HIGH RISK OB PROTOCOLS

DVT in pregnancy

Diagnosis

Need to have high clinical suspicion.
Lower extremity ultrasound to evaluate for vein compressibility and Doppler flow.

Treatment

Enoxaparin 1mg/kg Q 12hrs

-Discontinue 24hrs prior to delivery if delivery time is predictable.
-If labor occurs spontaneously, do not take next dose as scheduled. The risk for PPH while anticoagulated is not high, however anticoagulated patients are at risk of spinal hematoma with neuraxial anesthesia.

-Restart 6hrs post vaginal delivery, 12 hrs after cesarean section.

-Can transition to warfarin postpartum as it is safe in breastfeeding. Pt should receive both warfarin and enoxaparin for at least 5days. Stop enoxaparin when INR in therapeutic range (2-3) for two consecutive days.

Length of therapy

Continue for at least 6wks postpartum but…
Total duration (pregnancy plus postpartum period) should be 3-6months

** Cost can be prohibitive for some patients as cost of a 80mg dose of enoxaparin is 745 kSh.
If so, option to transition to warfarin after 20wks after much counseling about risks of warfarin in pregnancy

- Warfarin crosses the placenta. Concentrations in fetus are similar to maternal levels
- 1st trimester exposure – risks include limb/bony deformities
- 2nd and 3rd trimester exposure – CNS abnormalities, fetal hemorrhage/death

Diabetes

Screening

- Screen all patients at **first** visit for risk factors
  - Previous history of GDM
  - Pre-pregnancy BMI $\geq$ 25
  - Previous infant $\geq$ 4kg, with congenital anomalies, or unexplained IUFD
  - First degree relative with DM
  - Chronic hypertension
  - PCOS
- If any risk factor, screen at 24-28wks with 2hour OGTT
  - Must be fasting!

Abnormal levels: Fasting >5.1; 1hr > 10.0; 2hr > 8.5
Any **ONE** abnormal value results in diagnosis of GDM

Ultrasound/antepartum surveillance
- If pre-gestational DM and Hgb A1C > 8 early in pregnancy, recommend fetal echo at 20wks.
- If GDM – ultrasound for EFW, AFI every 4wks from 28wks
- weekly CST starting at 32wks

Treatment
- Counseling for diet modification (meals with low glycemic index) and exercise (at least 30min/day, 3x/wk of walking)

Would start metformin concurrently with diet/exercise modifications once GDM diagnosed.

- Metformin 500mg po OD x 1wk, then increase to 500mg po BD
Maximum dose 2500mg per day.

- Pt to check FBS and 1 OR 2hr PP ideally 3x/week
Goal: FBS < 5.3; 1hr postprandial < 7.8; 2hr postprandial < 6.7
- If unable to attain goals, admit for insulin therapy. Outpatient adjustment can be done with consultant input.

- Insulin - MIXTARD (70/30)
Initial starting dose 0.5 units/kg divided 2/3 in AM, 1/3 in PM (before dinner)

- Counsel patient on symptoms of hypoglycemia (fatigue, sweating). Carry sweets/soda and report to hospital immediately. If inpatient, use D50.

Timing of delivery
Diet controlled - IOL by 41+0wks
On medication, WELL controlled – IOL by 40+0
Poorly controlled – admit for insulin management, steroids, and close fetal surveillance, especially if ultrasound with macrosomia/polyhydramnios; deliver when non-reassuring fetal surveillance or after 37+0

Pediatrician to be involved when planning delivery.
Commence breastfeeding without delay.
Neonatal RBS 2-4hrs of life.

Postpartum
Discontinue medications immediately after delivery.
Monitor FBS and 1hr postprandial while inpatient.
FBS at 6wks.

ACOG Practice Bulletin Number 170, 2017
American Diabetes Association

Hypertensive disorders in pregnancy

Screening
- Screen all patients at **every** visit with BP check and urine dip for protein.

