balloon • Intra-op Cesarean: (typical order) <ul style="list-style-type: none"> - Inspect broad ligament, posterior uterus, and placenta - Uterine sutures - Place intrauterine balloon - Uterine artery ligation 	<ul style="list-style-type: none"> • Notify Blood Bank of OB hemorrhage • Bring 2 Units PRBCs to bedside, consider use of Emergency Release products (un-crossmatched) and transfuse per clinical signs – <i>do not wait for lab values</i> • Use blood warmer for transfusion Consider activating MTP if there is <u>continued bleeding</u>
<p>Stage 3</p>	<p>Triggers: <i>Continued bleeding with CBL > 1500mL or > 2 units PRBCs given or abnormal VS or Suspicion of DIC</i></p>		
<ul style="list-style-type: none"> • Initiate Massive Transfusion Protocol • Invasive surgical approaches 	<ul style="list-style-type: none"> • Expand team <ul style="list-style-type: none"> - Advanced GYN surgeon - 2nd anesthesia provider - OR staff - Adult intensivist • Repeat coags & ABGs • Central line 	<ul style="list-style-type: none"> • Selective embolization (IR) • Laparotomy <ul style="list-style-type: none"> - Uterine sutures - Uterine artery ligation - Hysterectomy • Patient support <ul style="list-style-type: none"> - Warmer for IV fluids - Upper body warming device - SCDs 	<ul style="list-style-type: none"> • Activate Massive Transfusion Protocol Transfuse aggressively • Near 1:1 PRBC: FFP • 1 PLT apheresis pack per 4-6 units PRBCs



**GENERAL
MANAGEMENT –
EARLY
INTERVENTIONS**

Assess source and initiate source specific interventions

Initiate resources (RRT, ME, OB Team, etc.)

Vitals Q15mins or more

Assess signs of shock

Ensure IV access and start fluids

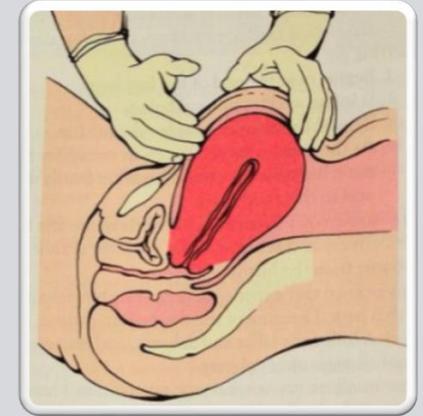
Accurate I/O and EQBL

Anticipate labs

Consider MFM consult

Additional steps vary by cause

ASSESS POSSIBLE SOURCE: **TONE**



ASSESSMENTS:

1. Uterus:

- Firm/boggy, midline/deviated, fundal height

2. Bladder:

- Distended, voiding

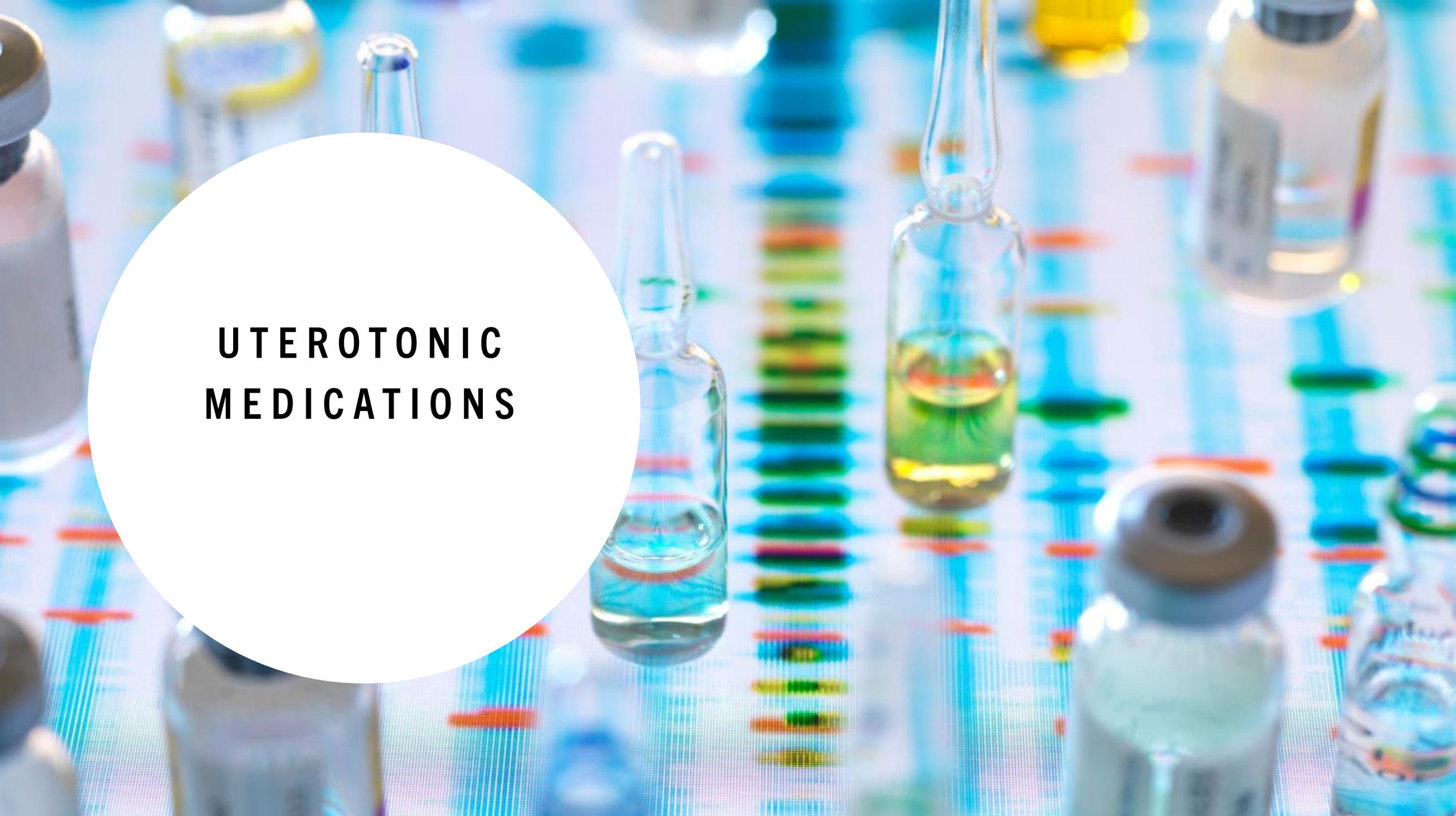
INTERVENTIONS:

1. Continuous Uterine Massage
2. Empty Bladder
3. Uterotonic Administration
4. If atony persists, move onto late interventions

UTERINE MASSAGE



- Lower hand should support the lower uterus just above the symphysis pubis
- Cup the upper hand over the fundus and massage
- Can be very uncomfortable
- Support the patient by:
 - Explaining the purpose
 - Assisting with breathing and relaxation techniques



**UTEROTONIC
MEDICATIONS**

FIRST-LINE AGENT: OXYTOCIN (PITOCIN)

- Side effects: water intoxication, nausea and vomiting
- Contraindications: none for PPH
- Dosage:
 - IV: 10-40 units/500-1000 mL solution at 500ml/hour
 - IM: 10 units
 - Do not administer IV push
- Nursing Considerations:
 - Continuous fundal massage until uterine tone achieved and vaginal bleeding WNL

SECOND-LINE AGENT: METHERGINE

- Side effects: hypertension, hypotension, nausea, vomiting, headache
- Contraindications: hypertension, preeclampsia, cardiac disease
- Dosage:
 - 0.2 mg IM q2-4hr up to five doses
 - If no response after first dose, it is unlikely that additional doses will be of benefit
 - May also be given intrauterine or oral
- Nursing Considerations: check BP before administering, do not give if BP >140/90 mmHg; continuous fundal massage until uterine tone achieved and vaginal bleeding WNL

