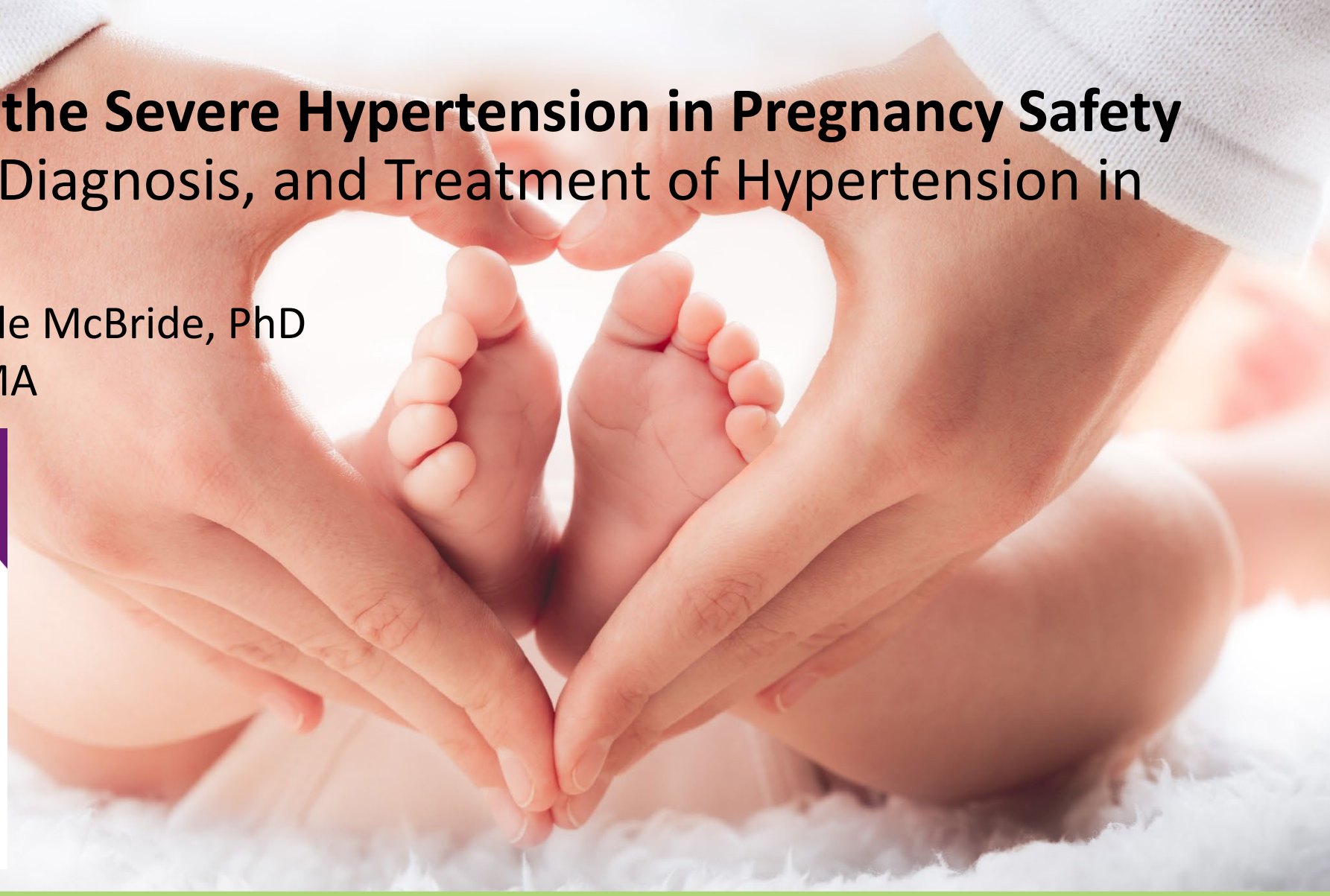
Implementation of the Severe Hypertension in Pregnancy Safety Bundle: Definition, Diagnosis, and Treatment of Hypertension in Pregnancy

Marjorie Meyer, MD, Carole McBride, PhD
and Samantha Bellinger, MA



AIM
ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Severe Hypertension in Pregnancy Patient Safety Bundle (2022)

Element Implementation Details

PERINATAL QUALITY COLLABORATIVE VERMONT

February 21, 2023

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VERMONT CHILD HEALTH IMPROVEMENT PROGRAM
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Vermont Child Health Improvement Program
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PERINATAL QUALITY COLLABORATIVE VERMONT

Mission: optimizing care and health outcomes in pregnancy and infancy through collaboration and continuous quality improvement.

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AIM: Debriefs and Multisystem Reviews

Discuss implementation of debriefs and multisystem reviews as it relates to the AIM Hypertension safety bundle.