Diagnosis

4 major hypertensive disorders in pregnancy
- **Chronic (pre-existing) hypertension** – HTN that precedes pregnancy, usually present before the 20th wk gestation or persists longer than 12wks postpartum
- **Gestational hypertension** – HTN first detected after 20wks gestation in the ABSENCE of proteinuria or other features of preeclampsia
- **Preeclampsia/eclampsia** – new onset HTN in the PRESENCE of proteinuria after 20wks gestation
- **Preeclampsia-eclampsia superimposed on chronic or gestational hypertension** – worsening hypertension with new onset proteinuria or end organ damage in a patient that with previously diagnosed chronic or gestational HTN

Ultrasound/antepartum surveillance
Chronic HTN – ultrasound for fetal growth, AFI, RI in 3rd trimester
Gestational hypertension – ultrasound for fetal growth, AFI, RI in 3rd trimester
Pre-eclampsia without severe features – ultrasound for fetal growth, AFI, RI at time of diagnosis

Treatment

GESTATIONAL HYPERTENSION (NO proteinuria)

Degree of HTN	Mild HTN <150/100	Moderate HTN 150-160 to 160/110	Severe HTN >160/110
Admit to hospital?	No	Yes until BPs controlle	Yes until BPs controlled
Treat?	No	Yes - oral medication	Yes - IV for emergency Then oral to maintain
Test for proteinuria?	Yes	Yes	Yes
Blood tests?	Baseline CBC, LFTs And creatinine	Baseline CBC, LFTs And creatinine	CBC, LFTs, creatinine WEEKLY
Ultrasound	3rd trimester for fetal growth, AFI, RI	3rd trimester Q4wks for fetal growth, AFI, and RI	3rd trimester Q3-4wks for fetal growth, AFI and RI
Follow-up	Q1-2wks	Weekly	Weekly

** ANY NEW ONSET PROTEINURIA CHANGES DIAGNOSIS TO SUPERIMPOSED PRE-ECLAMPSIA and requires admission.

If history of preeclampsia/HELLP/eclampsia in previous pregnancy:
Check baseline urinalysis for protein, creatinine, SGOT/SGPT at first antenatal visit
Aspirin 150mg PO OD and Calcium supplement from 12wks to 36wks

Antihypertensive agents safe in pregnancy

- Methyldopa – start 250mg PO BD; increase every 2days to desired BP. Maximum dose 3000mg/24hrs
- Labetalol (can be found in Nairobi AKH outpatient clinic) start 100mg PO BD, increase by 100mg BID every 2-3days to desired BP. Maximum dose 2400mg/24hrs
- Nifedipine 20mg po BD, increase every 7-14 days, maximum dose 120mg/24hrs
- If patient with chronic hypertension is on HCTZ, may continue in pregnancy

Timing of delivery
Chronic hypertension on medications – 37+0 - 39+0wks
Chronic hypertension on medications, difficult to control – 36+0 – 37+0wks
Gestational hypertension – 37+0 – 38+0wks
Preeclampsia without severe features – 37+0 wks
Preeclampsia with severe features – deliver at time of diagnosis if > 34+0wks; if preterm, finish steroids and any worsening disease

Postpartum
Slowly wean off medications to maintain desired BP unless chronic hypertensive

ACOG Hypertension in Pregnancy
RCOG Guidelines of Hypertension in Pregnancy
Obstet Gynecol. 2011 Aug. Timing of Indicated Late-Preterm and Early Term Birth

Thyroid disorder in pregnancy

HYPOTHYROID

Screening
Screen based on patient symptoms
Check TSH and free T4

Diagnosis
Elevated TSH (trimester dependent), but usually abnormal is > 4.0 mU/L

Treatment
If TSH >4 and low T4: Levothyroxine 1.6mcg/kg po OD
If TSH >4 and normal T4: Levothyroxine 1mcg/kg po OD
To be taken on an empty stomach, ideally 1hr before breakfast.

If patient was diagnosed pre-pregnancy, increase levothyroxine dose by approximately 30% at first visit.

Check TSH/T4 every 4wks.
Goal TSH between 0.1 and 2.5 mU/L

Timing of Delivery
Per usual obstetrics or fetal indications

Postpartum
Check TSH/T4 after cessation of breastfeeding.

HYPERTHYROID

Screening
Screen based on patient symptoms, goiter, ophthalmopathy
Check TSH, free T4 and T3

Diagnosis
TSH <0.1mU/L and free T4 and/or free T3 exceeding normal range

Treatment
- Thionamides
    PTU preferred in 1st trimester – start 50mg po BD (max 150mg TDS)
        May continue thru pregnancy or switch to methimazole

    Carbimazole preferred in 2nd/3rd trimesters – start 5-10mg po BD, max 10mg po TDS (risk of adverse SE increase with doses >30mg)

- Beta blocker to control symptoms, but should be weaned off as soon as symptoms improve with thionamides (within 4-6wks).
    Propanolol 20mg po Q8hrs

Check TSH/T4 every 4wks.
Adjust dose to keep T4 just above upper limit of normal.

