Nationwide Children's
When your child needs a hospital, everything matters.

Obstetric Hemorrhage Clinical Pathway
Emergency Department

Center for Clinical Excellence

Precipitous Delivery

Request assistance with the newborn:
- Vocera "Code Pink Team" and state "Code Pink in ED"
- Call the ECC at 614-722-2222 (x22222)

- IV access X 2
- O2 to keep sats > 95%
- Pharmacy to bedside
- Page GYN attending
- Initiate transfer to adult facility with obstetric capability

If BP ≥ 160 mmHg systolic or ≥ 110 mmHg diastolic

see *Obstetric Hypertensive Emergency Clinical Pathway*

After anterior shoulder delivered:
- Oxytocin 10 units IM or IV via premixed bag continuous infusion, to help prevent bleeding
- Normal saline 100 mL/hour

Vigorous uterine massage for at least 15 seconds after delivery

Continued bleeding after Oxytocin and fundal massage and/or concern for uterine atony?

No → Proceed with transfer to adult facility with obstetric capability

Yes

Rapid Response

Appropriate for continued bleeding even with normal HR and BP

- **Request OB hemorrhage Supply Kit**
- Ensure IV access x 2
- Level 1 Trauma Labs
- Urinary catheter
- Continue vigorous uterine massage
- Keep patient warm
- Request 2 units PRBCs from blood bank

Give all (unless contraindicated)
- Oxytocin (Pitocin) *infusion*
- Misoprostol PR
- Methylergonovine (Methergine) IM
  Avoid with HTN, Pre-eclampsia
- Carboprost (Hebamate) IM
  Avoid with asthma or cardiac/pulmonary/renal disease

Continued bleeding?

No → Collaboration with GYN regarding transfer to adult facility versus admission to NCH

Yes

- **Emergent transfer to OR with GYN**
- Consider TXA
- Give 2 units PRBCs
- Activate MTP *Obstetric Release*

Obstetric Hemorrhage Clinical Pathway for Maternal Fetal Medicine Unit

Stage 0: All Births	Assess obstetric hemorrhage risk on admission, during labor, on transfer	→ Administer Oxytocin IV infusion or Oxytocin 10 units IM after anterior shoulder is delivered for each birth	→ Vigorous uterine massage for at least 15 seconds after delivery	→ Verify Type and Screen or Type and Crossmatch based on obstetric hemorrhage risk	↓
Stage I Blood Loss C-Section greater than 1000 mL Vaginal 500-999 mL	Request Help Request OB Hemorrhage Supplies/Meds VS & O2 Sat q 5 min Cumulative QBL q 5-15 min O2 to keep Spo2 above 95%	→ Ensure 16G/18G IV Increase IV Crystalloid Rate Insert urinary catheter Vigorous uterine massage Administer uterotonics Optimize visualization Keep patient warm	→ Confirm type and crossmatch 2 units RBC with blood bank	→ Call/Prepare **OR** if clinically indicated	↓
Stage II Blood Loss Continued bleeding up to 1500 mL or after 2 or more uterotonics in addition to routine Oxytocin	Request additional help Start second IV Draw STAT CBC, coagulation and fibrinogen level	→ Cumulative QBL q 5-10 min Continue Stage I Meds Consider TXA Keep patient warm Call/Prepare OR if not done Consider uterine balloon	→ Call blood bank and request and administer 2 units RBC- **DO NOT WAIT FOR LABS**	→ **Move to OR** & Prep for: compression/B-Lynch suture, uterine artery ligation, hysterectomy	↓
Stage III Blood Loss Continued bleeding greater than 1500 mL or greater than 2 units packed red blood cells or at risk for occult bleeding/ coagulopathy or any patient with abnormal vital signs/labs/oliguria	If not in OR/ED, call a Code Blue Obstetric Announce clinical status Administer Stage I Meds Consider TXA	→ Call blood bank and activate OB Release MTP. If clinical coagulopathy add cryoprecipitate/other agents	→ **Move to OR if not already there.** Intervention based on etiology and escalate interventions to achieve hemostasis.		↓
Stage IV Cardiovascular collapse with massive hemorrhage, profound hypovolemic shock, or amniotic fluid embolism	If not in OR/ED, call a Code Blue Obstetric Give ACLS Meds Keep patient warm	→ **Transport to OR if not already there**	Immediate surgical intervention to ensure hemostasis		

