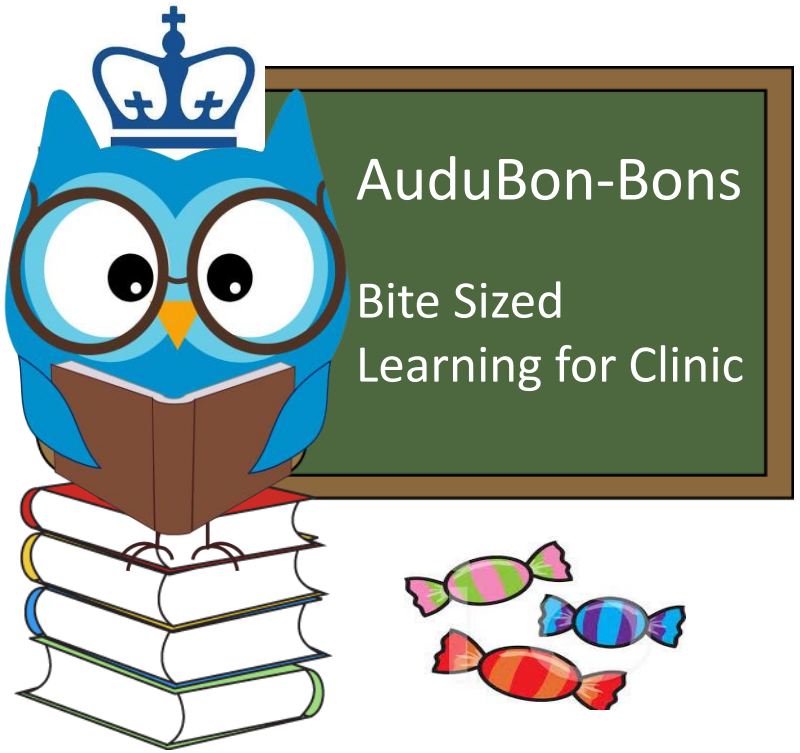
CHRONIC HYPERTENSION IN PREGNANCY



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Homework Assignment:
Podcast:

- Dr. Chapa's ObGyn Pearls, ACOG UPDATE! AHA and Chronic Hypertension in Pregnancy – 12.23.18
- Dr. Chapa's Ob/Gyn Pearls, ACOG UPDATE (Part 2): Chronic Hypertension in Pregnancy – 12.24.18

LEARNING OBJECTIVES

- To define hypertensive disorders associated with pregnancies complicated by chronic hypertension
- To review the updates on hypertensive categories by the ACC/AHA and how they impact obstetrical practice
- To gain comfort counseling a patient about the risks associated with chronic hypertension in pregnancy
- To review the recommendations for evaluation and management during ambulatory care of the antenatal and postpartum periods

CASE VIGNETTE

- Ms. P. Alta is a 36y G1 P0 woman at 11 weeks EGA (dated by 8wk u/s) who presents for initial prenatal visit. She has no complaints

- She reports occasional headaches, which are well-managed by hydration and PO Tylenol. She denies any pain or vaginal bleeding. This pregnancy was planned and she's very excited

- She states she had a visit with her PCP a few weeks ago and he recommended she start taking blood pressure medication even though her blood pressure was not higher than in the past

FOCUSED HISTORY

What elements of the patient's history are most relevant?

- **POB:** No prior pregnancies
- **PGYN:** **Irregular menses**; No STI/Cysts/Fibroids; No abnormal paps
- **PMH:** **cHTN**
- **PSH:** Denies
- **Meds:** **Labetalol 100mg BID**, PNV, Tylenol PRN
- **All:** NKDA
- **Soc:** No toxic habits; Lives with her husband; Accepts blood products
- **FHx:** No hx gyn cancers; **No hx DM or HTN**

PERTINENT PHYSICAL EXAM FINDINGS

What elements of the patient's physical exam are most relevant?

VS: P 76 **BP: 132/83** Wgt: 65kg Hgt: 160cm BMI: 25

- **Cor:** Regular rhythm, no M
- **Pulm:** CTAB b/l
- **Abd:** Soft, NT/ND, +BS x 4Q
- **Pelvic**: *Vulva*: Normal external female genitalia; No lesions
  Vagina: Healthy-appearing mucosa, No discharge
  Cervix: Parous os; L/C/P
  Uterus: NT, ~8wk size, anteverted
  Adnexae: No mass/tenderness b/l
- **Ext:** No calf tenderness b/l; no edema b/l; +1 DTR b/l

DEFINITIONS

How are the following hypertensive disorders defined by ACOG?