Fetal surveillance
Monitor for fetal tachycardia and growth ultrasound every 4wks after 28wks.

Delivery considerations
Timing of delivery based on routine obstetrics/fetal indications

Postpartum
Continue medications postpartum. Check TSH, free T4/T3 every 4wks

Multiple gestation

Screening

Have high suspicion if fundal height > dates.

Diagnosis
The earlier the ultrasound, the better to determine chorionicity.

Fetal surveillance
Monitor fetal growth ultrasound every 4wks after 28wks.

Delivery considerations
Timing of delivery based on chorionicity/complications.

TWINS
Dichorionic/Diamniotic – 38+0 – 38+6 wks; SVD if concordantly grown and presenting twin is cephalic
Monochorionic/Diamniotic – 36+0 – 37+0 wks; SVD if concordantly grown and presenting twin is cephalic
Monochorionic/Monoamniotic – 34wks after steroids given; cesarean section recommended

TRIPLETS or higher order
Delivery by cesarean section by 36+0 after steroids given.

Recurrent pregnancy loss

Work-up to be done > 3mos after most recent pregnancy loss.

1st Trimester losses (> 3 prior to 13wks gestation)

Antiphospholipid antibodies – lupus anticoagulant and anticardiolipin antibodies
Parental peripheral blood karyotyping
Ultrasound to assess for uterine anomaly. Confirm diagnosis hysteroscopy /laparoscopy

2nd Trimester losses (one or more loss of a fetus between 14 – 24wks)

Antiphospholipid antibodies – lupus anticoagulant and anticardiolipin antibodies
Parental peripheral blood karyotyping
Ultrasound to assess for uterine anomaly. Confirm diagnosis hysteroscopy /laparoscopy
Screen for inherited thrombophilias (factor V Leiden, Prothrombin gene mutation, Protein S)

3rd Trimester losses (one or more IUFD of a fetus >28wk)

At the time of diagnosis:
- Ultrasound to assess for fetal anomolies
- Assess for clinical signs of infection
- Assess for clinical signs of DM or other medical disorders (thyroid, cardiovascular, lupus)

After delivery
- examine fetus for growth (SGA/macrosomia), anomolies, offer babygram or autopsy
- examine placenta for infarction, necrosis, vascular thrombosis, vasa previa

- examine cord for knots, velamentous insertion (remember that 30% of normal pregnancies have a nuchal cord, so associating the IUFD to nuchal cord significantly increases the anxiety for the subsequent pregnancies)

If patient Rh negative, check ICT and give anti-D.

Treatment

Antiphopholipid syndrome – low dose aspirin (75mg PO OD) plus enoxaparin (40mg SQ OD) from 6wks
Uterine malformations – referral for possible uterine surgery (prior to pregnancy)
Suspected cervical insufficiency – see indications for cerclage in next section
Previous IUFD – if there was underlying cause, treat accordingly. If no underlying cause found:

- 24-28wk OGTT
- 3rd trimester ultrasound for EFW, AFI
- Consider elective IOL at 39-40wks

Am J Obstet Gynecol. Work-up of stillbirth: A Review of the Evidence. 2007 May: 196(5): 433-444

Cerclage

Indications

1. History of 2nd trimester loss described as painless/precipitous delivery. Best timing for placement between 12-14wks.
2. Singleton pregnancy, history of preterm delivery, ultrasound with short cervix (<25mm) or funneling. Placement between 12-23wks.
3. Cervix dilated on digital/speculum exam, without bleeding or contractions. Placement between 12-23wks.

Contraindications

Fetal anomaly not compatible with life
Active bleeding
Active preterm labor or premature rupture of membranes
Intraamniotic infection
Fetal demise

Situations in which cerclage NOT found to be helpful:
Multiple gestation with NO history of cervical insufficiency
Short cervix on ultrasound with NO history of preterm delivery (vaginal progesterone may be more beneficial)

Timing

Best between 12+0 – 23+6wks.

Prophylaxis

There is no evidence for prophylactic antibiotics and/or tocolytics at the time of placement.

Removal

Electively at 37+0 – 37+6wks
Onset of preterm labor
Controversial if PPROM

Fetal surveillance
No need for extra surveillance unless other high risk factors present.

Delivery considerations
Timing of delivery based on routine obstetrics/fetal indications

Asthma

Screening
For patient with known asthma or h/o asthma, measurement of peak expiratory flow with a peak flow meter regularly during prenatal visits.