Monday, May 11, 2023 from 11:00am-12:00pm

Speaker: Marjorie Meyer, MD

Severe Hypertension in Pregnancy Patient Safety Bundle

AIM

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

AIM 5 Rs:

Readiness-Every Care Setting
Recognition & Prevention-Every Patient
Response-Every Event
Reporting and Systems Learning-Every Unit
Respectful, Equitable, and Supportive Care-Every Unit/Provider/Team Member

Definition of each HTN disease: talk to coders (and make sure your notes have the correct diagnosis)

	Gestational Age	BP parameters	Notes
Chronic Hypertension	Pre-pregnancy, <20 weeks	140/90	Recommendation is to treat mild HTN in pregnancy; start early
Chronic hypertension with superimposed preeclampsia (with or without severe features)	CHTN with relatively rapid bp escalation of a previously stable patient	HTN: 140/90 Severe HTN: 160/110 Proteinuria present (>300 mg/24 hrs, P:C >0.3)	Third trimester escalation of bp is common and is responsive to increased medication; unresponsive, rapid escalation or symptoms of preeclampsia
Gestational hypertension	HTN develops >20 wks in pt without dx HTN prior to pregnancy	HTN: 140/90 Severe HTN: 160/110 No proteinuria (or proteinuria dx prior to 20 wks, get baseline)	Severe HTN is treated similarly regardless of proteinuria or dx preeclampsia
Preeclampsia without severe features	>20 wks	BP >140 systolic OR >90 diastolic, <160/110 Proteinuria	Antepartum or postpartum, progressive
Preeclampsia with severe features	>20 weeks	BP >=160 systolic OR >=110 diastolic Proteinuria Abnormal labs, HA, vision changes	Antepartum or postpartum, progressive, code most severe form (if admitted without severe features and develops SF)
Eclampsia	>20 wks	Preeclampsia with seizures	Antepartum or postpartum

Diagnosis of **Severe Hypertension (acute 160/110)**

	Gestational Age	**BP parameters**	**Notes**
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Prevention of Preeclampsia: Severe Hypertensive Disease in Pregnancy

ACOG COMMITTEE OPINION

Number 743

Committee on Obstetric Practice
Society for Maternal–Fetal Medicine
This Committee Opinion was developed by the Committee on Obstetric Practice in collaboration with committee member T. Flint Porter, MD, and the Society for Maternal–Fetal Medicine in collaboration with members Cynthia Gyamfi-Bannerman, MD, MS, and Tracy Manuck, MD.

Low-Dose Aspirin Use During Pregnancy

Table 1. Clinical Risk Assessment for Preeclampsia*

Risk Level	Risk Factors	Recommendation
High†	• History of preeclampsia, especially when accompanied by an adverse outcome • Multifetal gestation • Chronic hypertension • Type 1 or 2 diabetes • Renal disease • Autoimmune disease (systemic lupus erythematosus, antiphospholipid syndrome)	Recommend low-dose aspirin if the patient has one or more of these high-risk factors
Moderate‡	• Nulliparity • Obesity (body mass index greater than 30) • Family history of preeclampsia (mother or sister) • Sociodemographic characteristics (African American race, low socioeconomic status) • Age 35 years or older • Personal history factors (eg, low birthweight or small for gestational age, previous adverse pregnancy outcome, more than 10-year pregnancy interval)	Consider low-dose aspirin if the patient has more than one of these moderate-risk factors§
Low	• Previous uncomplicated full-term delivery	Do not recommend low-dose aspirin

*Includes only risk factors that can be obtained from the patient's medical history. Clinical measures, such as uterine artery Doppler ultrasonography, are not included.

†Single risk factors that are consistently associated with the greatest risk of preeclampsia. The preeclampsia incidence rate would be approximately 8% or more in a pregnant woman with one or more of these risk factors.

‡A combination of multiple moderate-risk factors may be used by clinicians to identify women at high risk of preeclampsia. These risk factors are independently associated with moderate risk of preeclampsia, some more consistently than others.

§Moderate-risk factors vary in their association with increased risk of preeclampsia.

<u>Single high risk factor:</u>

- 8% risk of preeclampsia
- Recommend if one high risk factor

<u>Moderate risk factors:</u>

- Vary in risk, compounded by multiple risk factors
- Recommend if >1 moderate risk factor (ie: nullip, BMI>30)

<u>Treatment:</u>

- ASA dose: 162 mg
- Start: 12 wks (optimal before 16 wks, can start as late as 28 wks)
- Can stop 36 wks (data uncertain, we usually continue)

Prevention of preeclampsia: Treatment of Mild Hypertension in Pregnancy: Recommended

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 MAY 12, 2022 VOL. 386 NO. 19

Treatment for Mild Chronic Hypertension during Pregnancy

- Randomized trial of antihypertensive treatment (no meds vs labetalol or nifedipine)
- Known or new diagnosis of chronic hypertension and a viable singleton fetus before 23 weeks' gestation
- Bp 140/90x2 measured 4 hrs apart <20 weeks gestation
- Prior or current antihypertensive treatment

- Bp treatment goal: <140/90

A protocol for accurate, reproducible, and pragmatic measurement of blood pressure during clinic visits was used for screening and enrollment and to guide any adjustments to medications

- Treatment of CHTN during pregnancy reduced the risk of preeclampsia with SF (or medically indicated preterm birth <35 wks, abruption, fetal/neonatal death) by 20% (preeclampsia: 31% vs 24%)
- Reduced severe hypertension (44% vs 36%)
- Especially in pts with BMI <40 or preexisting DM