- **Hypertension in pregnancy**
  - **SBP ≥ 140** or **DBP ≥ 90** on 2 occasions ≥ 4 hours apart
- **Severe-range hypertension**
  - **SBP ≥ 160** or **DBP ≥ 110** on 2 occasions ≥ 4 hours apart
- **Chronic hypertension**
  - HTN before pregnancy or **< 20 weeks** gestation OR
  - HTN first diagnosed during pregnancy which **doesn't resolve during the postpartum period**
- **Chronic hypertension with superimposed preeclampsia**
  - Preeclampsia in a patient with an **existing diagnosis** of chronic hypertension

CLASSIFICATIONS

According to the ACC/AHA changes, what are the blood pressure ranges for each of the following categories of hypertension?

- **Normal blood pressure**
  - **SBP < 120** and **DBP < 80**
- **Elevated blood pressure**
  - **SBP 120-129** and **DBP < 80**
- **Stage 1 hypertension**
  - **SBP 130-139** or **DBP 80-89**
- **Stage 2 hypertension**
  - **SBP ≥ 140** or **DBP ≥ 90**

PRACTICE IMPLICATIONS

This patient has an existing diagnosis of **Stage 1 HTN** by the new ACC/AHA criteria, but she has never had SBP $\geq$ 140 or DBP $\geq$ 90. How will you manage this patient during the antenatal period?

- It is reasonable to manage this patient in pregnancy as **chronically hypertensive**

The same day, a patient presents for a follow up prenatal visit at 15 weeks. Her vitals show a blood pressure of 135/82. She has no symptoms and no documented history of hypertension. How, if at all, does her management differ from the above patient?

- A blood pressure in this range would not require initiation of antihypertensive medication, but may warrant a conservative approach

RISKS TO PREGNANCY

How can this patient's cHTN affect her pregnancy?

MATERNAL IMPLICATIONS

- Superimposed preeclampsia
- GDM
- Placental abruption
- PPH
- Cesarean delivery
- Pulmonary edema
- CVA
- MI
- Renal insufficiency/failure
- Death

FETAL IMPLICATIONS

- Growth restriction
- Preterm birth
  - Indicated > Spontaneous
- Congenital anomalies
- Stillbirth/IUFD

EVALUATION

Which clinical tests should be ordered at the initial prenatal visit in a patient with chronic hypertension?

- Serum aspartate aminotransferase and alanine aminotransferase
- Blood urea nitrogen
- Serum creatinine
- Serum electrolytes (specifically K^+)
- Complete blood count
- Spot urine protein/creatinine ratio or 24-hour urine for total protein and creatinine as appropriate
- EKG (or echocardiogram as appropriate)

LOW-DOSE ASPIRIN

LDA is recommended for prevention of preeclampsia in patients with cHTN. What is the mechanism?

- Preferential inhibition of **thromboxane A2** (vasoconstrictor)

What is the gestational age range when LDA can be started?

- **12-28 weeks** (optimally before 16 weeks)

In which patients should LDA use be avoided?

- Bleeding disorders
- Peptic ulcer disease

BLOOD PRESSURE CONTROL

Which medications are recommended for long-term treatment in pregnancy?

- **Labetalol**
  - Contraindications? Avoid with asthma, pre-existing myocardial disease, heart block
- **Nifedipine**
  - Contraindications? Avoid in tachycardia

When should antihypertensive therapy be initiated for chronic hypertensives in pregnancy?

- For **persistent** cHTN when **SBP ≥ 160 or DBP ≥ 110**
- No clear evidence to support treatment of lower blood pressures

Who should be considered at lower thresholds?

- Comorbidities
- Evidence of **end-organ damage** → **Goal: SBP ≥ 150 or DBP ≥ 100**
  - Left ventricular hypertrophy
  - Underlying impaired renal function

BLOOD PRESSURE CONTROL

What is the evidence regarding management of cHTN patients already receiving treatment before pregnancy with blood pressures well-controlled or SBP < 160 and DBP < 110?

- Mixed and limited data for continuation vs discontinuation
  - **Individualized decision**
  - Informed discussion with the patient

What are blood pressure goals for patients receiving cHTN treatment?

- **SBP ≥ 120 - <160**
- **DBP ≥ 80 - <110**
  - Avoid aggressive BP lowering
  - Lower goals -> comorbidities, end-organ damage

SURVEILLANCE

What types of fetal surveillance are recommended for pregnancies complicated by cHTN?

- **Antenatal fetal testing**

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  - Recommended **weekly** starting at **32-34 weeks**

ACOG The American College of Obstetricians and Gynecologists

  - Recommended in cases of cHTN complicated by:
    - Need for medication
    - Underlying conditions affecting fetal outcome
    - Growth restriction
    - Superimposed preeclampsia

- *NB: Data is limited regarding timing and interval of testing*

- **Fetal growth assessment with 3TM ultrasound**

DELIVERY

What are the recommendations regarding timing of delivery in pregnancies complicated by cHTN?