Diagnosis
Shortness of breath with expiratory wheezing with prolonged expiratory phase

Treatment
Step 1: Mild intermittent asthma
- Short acting bronchodilator/short-acting inhaled beta 2 agonist as needed (albuterol inhaler used prn)

Step 2: Mild persistant asthma
- Long term daily low-dose inhaled corticosteroid (beclomethasone 100 mcg/puff, start 2 puffs BD)

Step 3: Moderate persistant asthma
- Combination of low-dose inhaled corticosteroid (beclomethasone) and long-acting inhaled beta 2 agonist (Salbutamol 100mcg/puff, 1-2puffs every
  OR
- Increase the dose of inhaled corticosteroid to medium dose range (beclomethasone 1 puff QID)

Step 4: Severe persistant asthma
- Increase dose of inhaled corticosteroid to high dose range (beclomethasone >4 puffs/day) AND/OR
- Systemic corticosteroids (prednisolone 1mg/kg/day; maximum 50mg OD, for 5-7days)

Fetal surveillance
Ultrasound in 3rd trimester to assess for fetal growth

Delivery considerations
Timing of delivery based on routine obstetrics/fetal indications

Postpartum
Continue medications postpartum

Fibroids

Screening

High level of suspicion if fundal height > gestational age and if irregular masses palpable

Diagnosis

Ultrasound to confirm size and location of fibroids.

Treatment

Expectant management.
Pain from degenerating fibroid
First line – PCM 1gm po TID prn
Second line – short course of NSAIDs or narcotics
Indomethacin 25mg PO Q6hrs for 48hrs if prior to 32wks

Fetal surveillance

Ultrasound in 3rd trimester q4wks to assess for fetal growth (as fundal height not accurate)

Delivery considerations

Timing of delivery based on routine obstetrics/fetal indications
SVD (Cesarean section for standard obstetrical issues) unless large fibroid located between fetal vertex and cervix in the 3rd trimester

Myomectomy at the time of Cesarean section NOT recommended

Patient with previous myomectomy, recommend Cesarean section between 37-39wks.

Postpartum

Ultrasound to assess size/location at 12wks postpartum

UTI/Pyelonephritis

It is common to have asymptomatic bacturia during pregnancy, which leads to higher risk of pyelonephritis and preterm delivery.

Screening

Urine culture is best, done first antenatal visit.

Diagnosis

Asymptomatic bacturia - >10,000 bacterial growth on culture (what is this on a dipstick?)
Acute Cystitis – dysuria, urgency, frequency, hematuria; confirmatory urinalysis with LE, WBC, nitrates, blood; ideally would obtain urine culture
Pyelonephritis – acute cystitis with fevers (>38C, flank/CVA pain, nausea/vomiting, elevated WBC)

Treatment Options

Asymptomatic bacturia
Nitrofurantoin 100mg PO BD x 5d
Amoxicillin 500mg PO Q8hrs x 3-7d
Cefuroxime 250mg PO BD x 7d
Acute Cystitis
Cefuroxime 250mg PO BD x 7d
Augmentin 625mg PO BD x 5d
Pyelonephritis – INPATIENT treatment due to high risk for sepsis and ARDS
Ceftriaxone 1gm IV q24hrs
Continue IV antibiotics until 48hrs afebrile or pain improves and discharge to complete 14 day course with Augmentin 625mg po BD followed by prophylaxis for remainder of pregnancy with Cefuroxime 250mg PO OD

Fetal surveillance
CST at time of admission for pyelonephritis

Delivery considerations
Timing and route of delivery based on routine obstetrics/fetal indications

Postpartum
Stop antibiotics

Nausea/Vomiting and Hyperemesis Gravidarum (HG)

Diagnosis
- Common to have N/V of pregnancy
- HG – protracted N/V with triad of weight loss, dehydration and electrolyte imbalance

Work-up
- Ultrasound to evaluate for multiple gestation, molar pregnancy
- Urinalysis (assess for infection, keturia)
- CBC with differential
- Sodium, potassium, calcium levels
- Creatinine
- TSH
- LFTs

Treatment
- Dietary counseling – frequent small meals, avoidance of spicy/fatty foods
- Medications

First line:
Pyridoxine (vit B6) 25mg PO Q6 (max dose 200mg/day) and
Doxalamine 10mg PO Q6hrs (max dose 40mg/day)
Nosic – is combination tablet of pyridoxine 10mg/doxalamine 10mg

Second line:

Antihistamine – Chlorpheniramine 4mg PO Q6 or Diphenhydramine 25-50mg PO Q6hrs

Add a dopamine antagonist
Plasil 10mg PO/IV Q6hrs or
Promethazine 25mg PO/PR Q4hrs or
Prochlorperazine 10mg PO/IV Q6hrs

Add a serotonin antagonist – controversial therefore should NOT be first line
Ondansetron 4mg PO q8hrs (max dose 16mg/24hrs)

Adjunctive agents – acid reducing agents (antacids and ranitidine 150mg PO BD)

Admission if dehydration (keturia, electrolyte imbalance)
Give medications IV/PR and transition to PO when able

Ringer's lactated 2L over 8-10 hrs
Normal saline if hyponatremia (< 120mEq/L)
After RL, then D10 NS until keturia resolves.
Replace potassium, magnesium, calcium as needed

Refractory cases
Chlorpromazine 10-25mg PO Q4-6hrs or
Methylprednisolone 16mg IV q8hrs for 48hrs then oral taper (AVOID before 10wks gestation)

UpToDate Treatment and Outcome of nausea and vomiting of pregnancy
RCOG Guideline No. 69, June 2016
Contemporary OB/GYN ACOG Guidelines at a Glance: Nausea and Vomiting of Pregnancy

Hepatitis B

Screening

Routine test of the antenatal profile for hepatitis B surface antigen (HBsAg)
If positive
Check HBeAg, baseline HBV DNA, ALT level.
Repeat at 28wks

Treatment

FOR PREGNANT MOTHERS
- Start antiviral at 30-32wks if
Serum hepatis B virus (HBV DNA) level is > 200,000 IU/mL, (>1 million copies/mL, or
ALT > 19 IU/mL, or
HBeAg positive (immune active phase)

Tenofovir 300mg PO OD

FOR NEWBORNS:
- Give hepatitis B immune globulin (HBIg) and hepatitis B vaccine within 12 hrs of delivery

- Finish the hepatitis B vaccine series as recommended

Timing of delivery
Timing and route of delivery based on routine obstetrics/fetal indications
Cesarean section has not been shown to reduce MTCT

Postpartum
WHO states there is no additional risk of HBV transmission in breastfeeding.
No definitive recommendations can be made about the effects of antivirals breastfeeding neonates.
However recommendation is to continue antiviral until 4wks postpartum.

AASLD guidelines for treatment of chronic hepatitis B
2015 WHO guidelines summary for Hepatitis B in pregnancy
ACOG recommendations
cdc.gov/hepatitis

HIV

Screening
Routine test of the antenatal profile for HIV 1 and 2 antibodies at first antenatal visit and repeated in 3rd trimester.
If positive, an HIV 1 and HIV 2 antibody differentiation immunoassay is performed.
If indeterminate or negative, check plasma HIV RNA level.

Treatment
- Lifelong ART recommended for all AHIV-infectd pregnant and breastfeeding women regardless of CD4 count or disease stage.
- Risk of transmission decreases with viral load. Goal to is to reduce the viral load to undetectable levels.
- Initiate ART regimen as early as possible in pregnancy

First line treatment
    Tenofovir (TDF), lamivudine (3TC), efavirenz (EFV) combination tablet PO OD
Recommended alternatives
    Zidovudine (ZDV, AZT) replaces tenofovir
    Nevirapine (NVP) replaces efavirenz

Timing of delivery and considerations
If patient has viral load <1000 copies/mL on ART > 4wks, timing/route of delivery dependent on OB indications.

If patient has viral load >1000, ART <4wks – planned cesarean section at 30+0-39+0wks.
If such patient presents with advanced labor or rupture of membranes >4hrs, the benefit of cesarean section may be lost and consideration should be given to SVD.

Obstetric management should include minimal vaginal exams, avoidance of internal monitoring, operative vaginal delivery.

Postpartum

MOTHER – continue lifelong ART

INFANT – start within 6 hours of delivery
- If mother virally suppressed and breastfeeding - nevirapine PO OD for 6wks
- If mother virally suppressed and NOT breastfeeding – nevirapine po OD OR zidovudine PO BD for 6wk

- If mother not virally suppressed and breastfeeding – nevirapine PO OD and zidovudine PO BD until 1wk after cessation of breastfeeding.
- If mother not virally suppressed and NOT breastfeeding – nevirapine and zidovudine for 6wks
- If mother not virally suppressed and NOT breastfeeding – nevirapine PO OD and zidovudine PO BD for 6wks

Guidelines on Use of Antiretroviral Drugs for Treating/Preventing HIV Infection in Kenya
CDC and WHO guidelines