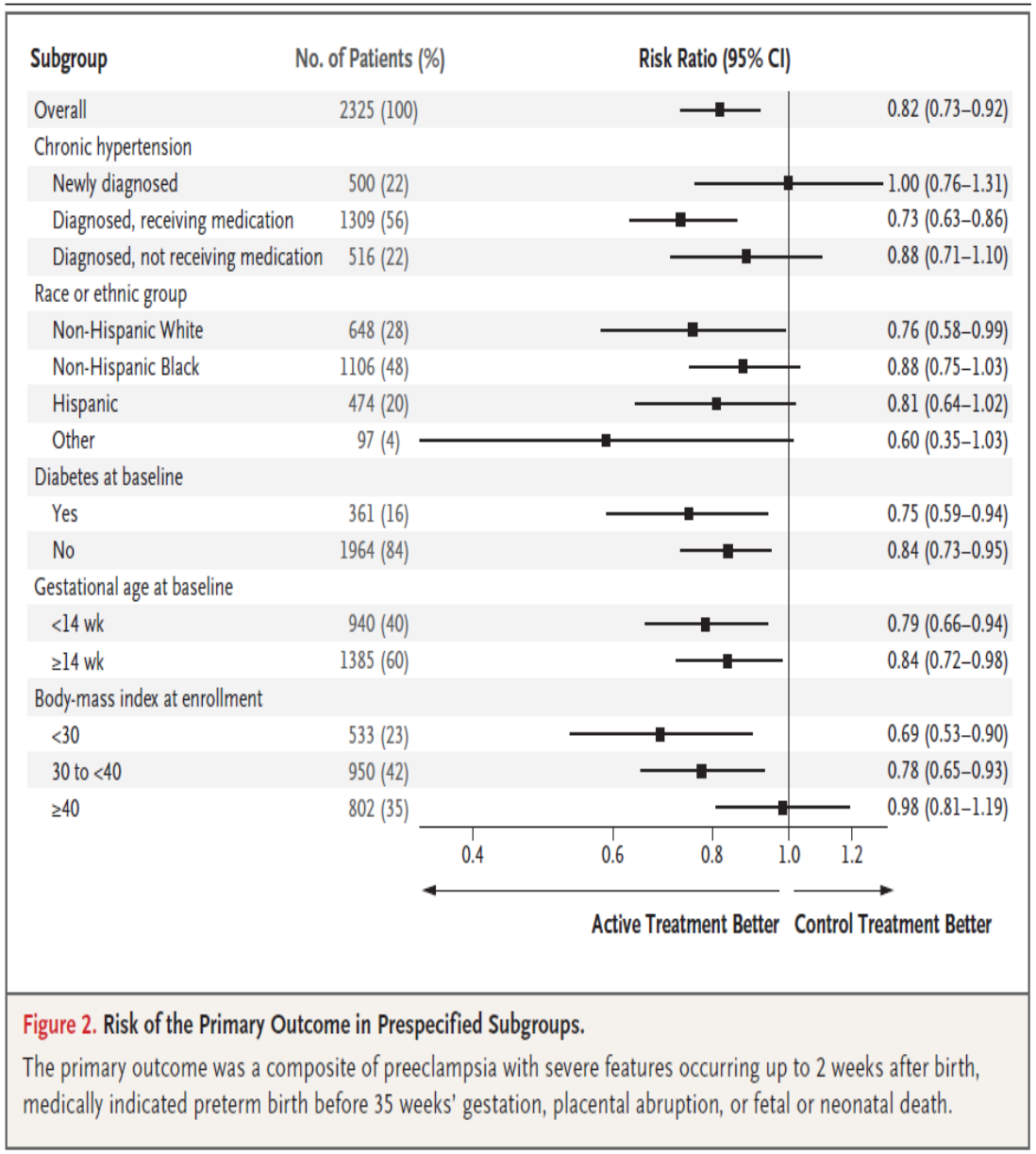

Figure 2. Risk of the Primary Outcome in Prespecified Subgroups.

The primary outcome was a composite of preeclampsia with severe features occurring up to 2 weeks after birth, medically indicated preterm birth before 35 weeks' gestation, placental abruption, or fetal or neonatal death.

Severe Hypertension in Pregnancy Patient Safety Bundle

Prevention:

- ASA 162 mg at 12 wks
- Treat CHTN
- Prescribe home bp cuff (and teach how to use)

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Readiness:

What Care Units need to be aware of the diagnosis and treatment of Severe Hypertension in Pregnancy

- Because severe HTN can occur in many settings (especially postpartum), the Readiness portion of this bundle is more wide reaching than others
- Each hospital/office system that feeds into your obstetric care unit needs training for recognition of severe hypertension in pregnancy and postpartum
- Anecdote: often missed in EDs, they definitely need to be well in the loop for Emergency Hypertension Implementation

All care settings potentially including:

- Labor and Delivery Units
- Freestanding Birthing Centers/Homebirth midwives
- Emergency Departments
- Urgent Care
- Critical Care
- Primary Care/Ob-Gyn Office
- Other Outpatient Settings

All areas need a way to identify patients that have recently (6 weeks) delivered

Readiness: Treatment of Severe Hypertension

Table 3. Antihypertensive Agents Used for Urgent Blood Pressure Control in Pregnancy

Drug	Dose	Comments	Onset of Action
Labetalol	10–20 mg IV, then 20–80 mg every 10–30 minutes to a maximum cumulative dosage of 300 mg; or constant infusion 1–2 mg/min IV	Tachycardia is less common with fewer adverse effects. Avoid in women with asthma, preexisting myocardial disease, decompensated cardiac function, and heart block and bradycardia.	1–2 minutes
Hydralazine	5 mg IV or IM, then 5–10 mg IV every 20–40 minutes to a maximum cumulative dosage of 20 mg; or constant infusion of 0.5–10 mg/hr	Higher or frequent dosage associated with maternal hypotension, headaches, and abnormal fetal heart rate tracings; may be more common than other agents.	10–20 minutes
Nifedipine (immediate release)	10–20 mg orally, repeat in 20 minutes if needed; then 10–20 mg every 2–6 hours; maximum daily dose is 180 mg	May observe reflex tachycardia and headaches	5–10 minutes

Abbreviations: IM, intramuscularly; IV, intravenously.