SECOND-LINE AGENT: HEMABATE

- Side effects: headache, nausea and vomiting, fever, chills, tachycardia, hypertension, significant diarrhea
- Contraindications: avoid with asthma or hypertension
- Dosage:
 - 250 mcg IM or intra-myometrial q15-90min up to eight doses
 - No IV administration
 - If no response after several doses, it is unlikely that additional doses will be of benefit
- Nursing Considerations: continuous fundal massage until uterine tone achieved and vaginal bleeding WNL

MISOPROSTOL - CONSIDER FOR PT WITH ASTHMA & HTN

- Side effects: headache, nausea, vomiting, diarrhea, fever, chills
- Contraindications: none
- Dosage:
 - 600 mcg orally or
 - 800 mcg sublingually
- Nursing Considerations: continuous fundal massage until uterine tone achieved and vaginal bleeding WNL

NON UTEROTONIC MEDICATION: TRANEXAMIC ACID (TXA) LYSINE ANALOG & ANTIFIBRINOLYTIC AGENT

- Adjunctive treatment *not* a primary treatment
- Side effects: nausea, vomiting and diarrhea
- Contraindications: women with a clear contraindication to antifibrinolytic therapy including known thromboembolic event during pregnancy, history of coagulopathy, active intravascular clotting, or known hypersensitivity to TXA
- Dosage:
 - Initial: 1g (100mg/ml) IV at 1ml/min
 - Second: 1g (100mg/ml) IV at 1 ml/min, if bleeding has not stopped in 30 min or if bleeding resumes w/in 24 hours after first dose
- Nursing Considerations: administered slowly as an IV injection over 10 minutes; do not mix with blood for transfusion, solutions containing penicillin, or mannitol; should be given within 3 hours of birth; Do not initiate TXA more than 3 hours after birth, unless being used for bleeding that restarts within 24 hours of completing the first dose

**ASSESS
POSSIBLE
SOURCE:
TRAUMA**

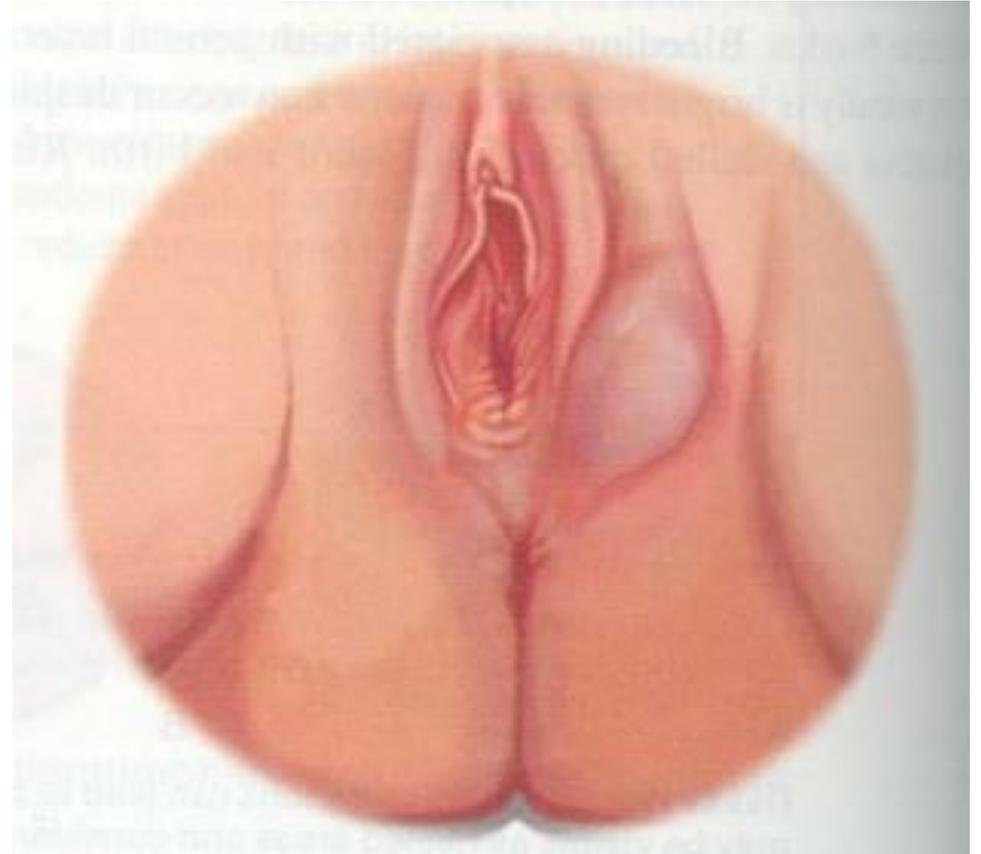
- Suspected if the uterus is firm & contracted but excessive bleeding still present
- Incomplete or unrepaired lacerations or episiotomy?
- Hematoma?
 - Localized collection of blood the soft or connective tissue under the skin without injury to the overlying tissue
 - May be a result of inadequate hemostasis at the site of incision or laceration repair

