OBSTETRIC EMERGENCIES

START/INITIAL STEPS FOR EMERGENCIES:

- **Call**
- **LEADER** designates
  - **Checklist reader**
  - **Time Keeper + Scribe**
  - **Patient & Family Communicator**

IMPORTANT CONTACTS

- Code blue:
- RRT:
- Blood bank:
- Anesthesia

Interventional Radiology:
Trauma surgery

1. ALTERED MENTAL STATUS
2. AMNIOTIC FLUID EMBOLISM
3. ANAPHYLAXIS
4. ARRHYTHMIA
5. CARDIAC ARREST/ACLS
6. DIABETIC KETOACIDOSIS
7. DIFFICULT AIRWAY
8. ECLAMPSIA
9. HEMORRHAGE
10. HIGH SPINAL
11. HYPERTENSIVE EMERGENCY
12. LOCAL ANESTHETIC SYSTEMIC TOXICITY
13. MAGNESIUM TOXICITY
14. RESPIRATORY DISTRESS
15. SEPSIS
16. SHOULDER DYSTOCIA
17. TRANSFUSION REACTION
18. UTERINE INVERSION

Version 2; 10/22/2022

UNC HEALTH SM

ALTERED MENTAL STATUS (AMS)

CARD **1**

PRESENTATION: delirium, obtundation, coma, confusion

START:

- ☐ Call for help
- ☐ Stop all sedating medications
  - Magnesium
  - Epidural/PCA
- ☐ Bring code cart

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Vital signs with SpO2 every 5 minutes
- ☐ Obtain FHR
- ☐ Evaluate, maintain airway (anesthesia)
- ☐ Ensure adequate venous access
- ☐ Review recent medications
- ☐ Fingerstick glucose
- ☐ Stroke assessment
- ☐ Draw STAT labs

STROKE ASSESSMENT:

- Pupils
- Facial droop: show teeth, show smile
- Arm drift: eyes closed, extend arms, palm up x10 secs
- Speech: say "you can't teach old dogs new tricks"
- Sudden onset severe (thunderbolt) headache
- If suspect stroke, RRT will activate Brain Attack Team (BAT)

LABORATORY STUDIES:

- CBC, CMP, Ca/Mg/Phos, serum alcohol level
- ABG + lactate
- Urine Studies: UA, UDS, urine ketones

DRUG DOSES AND TREATMENTS:

Naloxone
- Dose: 0.4 mg IV once as needed for RR <6 or reduced dosing per anesthesia (full doses may case severe pain and/or withdrawal, lower doses may be indicated in the absence of respiratory arrest).
- Can be repeated: every 3 mins

Dextrose
- Dose: 12.5 gm of 50% Dextrose 50 ml soln IV q10 min PRN low blood sugar, recheck blood glucose q5 mins or until awake

Glucagon
- Dose: 1 mg IV
- Can give SQ and IM if no IV

DIFFERENTIAL DIAGNOSIS:

- Acidosis (Hemorrhage/Sepsis)
- Cerebrovascular Accident (CVA)
- Eclampsia (Card 8)
- Endocrine (Card 6 for DKA)
- Medication
  - Benzodiazepine/Opioid
  - Local Anesthetic Systemic Toxicity (Card 12)
  - Magnesium Toxicity (Card 13)
- Metabolic
- Posterior Reversible Encephalopathy Syndrome (PRES)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

Version 2; 10/22/2022

AMNIOTIC FLUID EMBOLISM

CARD **2**

PRESENTATION: Sudden hypoxia and hypotension, often followed by coagulopathy, in relation to labor and delivery; cardiac arrest

START:

If pulseless, START CPR (Adult ACLS, see Card #)

- ☐ *Call Code Blue*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Bring code cart & cesarean tray
- ☐ Place backboard under patient
- ☐ Ensure adequate venous access above diaphragm
- ☐ Stop all sedating medications
- ☐ Ensure manual uterine displacement
  - Consider perimortem cesarean delivery
    - **GOAL: Incision by 4 mins, delivery <5 mins**
- ☐ Consider VA-ECMO with refractory cardiac arrest or severe RV failure

Hemorrhage/DIC

- ☐ Activate MTP and thaw cryoprecipitate
- ☐ See Card 9 for hemorrhage steps

RV Failure

- ☐ Consider ionotrophic & vasopressor support
- ☐ Consider pulmonary vasodilators
- ☐ Minimize fluid administration
- ☐ Consider CVC & invasive BP monitoring

ADDITIONAL STUDIES:

- ECHO - TTE/TEE
- Portable chest X-Ray
- CT-Chest or V/Q scan when stable
- 12 lead ECG

DRUG DOSES AND TREATMENTS:

Vasopressor:
- Epinephrine Dose: 0.01-1 mcg/kg/min
- Norepinephrine Dose: 0.05-3.3 mcg/kg/min

Inotropes:
- Dobutamine Dose: 2.5-5 mcg/kg/min
- Milrinone Dose: 0.25-0.75 mcg/kg/min

Inhaled nitric oxide
- 40 Parts Per Million
- Call 'NCCC RT' on Vocera

VA-ECMO
- Page Trauma or ask Code Blue team for ECMO team

DIFFERENTIAL DIAGNOSIS:

- Anaphylaxis (Card 3)
- Eclampsia (Card 8)
- High Spinal (Card 10)
- Local anesthetic toxicity (Card 12)
- Myocardial Infarction
- Pulmonary embolism
- Respiratory Distress (Card 14)

LABORATORY STUDIES:

- ABG/Lactate
- BNP
- CBC
- CMP
- Coags & Fibrinogen
- LFTs
- Troponin
- Tryptase

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

Version 2; 10/22/2022

ANAPHYLAXIS

CARD **3**

PRESENTATION: rash, facial edema, respiratory distress, hypotension, vomiting

START:

- ☐ *Call for help*
- ☐ *Stop all medications*
- ☐ *Bring code cart*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Vital signs (every 5 minutes) and FHR
- ☐ Administer epinephrine
- ☐ Evaluate, maintain airway
- ☐ Administer 100% O2 via non-rebreather
- ☐ Ensure two18g IV for access
- ☐ Consider left uterine displacement
- ☐ Administer fluid bolus
- ☐ Prepare operating room for possible delivery

Hypotension:

- ☐ Administer 1-2L rapidly. Repeat as needed
- ☐ Repeat epinephrine
- ☐ Consider secondary medications

Respiratory distress/hypoxia:

- ☐ Intubate for evidence of impending airway obstruction from angioedema
- ☐ Maintain saturation with 100% O2 via non-rebreather 8-10L/min
- ☐ Albuterol via nebulizer

