PERIPARTUM CARE: HOSPITALIST FOCUSED

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Non-discolosure

- I have no relevant relationships with ineligible companies to disclose within the past 24 months.

PERIPARTUM: BEFORE, DURING, AND IMMEDIATELY AFTER BIRTH

Who’s in charge?

- In most cases: Not you!!

- Typically, after the 1st trimester through the post-partum period, the Obstetrician is the primary physician.
- ALL conditions require fetal monitoring.

When do we get called in?

- Anemia
- Hemorrhage
- Urinary Tract Infection
- Hypertension
- Diabetes
- Hyperemesis Gravidarum
- Preeclampsia
- Pulmonary Embolism
- Surgical site infections
- Endometritis
- Mastitis
- Pelvic thrombophlebitis
- Cardiomyopathy

Pregnancy and breastfeeding-safe medication resources:

- UptoDate
- Lactmed
- Epocrates
- https://www.drugs.com/pregnancy/

Anemia

- Most often physiological anemia of pregnancy (dilutional, not pathological) or iron deficiency anemia (low serum ferritin or transferrin saturation).
- First trimester – Hemoglobin <11 g/dL
- Second trimester – Hemoglobin <10.5 g/dL
- Third trimester – Hemoglobin <11 g/dL
- Postpartum – Hemoglobin <10 g/dL

- Treatment:
  - oral iron for mild anemia for those who tolerate it
  - IV iron for severe anemia, those intolerant to oral iron, or if oral iron is ineffective. ONLY IN SECOND AND THIRD TRIMESTER.

Hemorrhage

- Causes: uterine atony, laceration, hematoma, rupture, retained tissue or placenta accreta spectrum, coagulopathy
- Mostly managed by OB: treatment specific to etiology
- Resuscitation based on quantifying blood loss and clinical picture. Treat by providing IV fluids and blood products.
- Transfusion in stable patient:
  - Typical thresholds
  - <10 g/dL if symptomatic
  - <8 g/dL if preexisting CAD or active acute coronary syndrome (MI)
  - <7 g/dL for most others

Urinary Tract Infection (UTI)

- Asymptomatic bacteriuria should be treated, unlike with non-pregnant females.
- Cystitis: Symptomatic bacteriuria (dysuria, urgency, frequency)
- Pyelonephritis: Upper UTI (fever, flank pain, nausea, vomiting)

- Asymptomatic bacteriuria and cystitis treatment: cefpodoxime, amoxicillin-clavulanate, and fosfomycin, 3-7 days.
- Pyelonephritis treatment: INPATIENT, IV ceftriaxone or piperacillin-tazobactam until afebrile 24-48 hours and symptoms improved, switch to oral based on culture susceptibilities for 7-10 days total.

- AVOID: Nitrofurantoin and Trimethoprim-sulfamethoxazole during the first trimester

Hypertension

- Differentials: chronic hypertension, gestational hypertension, preeclampsia
- Hypertension: Systolic blood pressure ≥140 mmHg, diastolic blood pressure ≥90 mmHg, or both.
- Severe hypertension: Systolic blood pressure ≥160 mmHg, diastolic blood pressure ≥110 mmHg, or both.

- Regardless of etiology, the goal is to gradually decrease blood pressure to 120-140/<90.
- Hypertension treatment: labetalol, extended-release nifedipine, or methyldopa
- Severe hypertension treatment: IV labetalol, IV hydralazine, or oral nifedipine

Diabetes

- Type 1, Type 2, Gestational Diabetes
- Testing typically done routinely at 24-28 weeks for asymptomatic patients.

- Regardless of etiology, goal glucose levels: 70 to 125 mg/dL
- Treatment: diet control, weight management, monitoring of blood sugar 4 times per day (ACHS), titrated insulin

- Note: Metformin can be resumed postpartum even in breastfeeding mothers for Type 2 diabetics.

Hyperemesis Gravidarum

- Meals:
  - eat prior to getting hungry and small snacks every 1-2 hours
  - avoid triggers such as coffee, spicy foods, high-fat, acidic, or sweet foods
  - focus on high-protein, salty, low-fat, bland, dry foods
  - ginger-containing foods
- Medications:
  - Vitamin B6
  - If ineffective, Doxylamine (Unisom) -pyridoxine (Vit B6)
  - If ineffective, dimenhydrinate, meclizine, or diphenhydramine (H2 blockers)
  - Add metoclopramide, promethazine, or prochlorperazine (Dopamine antagonists)
  - Add ondansetron, granisetron, and dolasetron (Serotonin antagonists)
  - Isotonic IV hydration for hypovolemia
  - Electrolyte replacement
  - IV Glucocorticoids for refractory cases

Preeclampsia

- Preeclampsia: hypertension + proteinuria or new onset hypertension + significant end-organ dysfunction with or without proteinuria typically at >20 weeks or postpartum
- Eclampsia: preeclampsia + grand mal seizure
- HELLP syndrome: hemolysis, elevated liver enzymes, low platelets – may not have hypertension or proteinuria, rarely neither

- Symptoms: epigastric, upper abdominal, or retrosternal pain, headache, visual symptoms, mental status changes, stroke, hyperreflexia, seizure, edema, pulmonary edema, placental abruption, oliguria

Preeclampsia (cont.)