- **Chronic hypertension**

cHTN + No medication	cHTN + Medication
38 wks – 39 6/7 wks	37 wks – 39 6/7 wks

- **Chronic hypertension → Superimposed preeclampsia**

siPEC + No severe features	siPEC + SF EGA ≥ 34 weeks	siPEC + SF EGA < 34 weeks
37 wks	Upon diagnosis	Inpatient expectant management may be considered

For siPEC + SF →

Immediate delivery if:

- Uncontrollable severe HTN
- Eclampsia
- Pulmonary edema
- DIC
- New/worsening renal insufficiency
- Placental abruption
- Abnormal fetal testing

POSTPARTUM

Does blood pressure rise, decline, or stay the same in the first 1-2 weeks postpartum?

- Blood pressure **tends to rise postpartum**, especially in the first 1-2 weeks

What is the best approach when planning the patient's discharge after delivery?

- Patients should have blood pressure monitoring in the **first 1-2 weeks postpartum** with ambulatory visits or home monitoring

Which antihypertensive medication should be avoided in the postpartum period due to an association with depression?

- **Methyldopa**

Which beta-blockers are concentrated in breast milk?

- **Atenolol**
- **Metoprolol**

What are blood pressure goals when adjusting antihypertensive medication in the postpartum period?

- **SBP $\leq$ 150**
- **DBP $\leq$ 100**

SOCIAL DETERMINANTS OF HEALTH

The effect of chronic hypertension on pregnancy outcomes differs by racial/ethnic group

Prevalence of chronic hypertension prevalence is 2-fold higher in black (1.24%) compared with white (0.53%) women

Black women with hypertension have a significantly elevated risk of intrauterine fetal demise, post-neonatal death compared with white women

Among women with chronic hypertension, Black, Latinx and Asian women are significantly more likely than white women to develop preeclampsia, deliver preterm**, and suffer a stroke**

Latinx and Asian women are significantly more likely to develop gestational diabetes

**after accounting for education level, socioeconomic status, maternal age, and parity

More effective management strategies for hypertension in pregnancy are needed, particularly in minority women who have increased risk of complications and poor pregnancy outcomes.

EPIC .PHRASE

BBONcHTNprenatal

Description: Chronic hypertension in pregnancy prenatal counseling and management

Pt was informed of her diagnosis of chronic hypertension (SBP > 140 or DBP > 90 before pregnancy or <20 weeks gestation). The risks associated with chronic hypertension in pregnancy were discussed, including maternal complications such as preeclampsia, GDM, placental abruption, PPH, cesarean delivery, PE, CVA, MI, renal insufficiency/failure, and death and fetal implications including growth restriction, preterm birth, congenital anomalies, stillbirth, and IUFD. Initial evaluation at the prenatal visit includes serum AST, ALT, BUN, Cr, electrolytes, CBC, spot UP/C, or 24-hour urine for total protein and creatinine as appropriate, and EKG (or echocardiogram as appropriate). The plan is to initiate low dose aspirin between 12-28 weeks (optimally before 16 weeks) given that the pt does not have contraindications such as a bleeding disorder or peptic ulcer disease. The patient was advised that factors such as the need for anti-hypertensive medication or the presence of superimposed preeclampsia may dictate the recommended timing of delivery.

***Given persistent HTN with SBP ≥ 160 or DBP ≥ 110 or comorbidities or evidence of end organ damage, pt was initiated on ***[labetalol/nifedipine]

*** Given ***[need for anti-hypertensive medication/underlying conditions/growth restriction/superimposed preeclampsia], the patient was advised of the need for antenatal fetal testing weekly with fetal growth assessment with 3TM ultrasound starting at 32-34 weeks

BBONcHTNdelivery

Description: Chronic hypertension in pregnancy delivery timing counseling and management

***Given diagnosis of cHTN without the need for medication, pt was advised that delivery is indicated at 38 wks – 39 6/7 wks.

***Given diagnosis of cHTN with the need for medication, pt was advised that delivery is indicated at 37 wks – 39 6/7 wks.

***Given diagnosis of cHTN with superimposed preeclampsia without severe features, pt was advised that delivery is indicated at 37 wks.

***Given diagnosis of cHTN with superimposed preeclampsia with severe features + EGA ≥ 34 weeks, pt was advised that delivery is indicated at diagnosis.

*** Given diagnosis of cHTN with superimposed preeclampsia with severe features + EGA < 34 weeks, pt was advised that inpatient expectant management may be considered.

CODING AND BILLING

- O10.011 **Pre-existing essential HTN** complicating **pregnancy**, first trimester
- O10.012 **Pre-existing essential HTN** complicating **pregnancy**, second trimester
- O10.2013 **Pre-existing essential HTN** complicating **pregnancy**, third trimester
- O10.2019 **Pre-existing essential HTN** complicating **pregnancy**, unspec trimester
- 010.02 **Pre-existing essential HTN** complicating **childbirth**
- 010.03 **Pre-existing essential HTN** complicating the **puerperium**
- 011 **Pre-existing HTN** with **preeclampsia**

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