Medications to have urgently available:

- Emergency HTN kit: actual or virtual
- Emergency HTN order set (with subsequent dosing and parameters (in Drill Book)
- All 3 medications included
- Medications should be stocked and immediately available in obstetric units (AP, L&D, PP), the Emergency Department, and in other areas where patients may be treated.

Recommended medications include:

- Magnesium sulfate
- Oral nifedipine, immediate release (acceptable first-line medication)
- Intravenous hydralazine
- Labetalol

Readiness: Drills and debriefs

Interprofessional and interdepartmental team-based drills:

Important to include ED and outpatient offices if far from hospital/treatment setting

Facilitate drills with simulated patients and timely debriefs that emphasize:

- All elements of the facility severe hypertension emergency management plan
- Patient-centered, empathetic, trauma-informed care
- In situ drills: ensures the unit is ready and systems are set up for success

Readiness: Referral resources and communication pathways

Ensure that:

- Maternal and neonatal transfer protocol is in place
- Hospitals/prenatal care sites should implement resource mapping to identify local resources and support services so that this information is available to providers and other care team members to optimize referrals.
- Consider providing blood pressure cuff, education materials, and information on who to call for concerns for patient to take home.
- Have low threshold to prescribe a home blood pressure cuff in pregnancy to facilitate blood pressure check if any question (or any high risk patient)

Readiness: Trauma-informed protocols and bias training

Maternal morbidity and mortality from severe HTN/preeclampsia is exceptionally high (and increased) in black, non-Hispanic people.

Ensure that:

• Every clinical setting, health system, and providers are welcoming and inclusive of all people no matter backgrounds, race, ethnicity, gender, social class, language, ability, and other personal or social identities and characteristics.

Recognize that:

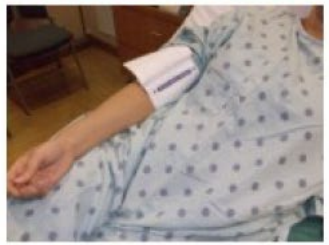
• Some of the identities above may be marginalized and to care for people in an intersectional manner is to treat the patient as a whole person and acknowledge all the identities that might impact equitable, supportive, and quality care

Recognition and Prevention: Diagnosis with accurate blood pressure assessment

Recognition/Prevention Resources

Accurate Measurement of Blood Pressure

Table 1: Steps for Obtaining Accurate Blood Pressure Measurements[3]

Step 1: Prepare equipment	a. Mercury sphygmomanometer is gold standard, can use validated equivalent automated equipment b. Check cuff for any defaults c. Obtain correct size cuff: width of bladder 40% of circumference and encircle 80% of arm (See Figure 1)
Step 2: Prepare the patient: 	a. Use a sitting or semi-reclining position with back supported and arm at heart level b. Patient to sit quietly for 5 minutes prior to measurement c. Bare upper arm of any restrictive clothing d. Patients feet should be flat, not dangling from examination table or bed, and her legs uncrossed e. Assess any recent (within previous 30 minutes) consumption of caffeine or nicotine. If blood pressures are at the level that requires treatment, consumption of nicotine or caffeine should not lead to delays in instituting appropriate anti-hypertensive therapies
Step 3: Take measurement	a. Support patients arm at heart level, seated in semi-fowlers position b. For ausculatory measurement: use first audible sound (Kortokoff I) as systolic pressure and use disappearance of sound (Kortokoff V) as diastolic pressure c. Read to the nearest 2 mm Hg d. Instruct the patient not to talk e. At least one additional readings should be taken within 15 minutes f. Use the highest reading g. If greater than or equal to 140/90, repeat within 15 minutes and if still elevated, further evaluation for preeclampsia is warranted. **Do not reposition patient to either side to obtain a lower BP. This will give you a false reading.**
Step 4: Record Measurement	Document BP, patient position, and arm in which taken

Adapted from Peters RM (2008) High blood pressure in pregnancy. Nursing for Women's Health, Oct/Nov, pp. 410-422. Photo courtesy of and printed with permission by Kristi Gabel, RNC-OB, C-EFM, MSN, CNS, Sutter Roseville Medical Center 2013.

Figure 1: Recommended cuff sizes

Arm Circumference (cm)	Cuff Size
22-26	"Small Adult": 12x22cm
27-34	"Adult": 16x30cm
35-44	"Large Adult": 16x36cm
45-52	"Adult Thigh": 16x42cm

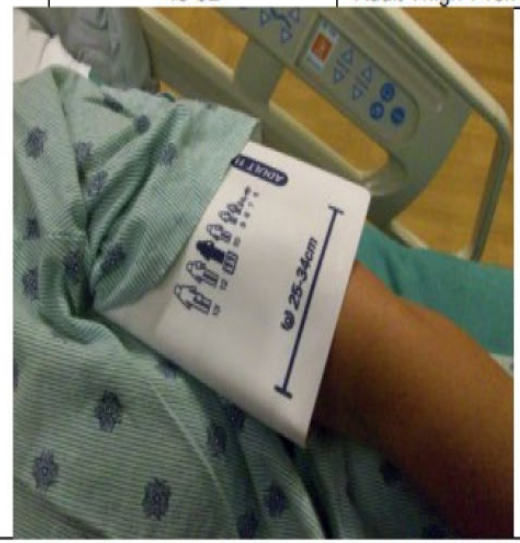


Photo courtesy of and printed with permission by Kristi Gabel, RNC-OB, C-EFM, MSN, CNS, Sutter Roseville Medical Center 2013.