HEMATOMA

- Can be vaginal, vulvar, perineal, subperitoneal, intraperitoneal, retroperitoneal

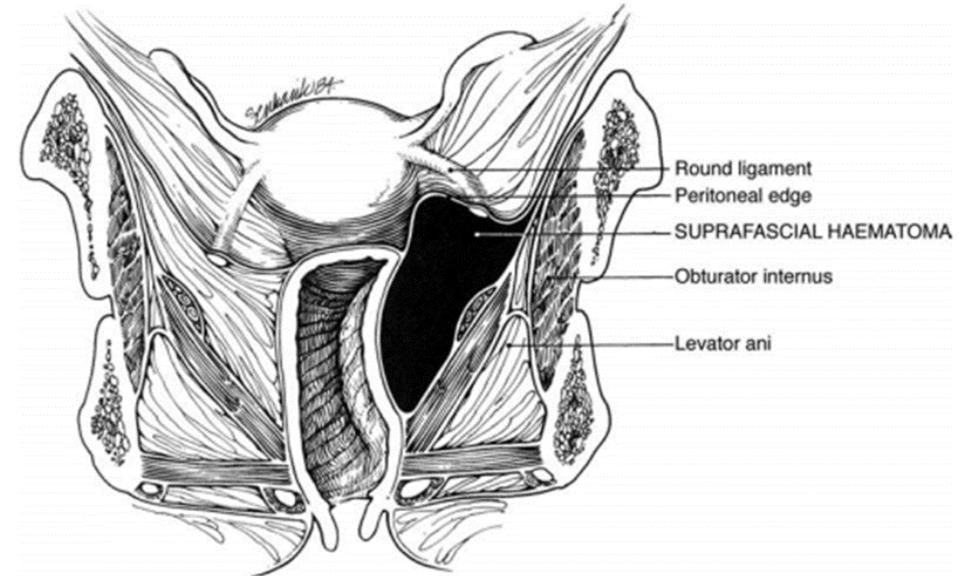
Signs & Symptoms:

- Extreme labial, rectal, pelvic pressure or pain
- Bluish, bulging area just under the skin surface
- Firm to palpation
- Restlessness
- Difficulty voiding
- Vital sign deterioration



HEMATOMA - TREATMENT

- Conservative measures for <3cm and nonexpanding:
 - Ice
 - Analgesics
 - Heat after 24 hrs (absorption of blood)
- Progressive enlargement and/or vital sign changes
 - Incision and drainage
 - Prophylactic antibiotics



ASSESS POSSIBLE SOURCE: TISSUE

Retained placenta is the most common cause of late hemorrhage

- Placenta intact at delivery?
- Incomplete placenta results in poor uterine tone despite intervention
- Removal is necessary (manual removal or curettage)