- Treatment: DELIVERY
  - Aspirin given for high-risk pregnancies
  - Magnesium sulfate to avoid seizures
  - Blood pressure control to avoid stroke, placental abruption

Pulmonary Embolism

- Use Wells or Geneva criteria – although limited value in pregnancy due to baseline tachycardia and low prevalence of risk factors.
- For those with lower extremity symptoms → lower extremity compression ultrasound
- For those with no lower extremity symptoms → chest X-ray, VQ scan
- If indeterminate: CT pulmonary angiography
- D Dimer of little value due to baseline elevated D Dimer in pregnancy.

- Treatment: LMWH unless contraindicated (renal failure) or high risk for bleeding, then unfractionated heparin is used.
- Thrombolytic therapy should be reserved for pregnant or postpartum patients with life-threatening acute PE.
- AVOID: warfarin, dabigatran, rivaroxaban, apixaban
- Treatment should continue 3-6 months post-partum.
- Note: Warfarin is safe in breastfeeding.

Infections

- C diff Colitis
  - watery diarrhea, lower abdominal pain, cramping, low grade fever, and leukocytosis
  - Treatment: oral fidaxomicin or oral vancomycin

- Surgical site infections: episiotomy site infection, abdominal incision site infection
  - treated with surgical debridement and broad-spectrum antibiotics if cellulitis is present

- Endometritis
  - fever, tachycardia, midline lower abdominal pain, and uterine tenderness
  - non-GBS-colonized treatment: IV Clindamycin or IV Gentamicin
  - GBS-colonized treatment: IV Clindamycin + Gentamicin + Ampicilin or IV Ampicillin-sulbactam

Infections (cont.)

- Septic pelvic thrombophlebitis
  - fever, abdominal pain
  - treatment: IV Clindamycin + Gentamicin or IV Ampicillin-sulbactam

- Mastitis
  - induration, erythema, pain, swelling of breast with associated fever
  - Low risk for MRSA: Dicloxacillin or Cephalexin
  - High risk for MRSA: TMP-SMX or Clindamycin

Cardiomyopathy

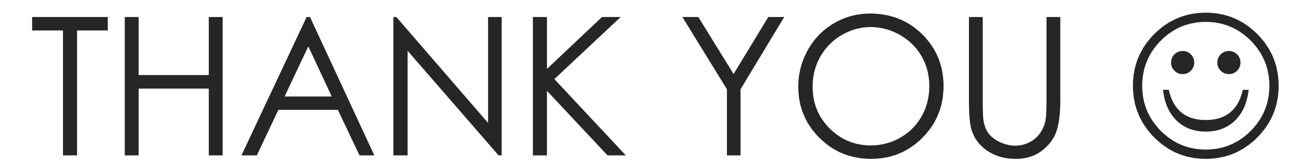
- Diagnostic criteria:
  - development of heart failure at the end of pregnancy or in the months immediately postpartum AND
  - no another identifiable cause AND
  - LV systolic dysfunction with an LVEF <45%
- Symptoms: dyspnea, edema, orthopnea, paroxysmal nocturnal dyspnea
- Diagnostics:
  - EKG: anywhere from normal to non-specific to ischemic
  - Echocardiogram: global LV dysfunction with LVEF <45%
  - CXR if necessary (radiation risk vs. benefit to be considered): pulmonary edema, effusions
  - BNP (brain natriuretic peptide): elevated more than normal in pregnancy
  - NO cardiac catheterization (unlike non-pregnant new-onset heart failure)

Cardiomyopathy (cont.)

- Treatment:
  - Supplemental oxygen
  - Diuretics: loop diuretics preferred (e.g. Furosemide)
  - Beta blockers: Continued if previously taking, not started in new-onset heart failure. Metoprolol preferred (NO Atenolol).
  - ACE-I (e.g. Lisinopril), ARB (e.g. Losartan): avoid in pregnancy due to teratogenic effects. ACE-I can be used safely in breastfeeding as studies have been done (NO ARB).
  - Vasodilator therapy: Hydralazine + Isosorbide dinitrate used when ACE-I not in use. Safe in pregnancy. Switched to ACE-I postpartum as Isosorbide dinitrate has not been adequately studied in breastfeeding.
  - Mineralocorticoid receptor antagonists (e.g. spironolactone): avoid in pregnancy due to teratogenic effects. Spironolactone preferred when breastfeeding.

Cardiomyopathy (cont.)

- Treatment (cont.):
  - Digoxin: Added if above therapies are ineffective. Safe in pregnancy and breastfeeding.
  - If blood pressure is high → IV Nitroglycerin
  - If blood pressure is low → IV Dobutamine, Dopamine, or Milrinone
  - No role for therapeutic anticoagulation.



Questions?