Hypertension, Postpartum (New Onset)

New onset postpartum Hypertension *

Evaluate for preeclampsia/ HELLP:
- CNS/GI symptoms?
- Abnormal physical exam?
- Evidence of end organ damage?
- Evaluated UPC?
- Abnormal HELLP labs?

Yes → Preeclampsia

No → Postpartum Hypertension

Preeclampsia – Severe Features?

Yes:
- IV Magesium Sulfate for pre-eclampsia with severe features or new onset HTN associated with headaches or blurred vision [1]
- Consider furosemide 20mg daily for 5 days for volume overloaded patients [6]

No:
Monitor for development of severe features (follow severe features pathway if develop)

Postpartum Hypertension (and severe features pathway):

-IV antihypertensive therapy if SBP> 160 or DBP > 110 [1]

-Start oral antihypertensive therapy if requiring IV therapy or when SBP > 150 or DBP > 100 on 2 occasions 4-6 hours apart. [1,3-5]

-Stop NSAIDs if BP elevated for over 1 day. Use alternative analgesics.[1,5]

- Inpatient management until stable

Responsive To Treatment?

Yes:
Monitor BP for 72 hrs w/ inpatient or equivalent outpatient surveillance and again 7-10 days after delivery [1]

No:
Consider imitators of severe preeclampsia[7] and evaluation for secondary causes of hypertension [2]

6 weeks postpartum:
-Arrange f/u with PCP for ongoing management of still requiring antihypertensive's.
-Consider other first line contraceptive options for all women with HTN.
-If obese or overweight, counsel regarding weight management.

Antihypertensive Drugs

Drug Class/Medication	Initial daily dose in mg (max daily dose)	Number of doses per day	Common side effects	Considerations in lactation
*Calcium Channel Blockers (dihydropyridines) Nifedipine XL Amlodipine	 30 (90-120) 5 (10)	 1 1	Nifedipine: headache, flushing, peripheral edema, palpitations Amlodipine: peripheral edema, pulmonary edema in patients with heart failure, palpitations	Nifedipine: - no known adverse effects on lactation - no adverse reactions reported in breastfed infants Amloidipine: - no data on effects on lactation - no adverse effects in breastfed infants based on limited information
**Calcium Channel Blockers (non-dihydropyridines) Diltiazem Verapamil	 180 (480-540) 180 (480)	 1-2 1-3	Edema, headache, bradycardia, 1st degree AV block	Diltiazem: - no adverse effects in brestfed infants based on limited information Verapamil: - no adverse effects in brestfed infants based on limited information
Beta blockers Labetalol Metoprolol	 200 (2400) 50 (200)	 2 1-2	Labetalol: Fatigue, nausea Metoprolol: Fatigue, depression, decreased exercise tolerance, bradycardia, 1st degree AV block	Labetalol: - no known adverse effects on lactation - possible association with Reynaud's phemonenon of the nipples in a woman with known Reynaud's phenomenon -no adverse effects in full-term breastfed infants -case report of bradycardia in a newborn 26week pretrm infant whose mom was taking labetalol Metoprolol: -no known adverse effects on lactation - no adverse reactions reported in breastfed infants
*Thiazide diuretics Chlorthalidone Hydrochlorothiazide	 25 (25) 12.5-25 (50)	 1 1-2	Electrolyte abnormalities (hypokalemia most common, hyponatemia, hypercalcemia), skin photosensitivity	Chlorthalidone: - intense diuresis with large doses may suppress lactation - slow clearance may lead to accumulation in the infant

			Sulfa allergy: contraindicated in sulfonamide allergy, avoid use in those with severe allergy to sulfonylureas, carbonic anhydrase inhibitors, loop diuretics	Hydrochlorothiazide: -typical doses used for hypertension (50mg daily or less) are acceptable in lactation -intense diuresis with large doses may decrease milk production
*ACE inhibitors Lisinopril Enalapril *Angiotensin receptor blockers Losartan Valsartan	 10 (40) 5 (20) 50 (100) 80 (320)	 1 1-2 1-2 1	Cough (ACEI not ARBs), angioedema, hyperkalemia, acute renal failure, teratogenicity **For women of reproductive age without a compelling indication (such as proteinuric renal disease), the use of ACEIs and ARBs is not recommended.** For women with a compelling indication, it is recommended that highly effective contraception is established prior to initiation of treatment.	ACE inhibors: - limited data - no known adverse effects on lactation or on breastfed infants Angiotensin recepto blockers: - no information on use in lactation
Loop diuretics Furosemide	20 (80)	1-2	Lightheadedness/dizziness, electrolyte depletion	- no information on use in lactation - intense diuresis might decrease lactation
Central alpha receptor agonist Methyldopa	500 (1000)	2-3	Sedation, depression	- no known adverse effects on lactation - no adverse reactions reported in breastfed infants
Direct vasodilator (arterial) Hydralazine	40-100 (300)	4	Reflex tachycardia, drug-induced lupus-like syndrome	- no known adverse effects on lactation - no adverse reactions reported in breastfed infants

*First line for treatment of hypertension for general non-pregnant population.
Long-acting dihydropyridine calcium channel blockers and thiazide diuretics are preferred in the black hypertensive population

** Non-dihydropyridines calcium channel blockers have a antiproteinuric effects in patients with renal disease with proteinuria

References:
American College of Obstetricians and Gynecologists (ACOG), Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. *Obstet Gynecol*. 2013;122(5):1122-1131. doi: 10.1097/01.AOG.0000437382.03963.88.

James PA, Oparil S, Carter BL, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 2014; 311:507.

LactMed http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?LACT

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management. Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.

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