LABORATORY STUDIES:

- Tryptase (immediately, 4 hours, and 18-24 hours post-reaction)
- CBC
- BMP
- ABG
- Glucose

DRUG DOSES AND TREATMENTS:

FIRST LINE TREATMENT

Epinephrine (1 mg/mL)
- Dose: 0.3-0.5mg IM (autoinjector if available)
  0.01-0.1mg IV (anesthesia only)
- Repeat every 5-15 minutes as needed
- Infusion should be initiated for severe or refractory symptoms (0.1 mcg/kg/min)

SECONDARY MEDICATIONS

Albuterol
- Dose: 2.5mg via nebulizer

Diphenhydramine
- Dose: 25-50mg IV every 4 hours as needed

Famotidine (H2 blocker)
- Dose: 20mg IV

Methylprednisolone
- Dose: 125mg IV

Vasopression
- Dose: 1-2U bolus for refractory hypotension, 0.04U/hr for infusion

DIFFERENTIAL DIAGNOSIS:

- Acute asthma exacerbation
- Pulmonary edema
- Pulmonary or amniotic fluid embolism
- Transfusion reaction (Card 17)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report
- Add allergen to patient's EMR

STOP

Version 2; 10/22/2022

ARRHYTHMIA

CARD **4**

PRESENTATION: Hypotension, signs of shock, ischemic chest pain, acute mental status change, acute pulmonary edema

START:

- ☐ *Call for help*
- ☐ *Code card and cesarean tray immediately available*
- ☐ **LEADER** designates
  - **Checklist reader**
  - **Time Keeper + Scribe**
  - **Patient & Family Communicator**
- ☐ *If pregnant, open OR for possible cesarean*
- ☐ Position patient left lateral decubitus
- ☐ Administer oxygen
  - o Oxygen facemask – high flow, even with normal O2 saturation
  - o Continuous pulse oximetry
- ☐ Ensure fetal monitoring
- ☐ Ensure IV access, 2 large bore IVs above diaphragm
- ☐ Obtain EKG – Rule out sinus tachycardia
  - o If SVT, can attempt carotid massage or adenosine bolus while preparing cardioversion
  - o Treat underlying cause of sinus tachycardia
- ☐ Consult cardiology & notify of plans for cardioversion
- ☐ Cardioversion – Apply pads
  - o Sedate patient – Anesthesia management
  - o Turn on defibrillator
  - o Set to SYNCHRONIZED mode
  - o Confirm spike on R wave confirming sync, adjust as needed
  - o Set appropriate level
  - o Press CHARGE – Do not touch patient
  - o Press and hold SHOCK
  - o Check monitor
    - Persistent tachycardia – Increase energy
    - Re-engage SYNC after each shock
  - o If cardiac arrest, card 5

DRUG DOSES AND TREATMENTS:

Adenosine

- Dose: 6 mg IV rapid push, then 20 mL 0.9% NaCl flush immediately after & elevation of extremity
- Repeat 2 additional doses of 12 mg if needed
- Max: 3 doses (30 mg)

DIFFERENTIAL DIAGNOSIS: H'S & T'S

EKG Findings	Conditions
Narrow, regular	SVT, Sinus tachycardia
Narrow, irregular	A-fib, A-flutter, multifocal atrial tachycardia
Wide, regular	Ventricular tachycardia
Wide, irregular	A-fib with pre-excitation, A-fib with aberrancy, polymorphic V tach/Torsades de pointes (may precipitate Ventricular fibrillation)

BIPHASIC CARDIOVERSION ENERGY

Condition	Energy Level Progression
Narrow, regular	50J/100J/150J/200J
Narrow, irregular	120J/150J/200J*
Wide, regular	100J/150J/200J
Wide, irregular	Treat as VF - 200J (see card 6)

*** Do not convert without considering risk of embolic stroke**

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

CARDIAC ARREST

PRESENTATION: pulseless ventricular tachycardia/fibrillation, pulseless electrical activity, aystole

GOAL: PERIMORTEM CESAREAN DELIVERY WITHIN 5 MINUTES FOR >20 WEEKS GESTATION

- Fetal monitoring should NOT guide timing of delivery

START:

- ☐ ***Call for help – Code Blue***
- ☐ **Begin CPR, Do Not Delay**
- ☐ *Bring code cart & cesarean section tray*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Position patient supine on backboard
  - o Manual uterine displacement
- ☐ Establish venous access above diaphragm (humeral IO if no IV access)
- ☐ Draw STAT labs
- ☐ **STOP** sedating medications, epidural, and/or inhalational agent
  - o If on magnesium, give calcium gluconate/chloride
- ☐ **Proceed with ACLS algorithm - See next page**
  - o 100 compressions per minute (rotate every 2 mins)
  - o 2 breaths every 30 compressions (1 every 6 secs if intubated)
  - o Place AED and assess rhythm
  - o Pulse and rhythm check (every 2 mins)
  - o Administer epinephrine
- ☐ **CONSIDER PERIMORTEM CESAREAN DELIVERY**

DEFIBRILLATON – V-FIB/V-TACH:

- Turn on defibrillator and set on DEFIB mode, 120J
- Press CHARGE, do not touch patient, press SHOCK
- Increase to 200J for next shock if no response

DRUG DOSES AND TREATMENTS:

Epinephrine (0.1mg/mL)
- Dose: 1 mg IV/IO every 3-5 minutes

Amiodarone – Refractory VT/VF
- Dose: 300 mg IV/IO, then 150 mg IV/IO

Magnesium sulfate – Torsades de Points
- Dose: 2 grams IV/IO

Sodium bicarbonate (8.4%) – consider for pH <7.2
- Dose: 50 mEq x 1

DIFFERENTIAL DIAGNOSIS: H'S & T'S

Hydrogen (Acidosis)	Thrombosis (coronary/pulmonary)
Hypo/hyperkalemia	Toxins
Hypo/hyperthermia	Tamponade
Hypoxia	Tension pneuomothorax
Hypoglycemia	Trauma

Anaphylaxis (Card 3), *Difficult Airway* (Card 7), *Hemolytic Transfusion Reaction* (Card 17), *Hemorrhage* (Card 9), *LAST* (Card 12), *Magnesium Toxicity* (Card 13), *Opioid Overdose* (Card 1), *Sepsis* (Card 15)

LABORATORY STUDIES:

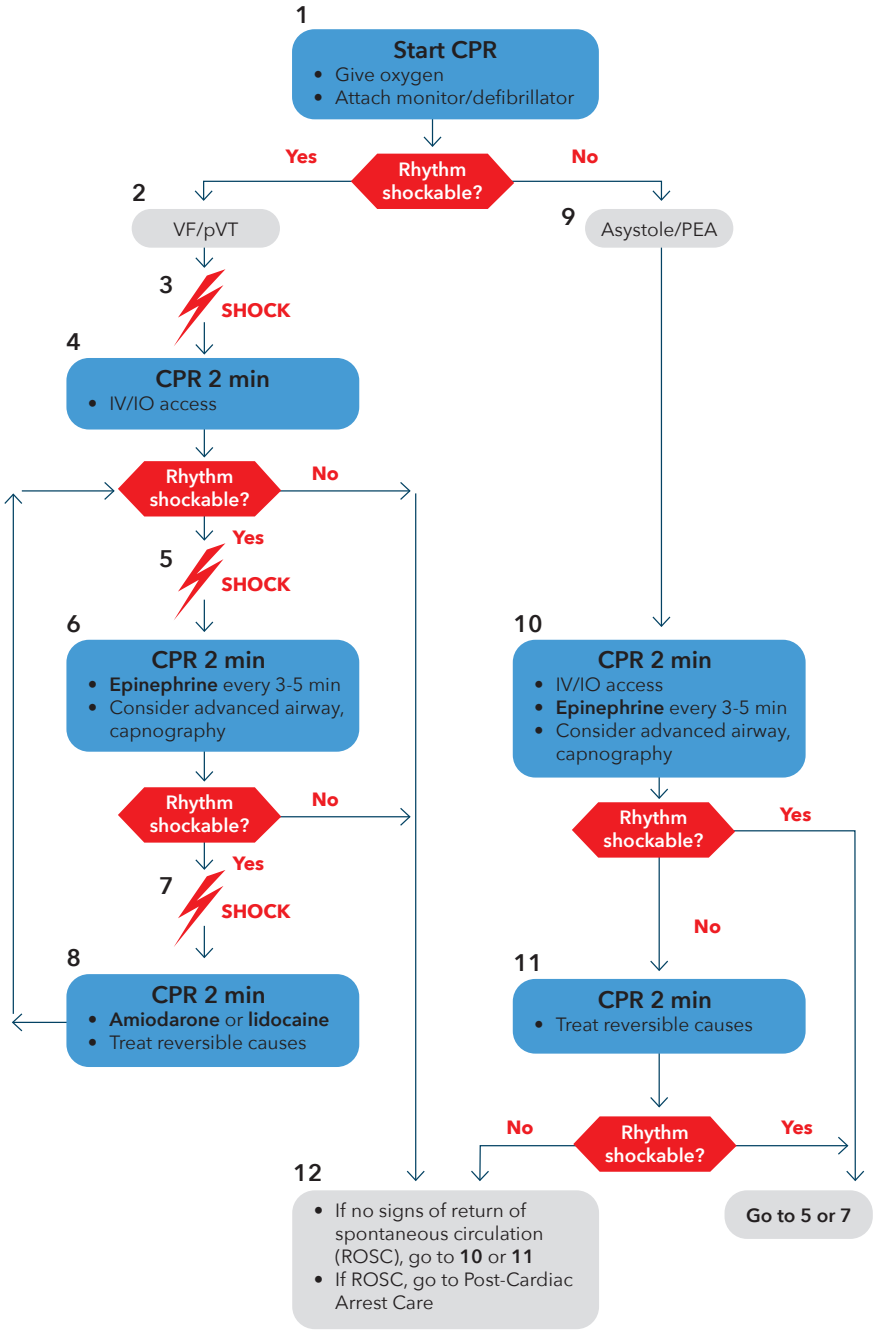
- Arterial Blood Gas
- Complete Metabolic Panel
- Complete Blood Count
- Fibrinogen
- PT/PTT/INR
- Urine Drug Screen

**Consider BNP, blood cultures, magnesium level, troponins, serum tryptase*

POST-EVENT PLANNING:

- Maternal echocardiography – TTE or TEE
- Order STAT chest X-ray & 12 lead ECG
- Consider arterial line
- Initiate targeted temperature management (TTM)
- Transfer to ICU
- Communicate with family

CONTINUED ON NEXT PAGE



CPR QUALITY:

- Push hard (at least 2 inches [5 cm] and fast (100-120/min) and allow complete chest recoil.
- Minimize interuptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If $PETCO_2$ <10 mm Hg, attempt to improve CPR quality.
- Intra-arterial pressure
  - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

SHOCK ENERGY FOR DEFIBRILLATION:

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

DRUG THERAPY:

- **Epinephrine IV/IO:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO:** First dose: 300 mg bolus.
  Second dose: 150 mg.
  – OR –
  Lidocaine IV/IO dose: First dose 1-1.5 mg/kg.
  Second dose: 0.5-0.75 mg/kg.
  – Max: 3mg/kg

ADVANCED AIRWAY:

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

RETURN OF SPONTANEOUS CIRCULATION (ROSC):

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

STOP

2018 American Heart Association Focused Update on Advanced Cardiovascular Life Support Use of Antiarrhythmic Drugs During and Immediately After Cardiac Arrest, 2018

Version 2; 10/22/2022

DIABETIC KETOACIDOSIS

CARD 6

PRESENTATION: nausea, vomiting, abdominal pain, lethargy, confusion, hypotensive, Kussmaul breathing

START:

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ *Call for help*
- ☐ Draw STAT labs
- ☐ EKG
- ☐ MICU and/or endocrinology consultation
- ☐ Initiate fluid repletion
- ☐ Continuous electronic fetal monitoring
- ☐ If viable, arrange for crash delivery cart
- ☐ Update family/patient

LABORATORY STUDIES:

- CMP and anion gap, CBC with differential
- Serum glucose and ketones
- Urinalysis
- Plasma osmolality
- ABG with lactate
- Consider: Urine, sputum, and blood cultures, serum lipase/ amylase on case-by-case basis

ADDITIONAL STUDIES:

- EKG
- Consider: Chest X-ray

DIFFERENTIAL DIAGNOSIS:

- Starvation/Alcohol Ketoacidosis
- Anion gap acidosis (uremia, salicylate/ethylene glycol/methanol toxicity, etc)
- Metabolic encephalopathy
- Rhabdomyolysis

FLUID AND ELECTROLYTE REPLETION

Fluid Repletion – in hypovolemic patients (without shock and heart failure), use **isotonic saline at 15-20 ml/kg/hr** for 2-3 hours. After the second or third hour, optimal fluid replacement depends upon the state of hydration, serum electrolyte levels, and the urine output.
- In patients with hypovolemic shock, isotonic saline should be infused as quickly as possible!