**ASSESS
POSSIBLE
SOURCE:
THROMBIN**

- Can be a cause or serious complication of postpartum hemorrhage
- DIC, Idiopathic thrombocytopenia, purpura, von Willebrand disease
- Signs & symptoms:
 - Petechiae
 - Ecchymosis
 - Prolonged bleeding from gums & IV sites
 - Uncontrolled bleeding during delivery
 - Tachycardia
 - Acute renal failure
 - Convulsions/Coma

GENERAL MANAGEMENT – LATE INTERVENTIONS

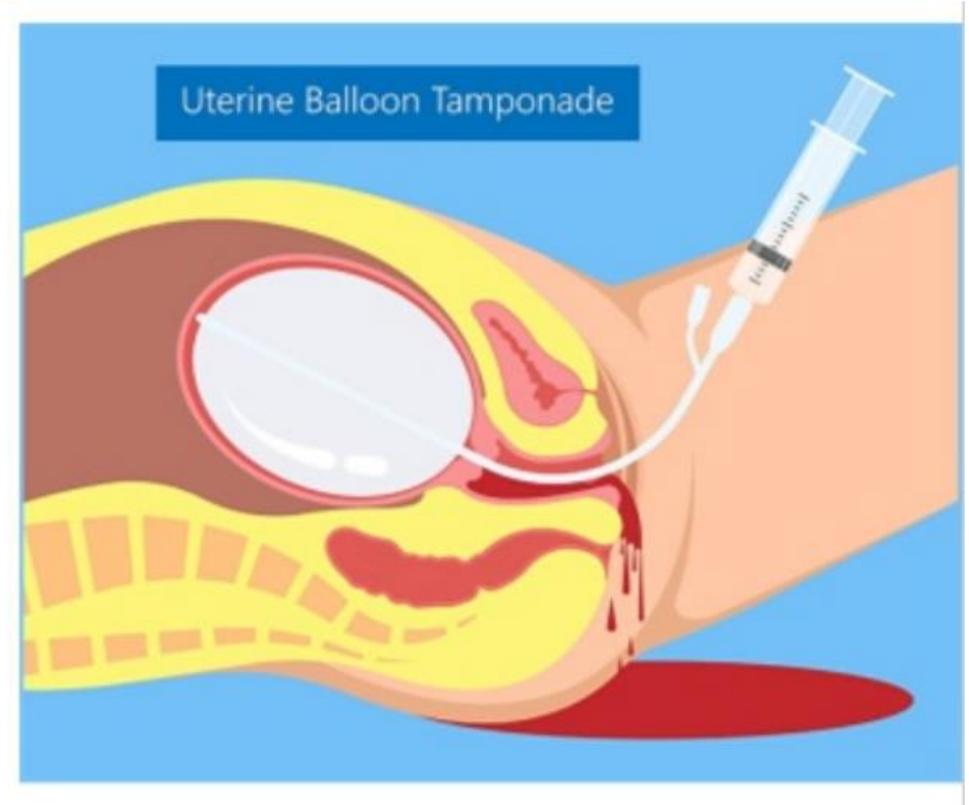
1. Supplemental O2
2. Repeat labs
 - PT & PTT will not change until the fibrinogen level is 150-100
 - May want to suggest Cryoprecipitate therapy sooner if fibrinogen levels are low
3. Blood replacement therapy
 - Uncontrolled bleeding - consider initiating massive transfusion protocol
4. Anticipate further management
 - Uterine tamponade (Bakri)
 - Jada system
 - Surgical intervention

COMMONLY USED BLOOD PRODUCTS

Blood Product	Information	Volume p/Unit	Expected Lab Changes
Packed red blood cells (PRBCs)	Improves O ₂ carrying capacity and provides volume	200-240 ml/unit	Increases Hgb by approx. 1g/dl or Hct by 3% per unit transfused
Fresh frozen plasma (FFP)	Contains all coagulation factors; given to replaced clotting factors	200-250 ml/unit	Increases fibrinogen 10 mg/dl per unit transfused
Platelets	Random donor platelets (RDPs); replaces platelets	Platelets (RDP) should contain $>5.5 \times 10^{10}$ platelets in 50 ml/unit plasma. Usually 4-10 units RDPs are pooled prior to transfusion. Number of RDPs in the pool x50 ml plasma.	Increases count 7,000-10,000/mm ³ per RDP unit transfused
Cryoprecipitate	Replaces fibrinogen	4-10 units, each unit provides ≥ 150 mg of fibrinogen	Ten-unit pack would increase fibrinogen level by approx. 75 mg/dl