Recognition and Prevention: Prenatal preparation

ASA 162 mg start 12 wks
Treat CHTN

Obtain and assess labs while listening to and investigating patient symptoms:

Baseline labs:
- Proteinuria (baseline 24 hr OR P:C)
- CBC with platelet count
- Serum creatinine
- LDH
- AST
- ALT

Screening for community support needs and resources provided

Screening should include:
- Medical needs
- Mental and behavioral health needs
- Substance use disorder needs
- Structural and social drivers of health

(Facilitates early recognition)

Patient Education: Should include:
- Who to contact with medical and mental health concerns, ideally stratified by severity of condition or symptoms
- Review of warning signs/symptoms
- Reinforcement of the value of outpatient postpartum follow up
- Summary of delivery events and treatments used
- Information about future pregnancies and hypertension risk

Can include:
- Patient support network in receiving relevant resources and education

All provided resources should align with the pregnant or postpartum patient's:
- Health literacy
- Cultural needs
- Language proficiency
- Geographic location and access

UVMMC has translations of many documents. Please contact us if you need translation. Check with your institution as you should have ready access to translation and translated documents.

Recognition and Prevention:

Summary of actions at initiation of prenatal care and during prenatal visits:

- Assess for high and moderate risk factors for preeclampsia and initiate ASA 162 mg qd at 12 wks
- Prescribe home blood pressure cuff. Have patient bring in cuff for calibration, ensure correct cuff size
- Treat CHTN

Baseline labs including 24 hr urine or urine protein/creatinine ratio

- Assess for difficulty with medical access or communication if concerned about pregnancy/blood pressure:
  - language access information
  - transportation plan if needed for assessment

Response: standardized, facility wide protocols

Should include:

- Notification of physician or primary care provider if systolic pressure is 160 mm Hg or more or diastolic pressure is 110 mm Hg or more for two measurements within 15 minutes
- Monitoring cases of borderline severe hypertension (150 to 159 mm Hg systolic and/or 105-109 mm Hg diastolic) closely for progression to severe hypertension.
- Initiating treatment within 60 minutes of verification after first severe range blood pressure reading, assuming confirmation of persistent elevation through a second reading.
- Escalation measures for ongoing observation and management
- Onset and duration of magnesium sulfate therapy
- Advance preparation for seizure prophylaxis and magnesium toxicity

Documents Status: **Approved**

IDENT	NOBG64
Type of Document	Guideline
Applicability Type	Cross-Organizational
Title of Owner	Nursing Dir: Women's Care & Peds
Title of Approving Official	Chief Nursing Officer
Date Effective	1/19/2022
Date of Next Review	1/19/2023

THE University of Vermont MEDICAL CENTER

TITLE: Obstetric Hypertension Guideline

PURPOSE:
Hypertensive disorders of pregnancy constitute one of the leading causes of maternal and perinatal mortality worldwide. It has been estimated that preeclampsia complicates 2–8% of pregnancies globally. In the United States, the rate of preeclampsia increased by 25% between 1987 and 2004. Moreover, in comparison with women giving birth in 1980, those giving birth in 2003 were at 6.7-fold increased risk of severe preeclampsia. This complication is costly: one study reported that in 2012 in the United States, the estimated cost of preeclampsia within the first 12 months of delivery was $2.18 billion ($1.03 billion for women and $1.15 billion for infants), which was disproportionately borne by premature births. Acute-onset, severe systolic hypertension, severe diastolic hypertension, or both can occur during the prenatal, intrapartum, or postpartum periods. At any of these pregnancy time points, severe hypertension can be associated with severe maternal morbidity, including stroke, heart failure, and seizure. Pregnant women or women in the postpartum period with acute-onset, severe systolic hypertension; severe diastolic hypertension; or both require urgent antihypertensive therapy. Reduction in hypertension may reduce the risk of severe maternal morbidity (ACOG Practice Bulletin: 202: Gestational Hypertension and Preeclampsia, 2019; Emergent Therapy for Acute Onset, Severe Hypertension During Pregnancy and Postpartum, ACOG Committee Opinion 767, 2019).

POLICY STATEMENT: The UVMMC OB Hypertension guideline includes readiness, recognition, response, and reporting for severe maternal hypertension within our institution. Activation of appropriate resources and personnel may be necessary for patients within the Birthing Center, Mother Baby Unit, or other areas of the institution.

Readiness:
System Level: Standardized protocols for identification, diagnostic criteria, and management of severe hypertension, unit based multidisciplinary drills, system plan for escalation of care.
Patient Level: Assessment of risk factors and education of early warning signs such as headache and visual changes. Patients at high risk for preeclampsia may be treated with low dose aspirin (81-162 mg) during pregnancy.

Recognition: Standardized measurement of blood pressure in pregnancy and post-partum; identification of risk factors for severe hypertension; identification of early warning symptoms.

Response: Standardized approach for the prompt treatment of severe hypertension with checklists, escalation policies, and immediate availability of medications. Support for patient, families, staff during and after severe maternal morbidity event related to severe hypertension.