Potassium – initiate immediately if K <5.3 mEq/L as long as urine output is adequate. Maintain a K in the range of 4-5 mEq/L
- If K < 3.3 mEq/L → give IV KCl 20-40 mEq/hr
- If K between 3.3 and 5.3 mEq/L → give IV KCl 20-30 mEq/L

Insulin – Initiate regular insulin in patients with moderate-severe DKA who have a K>3.3 mEq/L per protocol in unit.
- **Delay insulin if K below 3.3 mEq/L** to prioritize fluid and potassium replacement.

DELIVERY CONSIDERATIONS

Fetal heart rate tracings are often non-reactive or non-reassuring in DKA. **Delivery should be DEFERRED as correction of DKA can result in resolution of a concerning tracing.**

The team should deliver in the event of:
- Terminal bradycardia
- Worsening fetal status despite improving maternal status

Decisions regarding thresholds for urgent/emergent delivery ought to be made with OB nursing, OB anesthesia, and NCCC.

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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DIFFICULT AIRWAY

CARD **7**

PRESENTATION: Failure to intubate, unable to see cords or pass the ETT into the trachea

START:

- ☐ *Call for help*
  - *Consider calling for surgical backup*
- ☐ Bring airway tower

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Establish effective mask ventilation
  - Ensure 100% oxygen
  - Optimize positioning
  - Consider airway adjunct (oral/nasal)
  - 2 handed mask
  - Increase APL valve

Consider:

- Changing laryngoscope blade
- Reducing ETT size (6.0 mm)
- Bougie
- Intubating LMA
- Video laryngoscope/fiberoptic
- Changing provider (most experience)

If unable to ventilate:

- ☐ Place supraglottic airway/LMA
- ☐ If ventilation successful -> assess maternal/fetal status and consider continuing with SGA device or facemask ventilation
  - Other options:
    - Intubating LMA
    - Fiberoptic intubation (+/- awake)
    - Awaken patient (delay surgery v neuraxial)

Can't intubate, can't ventilate:

- ☐ Establish surgical airway (cricothyrotomy/tracheostomy)
- ☐ Consider awakening the patient

DRUG DOSES AND TREATMENTS:

Suggamadex Dose:
- 16 mg/kg (emergent reversal of Rocuronium)

DIFFERENTIAL DIAGNOSIS:

- Bronchospasm
- Mainstem intubation
- Equipment malfunction

LABORATORY STUDIES:

- ABG/Lactate

ADDITIONAL STUDIES:

- Consider portable chest X-Ray
- Consider POCUS - Lung

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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ECLAMPSIA

CARD **8**

PRESENTATION: New-onset tonic-clonic, focal, or multifocal seizures in the absence of other causative conditions

START:

- ☐ *Call for help*
- ☐ **LEADER** designates
  - **Checklist reader**
  - **Time Keeper + Scribe**
  - **Patient & Family Communicator**
- ☐ Position patient left lateral decubitus
  - o Raise bed rails
- ☐ Support airway
  - o Oxygen facemask – high flow
  - o Continuous pulse oximetry
- ☐ Ensure two18g IV for access
- ☐ Draw STAT labs
- ☐ Magnesium sulfate IV
  - o (IV preferred)
- ☐ Control severe hypertension, using OB IP Management of Hypertension order set (card 11)

Additional Considerations:

- ☐ Ensure fetal monitoring
- ☐ Consider lorazepam and and stat paging neurology if still seizing
- ☐ Place Foley catheter
- ☐ *If pregnant, open OR for possible cesarean*

LABORATORY STUDIES:

- Drug screen, magnesium level (if already on magnesium infusion), CBC, CMP, T+S, PT/PTT/INR
- Urine studies: urinalysis, toxicology, fentanyl, oxycodone
- ABG if oxygen saturation below 92%

FETAL MANAGEMENT:

- Expect fetal bradycardia 3-5 minutes
- If fetal bradycardia persists for 10 minutes despite maternal resuscitation, proceed with emergent cesarean

DRUG DOSES AND TREATMENTS:

Magnesium

- Dose IV: 6 g IV over 30 minutes
- Infusion: 2 grams IV per hour
- Recurrent eclampsia: 2 gram IV over 5 minutes
- Dose IM: 5 g IM in each buttock
  (use ONLY if IV access is not available)

Lorazepam

- Dose: 4 mg IV once
- Repeat dose in 2-5 minutes

MAGNESIUM CRITICAL CONSIDERATIONS:

- **Contraindications: myasthenia gravis**
- Dosing modifications for renal insufficiency:
  - o Bolus is unchanged
  - o Cr 1.0 to 1.5: decrease maintenance dose to 1 gram/hour
  - o Cr >1.5: administer bolus, do not give maintenance dose
  - o Severe renal failure: discuss with MFM and ICU teams
  - o Oliguria: <30mL/hr for 4 hours: decrease maintenance dose to 1 gram/hr
  - o Obtain magnesium levels every 4 hours

DIFFERENTIAL DIAGNOSIS:

- Magnesium toxicity (Card 13)
- Local anesthesia toxicity (Card 12)
- Seizure disorder (consider neurology consult)
- Altered Mental Status (Card 1)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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HEMORRHAGE

CARD 9

PRESENTATION: QBL >1000 mL *with ongoing bleeding* or signs of concealed hemorrhage

START:

- ☐ *Call for help*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

STAGE 0:

QBL 500-1000 cc with ongoing bleeding at vaginal birth

- ☐ Discuss bleeding with patient and family
- ☐ Fundal massage
- ☐ Determine etiology and treat
- ☐ Ensure two large bore IV for access
- ☐ Draw labs (Ensure T&S and ABO confirmatory)
- ☐ Start 1 liter Lactated Ringers bolus
- ☐ Bedside uterine ultrasound
- ☐ Empty bladder

Medications:
- ☐ Ensure oxytocin is infusing
- ☐ Uterotonics, avoid contraindicated meds
- ☐ Address pain control

Blood Bank:
- ☐ T&C 2 units pRBC

STAGE 1:

QBL >1000 mL with normal vital signs and lab values

- ☐ Critical pause, identify leader
- ☐ Call OB FAST HEMORRHAGE and activate PPH narrator
- ☐ Vital signs q5 minutes
- ☐ Transfer to L&D if on different floor
- ☐ Determine etiology and treat
- ☐ Keep patient warm
- ☐ If atony unresponsive, place Bakri or Jada

Medications:
- ☐ Ensure oxytocin is infusing
- ☐ Uterotonics, avoid contraindicated meds
- ☐ Give TXA

STAGE 2:

QBL less than 1500ml AND HR >110, BP <85/45, O2 Sat < 95%

- ☐ Critical pause (If in OR, anesthesia led)
- ☐ Report QBL every 5-10 minutes
- ☐ Interventions not performed in prior stages
- ☐ Discuss with patient and family

Medications:
- ☐ Continue uterotonics, avoid contraindicated meds
- ☐ Repeat TXA 30 minutes after first dose

Blood Bank:
- ☐ Transfuse per vital signs and QBL, do not wait for lab results
- ☐ Thaw 2 units FFP

POSSIBLE INTERVENTIONS:

- Consult OB (if applicable)
- Laceration repair
- Packing of hematoma
- Bakri balloon
- Jada device
- Exploratory laparotomy
- Compression suture/B-Lynch suture
- Uterine artery ligation
- Hysterectomy
- Interventional Radiology

DIFFERENTIAL DIAGNOSIS

- Tone (i.e., atony)
- Trauma (i.e., laceration, rupture)
- Tissue (i.e., retained products)
- Thrombin (i.e., coagulopathy)

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STAGE 3:

QBL > 1500 mL OR >2 units PRBCs given OR unstable VS OR suspicion of DIC

- ☐ Critical pause, identify leader
- ☐ Move to OR if not already there
- ☐ Place patient in lithotomy
- ☐ Interventions not performed in prior stages
- ☐ Call in surgical backup
- ☐ Consider cell saver
- ☐ Warm patient and warm room to 70 degrees
- ☐ Arterial line
- ☐ Calcium repletion
- ☐ Consider central venous catheter
- ☐ Consider intubation
- ☐ Redose preoperative antibiotics
- ☐ Consider ICU consult/bed request

Blood Bank:

- ☐ Initiate Massive Transfusion Protocol
- ☐ Thaw cryoprecipitate
- ☐ Consider any interventions not performed in Stage 2

STAGE 4:

Hypovolemic shock

- ☐ Critical pause, identify leader
- ☐ Immediate surgical intervention (hysterectomy)

Medications:

- ☐ ACLS

Blood Bank:

- ☐ Simultaneous aggressive MTP
- ☐ Add cryoprecipitate for each round of massive transfusion

DRUG DOSES:

Use available Pyxis Kit:
Postpartum Hemorrhage Medical Center
Avoid contraindicated medications

Methylergonovine (Methergine)

- Dose: 0.2 mg IM, may repeat every 2 hours
- Max: 5 doses
- **Contraindications: hypertension**

Misoprostol (Cytotec)

- Dose: 1000 mcg PR (may also give buccal or sublingual)
- Max single dose: 1000 mcg

Carboprost (Hemabate)

- Dose: 250 mcg IM, may repeat every 15 minutes
- Max: 8 doses
- **Contraindications: asthma**

Tranexamic Acid (TXA)

- Dose: 1 gram IV over 10 minutes, may be repeated once after 30 minutes
- May be given as an infusion under direction from anesthesia

LABORATORY STUDIES:

- CBC, PT/PTT/INR, fibrinogen, ABG, lactate

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report
- Discuss epidural removal plan
- **Cancel MTP**

HIGH SPINAL

CARD **10**

PRESENTATION: Dyspnea, weak grip, respiratory compromise, hypoxemia, hypotension, cardiac arrest

START:

- ☐ *Call for help*
- ☐ *Code cart immediately available*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ **STOP** epidural infusion
- ☐ *If pregnant, open OR for possible cesarean*
- ☐ Elevate head of bed
  - o Left uterine displacement
- ☐ Ensure two large bore IVs for access
- ☐ High flow oxygen via facemask
- ☐ Treat bradycardia – atropine, glycopyrrolate, EPINEPHrine
- ☐ Treat hypotension – IV fluids, phenylephrine, EPINEPHrine
- ☐ If absence of pulse, start CPR (card 5)

FETAL MANAGEMENT:

- Once stable, start fetal monitoring
- If non reassuring fetal monitoring persists for 10 minutes despite maternal resuscitation, proceed with stat cesarean delivery

DRUG DOSES AND TREATMENTS:

IF BRADYCARDIA:

Atropine
- Dose: 0.5 mg IV/IM every 3 minutes
- Max: 3 mg

Glycopyrrolate
- Dose: 0.1 mg IV every 3 minutes

IF HYPOTENSION:

Consider:
- Phenylephrine
- EPHEDrine

DIFFERENTIAL DIAGNOSIS:

- Amniotic fluid embolism (Card 2)
- Asthma exacerbation
- Hemorrhage (Card 9)
- Local anesthesia toxicity (Card 12)
- Magnesium toxicity (Card 13)
- Massive pulmonary embolism
- Pneumothorax
- Pulmonary edema
- Sepsis (Card 15)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

HYPERTENSIVE EMERGENCY

CARD **11**

PRESENTATION: Persistent blood pressure ≥ 160 systolic or ≥ 110 diastolic

START:

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

Identify elevated BP, check cuff and repeat in 15 minutes.

If persistent:

- ☐ Notify provider immediately
- ☐ Notify charge nurse
- ☐ Establish IV access, if difficulty obtaining, administer oral antihypertensives
- ☐ Administer escalating short acting antihypertensives
- ☐ Administer escalating long acting antihypertensives
- ☐ Consider magnesium sulfate for seizure prophylaxis
- ☐ Draw STAT labs
- ☐ If fetus is viable, initiate fetal monitoring

LABORATORY STUDIES:

- CBC, CMP, urine protein: creatinine ratio, PT/PTT/INR

DRUG DOSES AND TREATMENTS:

SHORT ACTING ANTIHYPERTENSIVE MEDICATION:

Labetalol
- Dose: 20 → 40 → 80 mg mg IV escalating every 10 minutes
- Max 24 hour dose: 300 mg
- Contraindication: pulse <60 bpm, moderate persistent asthma, heart failure

Hydralazine
- Dose: 5-10 mg IV → 10 mg IV escalating every 20 minutes
- Max 24 hour dose: 25 mg

Nifedipine immediate release (IR)
- Dose: 10 → 20 → 20 mg PO every 20 minutes
- Max 24 hour dose: 180 mg

LONG ACTING ANTIHYPERTENSIVE MEDICATION:

Labetalol
- Dose: 200 mg PO escalating doses every 8 to12 hours
- Max single dose: 800 mg
- Max 24 hour dose: 2400 mg

Nifedipine extended release (XL)
- Dose: 30 mg PO every 24 hours
- Max 24 hour dose: 120 mg

CRITICAL CONSIDERATIONS:

- Transfer patient to L+D for closer monitoring if repetitive dosing is required
- For refractory severe hypertension, consult cardiology, establish telemetry, nicardipine vs esmolol drip, transfer to ICU