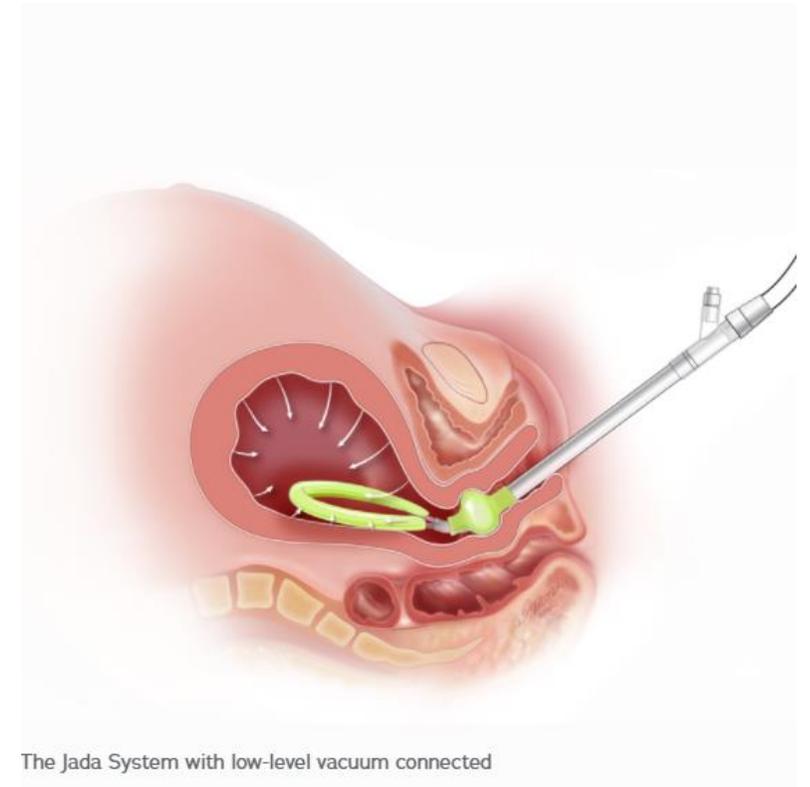
TAMPONADE BALLOON

- Manually placed inside the uterus and filled with normal saline
- Helps to tamponade the uterus to reduce bleeding
- Reduces the need for more invasive procedures
- Doesn't require an operating room for placement
- Most are placed with U/S



JADA SYSTEM

- Uses consistent gentle vacuum to induce uterine contractions
- Stops OB hemorrhage in approximately 3 minutes
- Placed vaginally
- Soft silicone loop containing 20 vacuum pores to evacuate blood
- Expandable cervical seal is filled with fluid to hold system in place
- Connector at the end of the tube is connected to low level vacuum source
- Vacuum is left in place for minimum of 1 hour
- Leave system in place for minimum 30 mins after suction discontinued



PREVENTING HYPOTHERMIA

- Increasing the temperature in the room
- Cover woman's body including her head with warm blankets
- Remove any wet linens
- Keep IV solutions in a readily accessible warming cabinet
- Use IV fluid/blood warmers
- Utilize rapid infusion systems
- Use of “Bair hugger” warming device



<https://images-na.ssl-images-amazon.com/images/I/31MQ733a8iL.jpg>

DEBRIEFING



Recommended after OB hemorrhage events



Performed once patient is stable and ASAP after event to facilitate accurate recall



Designated time



Appropriate environment



Brief – 15 mins or less



Utilize checklist

DEBRIEFING CHECKLIST

IMMEDIATE FOCUSED POSTPARTUM HEMORRHAGE (PPH) DEBRIEF FORM

For quality improvement (QI) processes only.
Follow hospital QI policies regarding recording the patient's name and medical record number.