Reporting: Use of SAFE system for reporting of events, multidisciplinary review of severe hypertension cases with severe maternal morbidity at QAI. Education every 2 years and M&M as indicated

Response:
Protocol should include medication:

Initiation

Response

Escalation

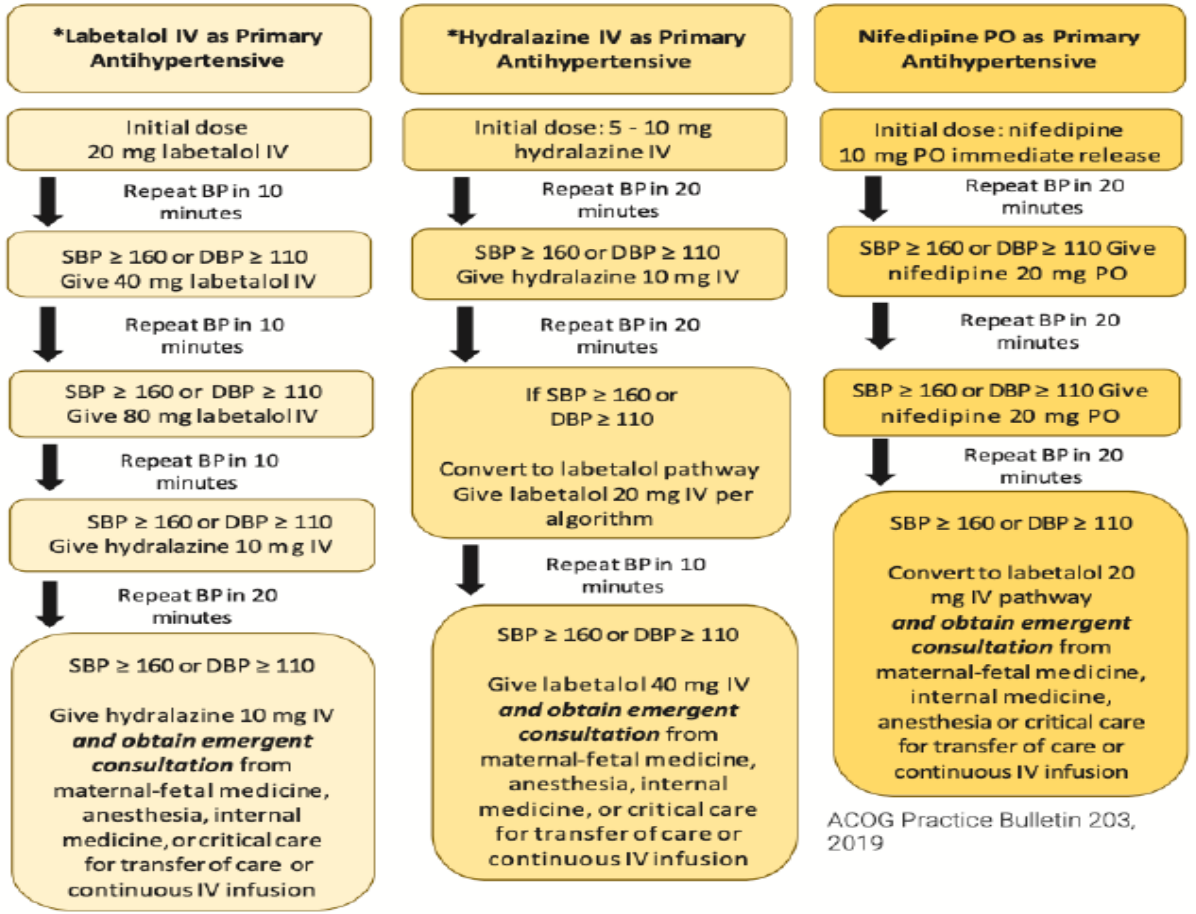
Follow-up monitoring

Goal: Treatment within 60 minutes from first severe range blood pressure

Part 2: Antihypertensive Treatment Algorithm for Hypertensive Emergencies

Treatment Recommendations for Sustained Systolic BP ≥ 160 mm Hg or Diastolic BP ≥ 110 mm Hg

*Antihypertensive treatment and magnesium sulfate should be administered simultaneously. If concurrent administration is not possible, antihypertensive treatment should be 1st priority.