STOP

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LOCAL ANESTHESIA TOXICITY

CARD **12**

PRESENTATION: Tinnitus, metallic taste, circumoral numbness, alterned mental status, seizures, hypotension, bradycardia, ventricular arrthymias, cardiovascular collapse

START:

- ☐ *Call for help – Code Blue with cardiac arrest*
- ☐ **Call for intralipid kit**
  - o Administered by anesthesia

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ If pregnant, open OR for possible cesarean
- ☐ Establish airway, consider endotracheal intubation
- ☐ Establish 2nd IV and initiate fluid bolus
- ☐ Assess
  - o Obtain vital signs (every 5 mins)
  - o Continuous fetal heart rate monitoring
  - o Physical exam
  - o Fetal monitoring

If hypotensive:

- ☐ Administer EPINEPHrine

If seizing:

- ☐ Administer benzodiazepine

If pulseless:

- ☐ Start CPR (card 6)

DRUG DOSES AND TREATMENTS:

Lipid Emulsion
- Dose: Bolus 1.5 mL/kg IV
  - o Then start infusion at 0.25 mL/kg/min
- If remains unstable, repeat bolus and double infusion.
- Max dose 12 ml/kg
- Located in top of regional carts & core OR Pyxis ('fat emulsion')

EPINEPHrine
- Reduced code dose epinephrine (<1 mcg/kg IV)

Lorazepam
- Dose: 2 mg IV/IM over two minutes every 10 minutes
- Max: 4 mg

CRITICAL CONSIDERATIONS:

- May require prolonged resuscitation (>1 hr)
- Consider invasive monitoring (A-line)
- AVOID: vasopressin, calcium channel blockers, beta blockers, and local anesthetics
- Consider perimortem cesarean delivery (PMCD) in cardiac arrest
- Consider cardiopulmonary bypass if refractory to treatment
- Once stable, continue lipid emulsion ≥ 15 mins

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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MAGNESIUM TOXICITY

CARD **13**

PRESENTATION: loss of reflexes, respiratory depression, cardiac arrest in a patient on magnesium sulfate

START:

- ☐ *Call for help*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Bring code cart outside the room
- ☐ Stop magnesium sulfate infusion and all sedating medications/infusions (including epidural)
- ☐ Obtain vital signs (every 5 mins) and physical exam
- ☐ Administer calcium gluconate IV per provider discretion
- ☐ Left lateral positioning
- ☐ Maintain fetal monitoring (if applicable)
- ☐ Cardiorespiratory supportive measures PRN
- ☐ Draw STAT Labs
- ☐ EKG
- ☐ *If pregnant, open OR for possible cesarean*
- ☐ Update family/patient

LABORATORY STUDIES:

- Serum magnesium level
- CBC, CMP, PT/PTT/INR, Fibrinogen
- ABG with lactate

ADDITIONAL STUDIES:

- EKG
- Chest X-ray

MAGNESIUM SULFATE TOXICITY

mEq/L	Signs/Symptoms
7-10	Loss of DTRs
10-13	Respiratory Paralysis
>15	Cardiac Arrhythmias
>25	Cardiac Arrest

Therapeutic Mg Level: 4.8-8.4

DRUG DOSES AND TREATMENTS:

Calcium gluconate

- **(Location: L&D Pyxis 1 (by OR), 3WH Pyxis, and 6WH Pyxis 1)**
- Dose 1 gram IV over 2 minutes
- May re-dose 1g IV every 10-20 minutes (Max 3g IV in 1 hour)
- For those with cardiac arrest or severe cardiac toxicity, dose 1.5-3 gram IV over 2 to 5 minutes
- Consider IV administration of furosemide 20-40 mg

If calcium gluconate not available use:

Calcium chloride (Location: Code Cart)

- Dose: 500-1000 mg IV over 2 to 5 minutes

DIFFERENTIAL DIAGNOSIS:

- Altered mental status (Card 1)
- Cardiac arrest (Card 5)
- Eclampsia (Card 8)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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RESPIRATORY DISTRESS

CARD **14**

PRESENTATION: Desaturation, shortness of breath, wheezing

START:

- ☐ *Call for help*
- ☐ Bring Code Cart

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ Place patient on 100% oxygen via non-rebreather
- ☐ Assess
  - o Obtain vitals (every 5 mins until stable)
  - o Physical Exam
  - o Fetal Monitoring
  - o Order STAT ECG and CXR
  - o Consider POCUS TTE and/or Lung exam
- ☐ Consider CT PE protocol
- ☐ Establish IV access
- ☐ Obtain arterial blood gas
- ☐ Consider albuterol nebulizer
- ☐ Consider antibiotics or diuresis if indicated
- ☐ Consider need for ventilatory support

LABORATORY STUDIES:

- Arterial blood gas and lactate
- CBC with differential
- Complete metabolic panel
- Magnesium level
- Troponin
- BNP

DRUG DOSES AND TREATMENTS:

Albuterol
- Dose: 2.5mg via nebulizer, can be given every 20 mins for the first hour in mild to moderate asthma exacerbations

Furosemide
- Acute Pulmonary Edema
- Dose: 20-40mg IV, can be repeated or increased by 20mg every 1-2 hours

DIFFERENTIAL DIAGNOSIS:

- Amniotic Fluid Embolism (Card 2)
- Aspiration
- Asthma Exacerbation
- High Spinal (Card 10)
- Magnesium Toxicity (Card 13)
- Pulmonary Edema
- Pulmonary Embolism
- Pneumonia
- Sepsis (Card 15)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

STOP

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SEPSIS

PRESENTATION: New onset altered mental status, oxygen demand, oliguria, tachypnea, hypotension, febrile, tachycardia

START:

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

- ☐ *Call RRT and Code Sepsis*
- ☐ Place two 18G IVs
- ☐ Draw 2 blood cultures prior to antibiotics
- ☐ Start antibiotics within 1 hour of diagnosis
  - ☐ Use Epic specific tools below for ordering
- ☐ Respiratory support if needed
- ☐ Volume resuscitation on pressure bag
  - ☐ 1-2 L crystalloid in first 2 hours
    If hypotensive or lactate ≥4 mmol/L
  - ☐ Vasopressor if MAP <65 mm Hg
    May consider lower MAP in pregnant patients
- ☐ Continuous external fetal monitoring
- ☐ Consider steroids if <34 weeks for fetal indications
- ☐ Vitals Q 15 minutes
- ☐ Decisions regarding delivery should be made with multidisciplinary team as correction of sepsis can result in resolution of a Category II tracing.
  - ☐ Delivery timing should be individualized based on GA and maternal-fetal status.