Date of the event: _____

Form completed by: _____

Type of event: Please check one.
Postpartum Hemorrhage Stage 2 Stage 3

Description: A quick focused debrief immediately after an event helps capture important lessons learned and identify areas for needed improvement.

Facilitator Guidelines:

1. RN and MD partner as facilitators. (Primary RN is responsible for calling the debrief. Ensure that the family is debriefed and debrief is recorded).
2. Blame-free and shame-free session
3. No interruptions or side conversations

Clinical Debrief Guidelines:

- Conduct a team debrief for ALL stage 2 or 3 postpartum hemorrhages and other emergencies as indicated.
- Empower all team members who cared for the patient to participate.
- Keep the debrief short, maximum of 15 minutes. Be as specific as possible.
- Conduct the debrief as soon possible once the patient is stabilized.
- The RN debrief leader should follow up with the family.
- Learn from debriefs by sharing what went well and any concerns.

Debrief Attendees: Indicate the number (#) of team members that attended the debriefing.

#	RN debrief attendees	#	Provider debrief attendees	#	Anesthesia and Pediatric debrief attendees (MDs and RNs)	#	Support staff debrief attendees
	Primary RN		Primary MD (MFM, OB, FP)		Neonatology/Pediatrics MD		Unit Secretary/Clerk
	Nurse Manager or Supervisor		OB Resident(s)		Anesthesia Provider		OB Scrub/Surgical Tech
	Charge RN		Certified Nurse Midwife		NICU RN		Other Departments
	Other RN		Other		Other		Clergy or Social Worker

Overall Team Management: Check all that apply.

RECOGNITION				READINESS			
Risk and Hemorrhage Identification	Performed Well	Needs Improvement	Comments	Resources and Equipment	Performed Well	Needs Improvement	Comments
1. Were ongoing PPH risk assessments performed on admission, pre- and post-birth?	<input type="checkbox"/>	<input type="checkbox"/>		1. Was there adequate staffing on the unit?	<input type="checkbox"/>	<input type="checkbox"/>	
2. Was there prompt recognition of the emergency?	<input type="checkbox"/>	<input type="checkbox"/>		2. Were necessary supplies and/or equipment available?	<input type="checkbox"/>	<input type="checkbox"/>	
				3. Were additional supplies and/or equipment easily accessible?	<input type="checkbox"/>	<input type="checkbox"/>	
RESPONSE							
Teamwork and Clinical Management	Performed Well	Needs Improvement	Comments	Medications, Blood Loss, and Blood Administration	Performed Well	Needs Improvement	Comments
1. Was the team mobilized in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>		1. Were the appropriate uterotonic medications given?	<input type="checkbox"/>	<input type="checkbox"/>	
2. Were appropriate clinical decisions followed as per the hemorrhage policy?	<input type="checkbox"/>	<input type="checkbox"/>		2. Was blood loss quantified by direct measurement?	<input type="checkbox"/>	<input type="checkbox"/>	
3. Were other interventions, e.g., tamponade balloons, B-Lynch suture utilized in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>		3. Were blood products administered in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>	
4. Was additional support requested and obtained in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>		4. Was blood readily available?	<input type="checkbox"/>	<input type="checkbox"/>	
Team and Family Communication	Performed Well	Needs Improvement	Comments	Additional Comments	Performed Well	Needs Improvement	Comments
1. Did team members communicate important or critical information in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>		1.	<input type="checkbox"/>	<input type="checkbox"/>	
2. Were the patient and family informed and the team's plan of care communicated?	<input type="checkbox"/>	<input type="checkbox"/>		2.	<input type="checkbox"/>	<input type="checkbox"/>	
3. Did the team meet the patient's and family's spiritual and emotional needs?	<input type="checkbox"/>	<input type="checkbox"/>		3.	<input type="checkbox"/>	<input type="checkbox"/>	

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