Uterotonics & TXA

For continued bleeding after initial Oxytocin (Pitocin) dose, give the following medications (unless contraindicated) simultaneously. Oxytocin (Pitocin) infusion

- Methylergonovine (Methergine)
- Carboprost (Hebamate)
- Misoprostol

Drug Name	Dose/Route	Mechanism	Adverse Effects	Contraindications
Oxytocin (Pitocin)	• 30 units in 500 mL normal saline bolus 5 units (500 mL per hour) over 10 minutes followed by continuous IV at 70 milliunits/MIN (70mL per hour) for 6 hours • 10 units IM or IV via premixed bag continuous infusion	Contraction of myometrium leading to decreased blood flow	• IV push at high doses – hypotension • IV push may be associated with MI • Water intoxication after prolonged use	• Allergy to oxytocin • If cardiovascular risk factors IV bolus dose should be given over at least 5 minutes
Methylergonovine (Methergine)	• 0.2 mg IM q 2-4 hours • 0.2 mg IVP over 1-2 minutes **for life-saving use only** and with BP monitoring	Vasoconstriction and smooth muscle contraction	• Hypertension • Nausea and vomiting • Diarrhea, diaphoresis, cramping, headache • Dizziness, bradycardia or tachycardia	• Hypertension or pre-eclampsia • Notify MD prior to admin for BP >140/90
Carboprost (Hemabate)	• 0.25 mg IM • May repeat every 15-90 minutes • Total dose should not exceed 2 mg (8 doses of 0.25 mg)	Increases number of oxytocin receptors and causes vasoconstriction	• Severe bronchospasm • Nausea and vomiting • Diarrhea • Shivering • Fever • Chills	• Avoid in asthma • Avoid in patients with active cardiac, pulmonary, hepatic, or renal disease
Misoprostol (Cytotec)	• RECTAL: 600-800mcg	Generalized smooth muscle contraction	• Nausea and vomiting • Shivering • Diarrhea • Fever	• Allergy to prostaglandins
Tranexamic acid (TXA)	• 1 gram in 100 mL IV over 10 minutes • Additional 1 gram administered at 30 minutes if bleeding persists *For continued bleeding after uterotonics*	Inhibits breakdown of fibrin and fibrinogen	• Nausea/vomiting • Thromboembolism • High doses (not recommended in OB); gastrointestinal adverse effects and seizures	• Significant renal impairment • Active thrombotic disease such as DVT, PE, and cerebral thrombosis

PPH kits and medication Pyxis locations: H5A-MFM, H2B1, OR-Main, D-PACU, ED-Green, LCED-A

ED Algorithm MFM Algorithm

Escalation of Care & Transfer

Escalation of Care

- Decreased BP and tachycardia can be late signs of circulatory compromise. Initiate rapid response for continued bleeding even with normal vital signs.
- OB Release Massive Transfusion Protocol (MTP)
- If uterine atony, consider uterine tamponade balloon, prepare for compression/B-Lynch suture, uterine artery ligation and hysterectomy as indicated

Transfer

- Transfer to accepting facility **as soon as** patient is stable for transport and transport is available

ED Algorithm

MFM Algorithm

Definitions & Clinical Signs

Postpartum Obstetric Hemorrhage is defined as the cumulative blood loss of greater than or equal to 1,000 mL or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours following the birth process.

Specific Causes: The 4 T's

- Tone: Uterine Atony
- Tissue: Retained Products of Conception
- Trauma: Hematomas, Lacerations
- Thrombin: Coagulopathy

Clinical Alarm Findings

- Cumulative quantified or estimated blood loss of greater than 500 mL for vaginal delivery or greater than 999 mL after a Cesarean delivery
- Soaking through more than 1 pad per hour or a blood clot larger than an egg
- Signs and symptoms of hypovolemia

ED Algorithm

MFM Algorithm

Key References

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Quality Measures

- Time from recognition of Obstetric Hemorrhage to first dose of uterotonic (not including standard oxytocin infusion)
- Percent of delivered patients requiring greater than/equal to 4 Units of blood
- Percent of delivered patients requiring hysterectomy during delivery encounter

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Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associates with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

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