EPIC SPECIFIC TOOLS:

- Order set: **Sepsis Inpatient – ADULT**
- Nursing Documentation: **Sepsis Narrator**

DRUG DOSES AND TREATMENTS:

Norepinephrine
- Dose: 0.01-0.1 mcg/kg/min IV

Epinephrine
- Dose: 0.01-0.1 mcg/kg/min IV

LABORATORY STUDIES:

- Lactate
- CBC
- CMP
- Glucose
- PT/PTT/INR
- ABG

OBTAIN CULTURES (AS APPROPRIATE):

- Blood
- Urine
- Sputum
- CSF
- Wound
- Stool

DIFFERENTIAL DIAGNOSIS:

- Amniotic fluid embolism (Card 2)
- Anaphylaxis (Card 3)
- Cardiogenic shock
- Hemorrhagic shock (Card 9)

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report
- Trend lactate if elevated

STOP

Version 2; 10/22/2022

SHOULDER DYSTOCIA

CARD **16**

PRESENTATION: Turtle sign, failure to delivery fetal shoulders

START:

☐ *Call for help*

LEADER designates
- **Checklist reader**
- **Time Keeper + Scribe**
- **Patient & Family Communicator**

☐ **Tell patient to stop pushing and bring stool to bedside**
☐ State out loud the maneuvers being performed
☐ Timekeeper:
  -Notes time of head delivery
  -Notes aloud every 15 seconds that passes
☐ **1st** - McRoberts
☐ **2nd** - Suprapubic Pressure
  - o Delivering clinician notes which direction force should be applied
☐ **3rd** - Delivery of posterior arm, posterior sling, or Gaskins
☐ Reposition patient or breakdown bed if needed
  - o Primary providers should state what maneuvers have been attempted and if a second provider is needed to attempt
☐ Ensure a **second provider** attempts maneuvers, then consider:
  - o Episiotomy if additional access is needed to perform maneuvers
  - o Rubin maneuver
  - o Woods screw maneuver
☐ In rare cases:
  - o Clavicular fracture
  - o Move to the operating room for Zavenelli or abdominal rescue

DELIVERY DOCUMENTATION TO INCLUDE:

- Record in delivery summary that shoulder dystocia occurred
- All present providers
- Which shoulder was anterior
- Time it took to deliver the shoulder
- All maneuvers and orders used
- Birthweight
- Apgar scores
- Cord gases sent
- If infant was moving all extremities after delivery
- Pediatrician called for delivery
- Type of lacerations
- Quantitative blood loss

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report
- Review provider documentation to ensure accuracy

MANEUVERS:

- **McRoberts:** sharp flexion of thighs back against abdomen
- **Suprapubic pressure:** apply pressure above the pubis with palm or fist downward and laterally toward the fetal face/sternum.
- **Posterior arm:** provider places hand in the vagina and delivers posterior arm or hand
- **Rubin maneuver:** provider places hand on the back surface of the posterior fetal shoulder and rotates towards fetal face
- **Woods Screw maneuver:** provider places hand on the front of the posterior fetal shoulder and rotates toward the fetal back
- **Gaskins maneuver:** have the patient move to a hands and knees position and attempt to deliver the baby
- **Posterior Axilla Sling:** provider's fingers are looped through the posterior axilla and apply downward traction
- **Zavanelli Maneuver -** Reverse the cardinal movements of labor and then replace the fetal head into the pelvis and proceed with c/section.
- **Clavicular fracture -** pull the anterior clavicle outward
- **Abdominal rescue –** hysterotomy facilities manual dislodging of anterior shoulder from above.

STOP

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TRANSFUSION REACTION

CARD **17**

PRESENTATION: fever, chills, pruritus, urticaria, wheezing, respiratory distress, chest pain, red colored urine, hyper/hypotension, pink frothy airway secretions

START:

- ☐ *Call for help*
- ☐ *Bring code cart*
- ☐ **LEADER** designates
  - **Checklist reader**
  - **Time Keeper + Scribe**
  - **Patient & Family Communicator**
- ☐ **STOP blood transfusion**
  - Inform blood bank *(Vocera: 'call blood bank')*
- ☐ Establish two -18 gauge PIVs
  - Consider arterial line
- ☐ Order STAT labs (see 'Lab Studies')
  - Return the following to Blood Bank:
    - Blood product bag & tubing from patient
    - 2 labeled pink-tops
    - Completed 'Transfusion Reaction Paper' *(charge RN station)*
- ☐ Order STAT ECG & CXR
- ☐ Consider TTE/TEE
- ☐ Assess vitals (every 5 mins until stable)
- ☐ Continuous fetal monitoring

Critical Considerations:

- Supportive therapy for severe transfusion reactions
- If suspected hemolytic transfusion reaction, maintain UOP >100 ml/hr
- *If ongoing hemodynamic instability from hemorrhage, send emergency release (pink slip) to blood bank for additional product*

DRUG DOSES AND TREATMENTS:

Norepinephrine
- Dose: 0.01-0.1 mcg/kg/min IV

Epinephrine
- Dose: 0.01-0.1 mcg/kg/min IV

LABORATORY STUDIES:

- ABG + lactate
- Blood cultures
- BNP
- CBC + differential
- Complete metabolic panel
- Fibrinogen
- PT/PTT/INR
- Serum tryptase
- **Transfusion Reaction Evaluation**
  - **Prints 2 stickers for 2 pink tops**
- **Urinalysis**

DIFFERENTIAL DIAGNOSIS:

- Amniotic/Pulmonary Fluid Embolism (Card 2)
- Anaphylaxis (Card 3)
- Febrile non-hemolytic reaction
- Hemorrhage (Card 9)
- Hemolytic Transfusion Reaction
- Transfusion-associated circulatory overload (TACO)
- Transfusion-related acute lung injury (TRALI)
- Sepsis (Card 15)
- Simple allergic reaction

WRAP UP

- Determine disposition of patient
- Discuss with family and patient
- Debrief and file safe report