ACOG Practice Bulletin 203, 2019

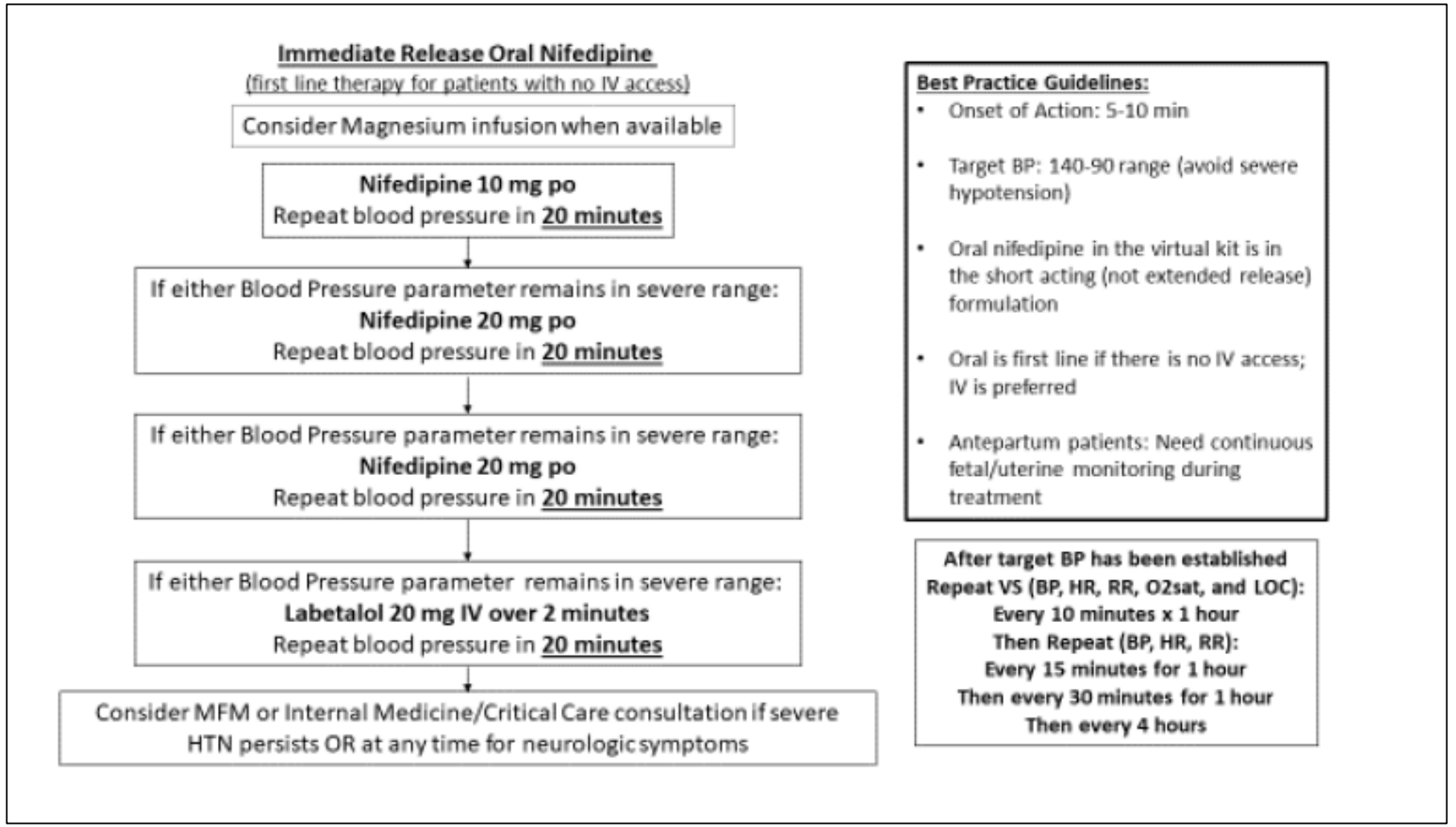
Target BP: 130-150/80-100 mm Hg

Once BP threshold is achieved:
- Q10 min for 1 hr
- Q15 min for 1 hr
- Q30 min for 1 hr
- Q1hr for 4 hrs

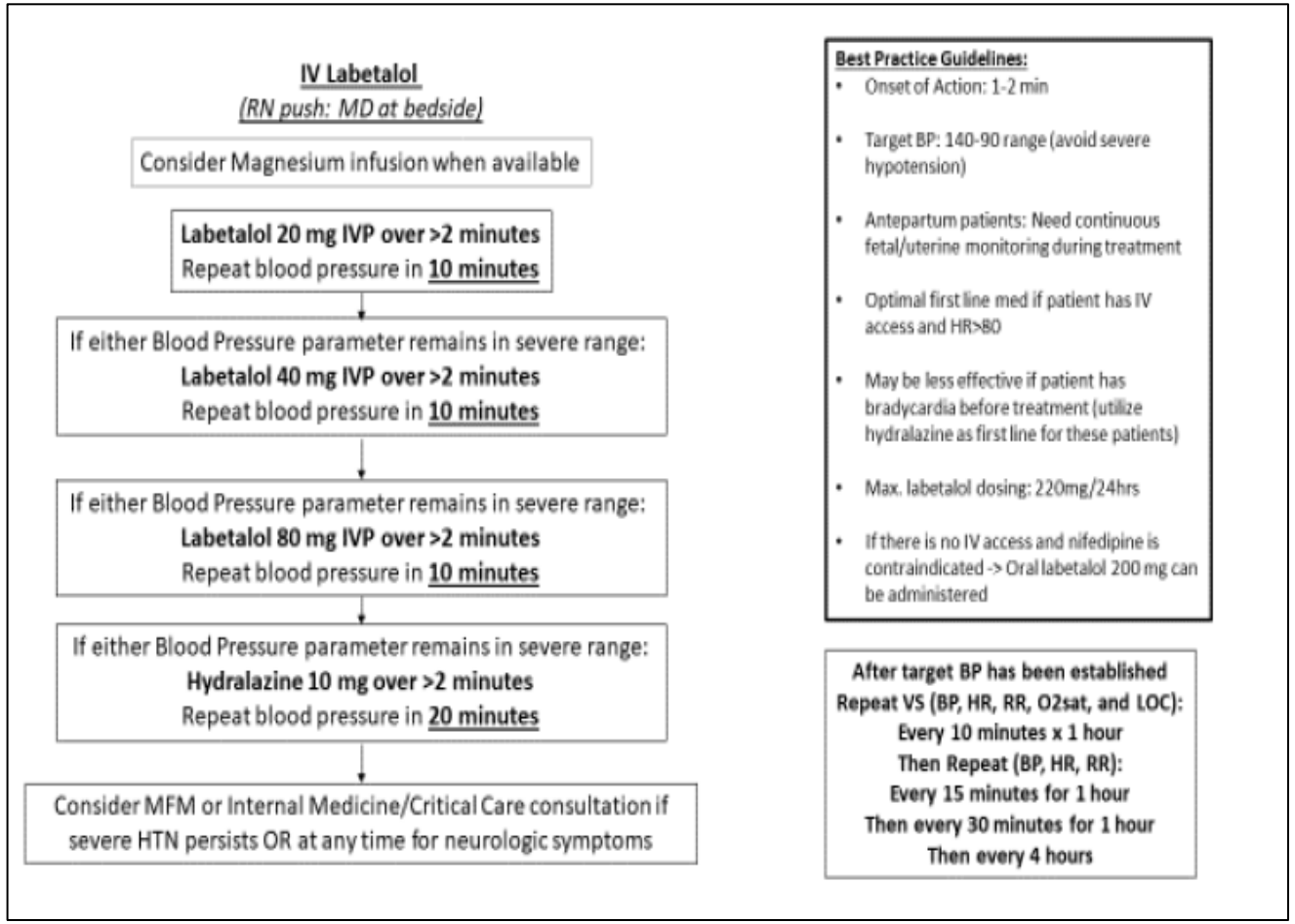
***Intravenous hydralazine or labetalol should be given over 2 minutes. In the presence of sinus bradycardia or a history of asthma, hydralazine or nifedipine are preferred as initial agents. If maternal HR > 110, labetalol is preferred.**