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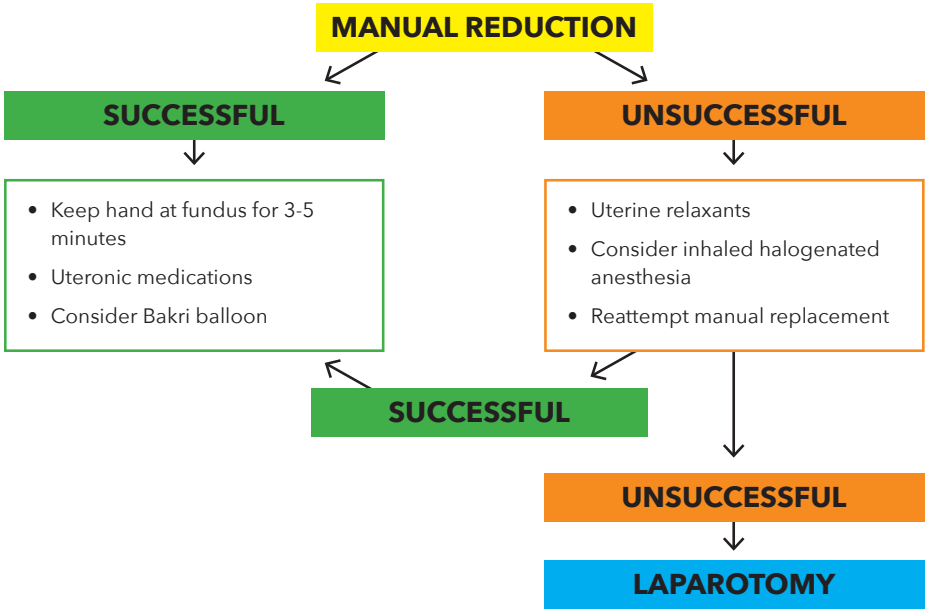
UTERINE INVERSION

CARD **18**

PRESENTATION: Mass in cervix or vagina, inability to palpate fundus abdominally

START:

- ☐ *Call for help*
- **LEADER** designates
  - **Checklist reader**
  - **Time Keeper + Scribe**
  - **Patient & Family Communicator**
- ☐ Discontinue uterotonic medications
- ☐ Obtain hemorrhage kit in room
- ☐ Ensure two large bore IVs
- ☐ Type and cross 2 units packed RBC
- ☐ Consider moving to operating room
- ☐ Obtain vital signs (every 5 mins)
- ☐ EKG leads
- ☐ Bolus regional anesthesia
- ☐ Remove placenta if easily accomplished
  - o If not easy to remove while inverted, leave placenta attached and remove once uterus is reduced



DRUG DOSES AND TREATMENTS:

UTERINE RELAXANTS:

Terbutaline
- Dose: 0.25 mg SQ, may repeat every 20 minutes
- Max: 1 mg in 4 hours

Nitroglycerine
- Dose: 100 mcg IV, may repeat 100 mcg IV if no response
- Max: 200 mcg

UTEROTONICS:

Oxytocin (Pitocin)
- Dose: Bolus 250 milli-units/minute over 1 hour

Methylergonovine (Methergine)
- Dose: 200 mcg IM, may repeat every 2 hours
- Max: 5 doses
- Contraindications: hypertension

Carboprost (Hemabate)
- Dose: 250 mcg IM, may repeat every 15 minutes
- Max: 8 doses
- Contraindications: asthma

Misoprostol (Cytotec)
- Dose: 1000 mcg PR (may also give buccal or sublingual)
- Max single dose: 1000 mcg

ADDITIONAL MEDICATIONS:

Tranexamic Acid (TXA)
- Dose: 1 gram IV over 10 minutes, may be repeated once after 30 minutes
- May be repeated once after 30 minutes

WRAP UP

- Determine disposition of patient
- Debrief
- Update family and patient
- File safe report

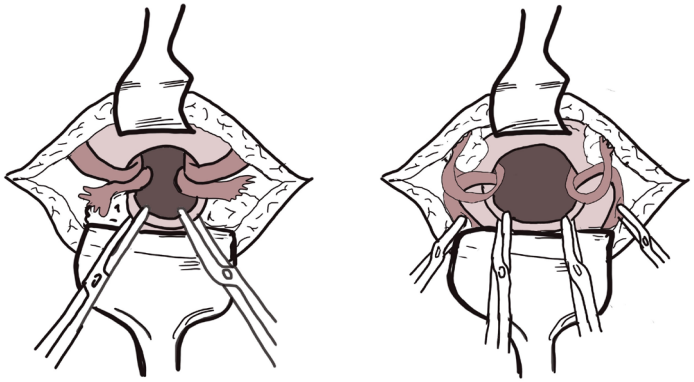
CONTINUED ON NEXT PAGE

UTERINE INVERSION, CONTINUED.

MANUAL REDUCTION:

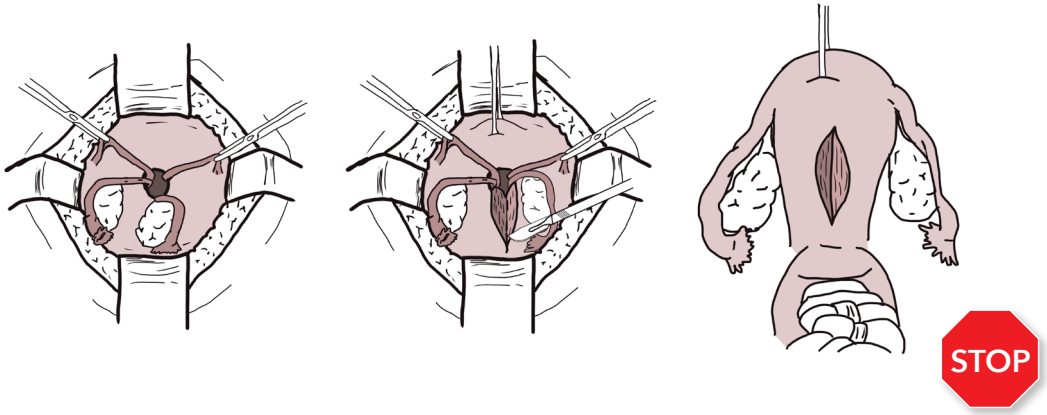
HUNTINGTON PROCEDURE:

- ☐ Abdominal incision
- ☐ Locate cup of the uterus formed by inversion
- ☐ Dilate the constricting cervical ring digitally
- ☐ Stepwise traction on the funnel of inverted uterus or the round ligament with Allis forceps or traction suture
- ☐ Reapply progressively as fundus emerges
- ☐ If unsuccessful, consider Haultain procedure



HAULTAIN PROCEDURE:

- ☐ Make longitudinal incision posterior through uterine wall and constriction ring
- ☐ Reposition the corpus on inverted fundus through vagina by assistant
- ☐ Once the corpus is repositioned, the incision on the posterior uterus must be sutured closed in manner similar to closing classical cesarean delivery



The information in these checklists should not be construed as dictation of patient treatment or procedures. They should be used with appropriate clinical judgement. Each checklist may be adapted to individual hospital resources. Standardization of checklists within an institution is strongly encouraged.

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