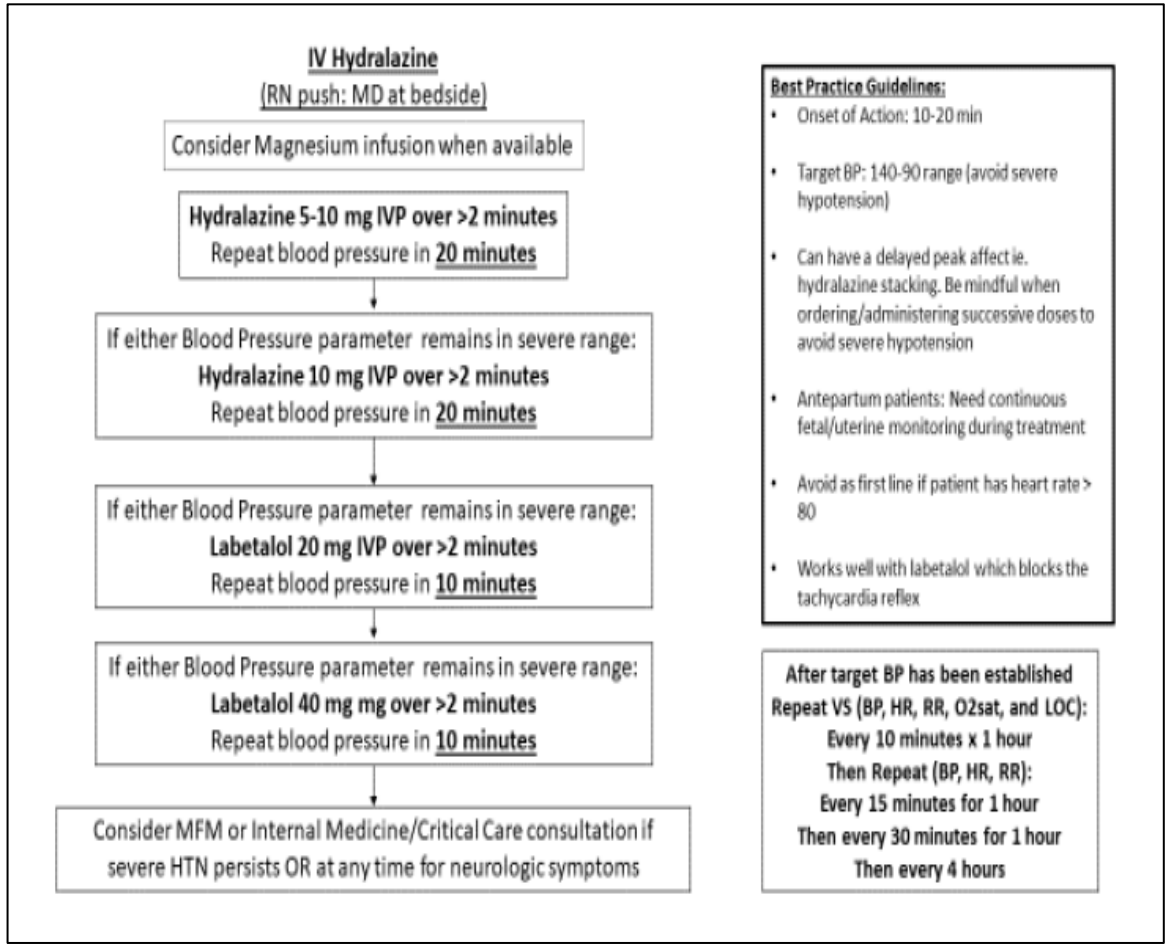
This figure was adapted from the Improving Health Care Response to Preeclampsia: A California Quality Improvement Toolkit, funded by the California Department of Public Health, 2014; supported by Title V funds.

Response: Place on EFM
Oral (immediate release) nifedipine if no IV access



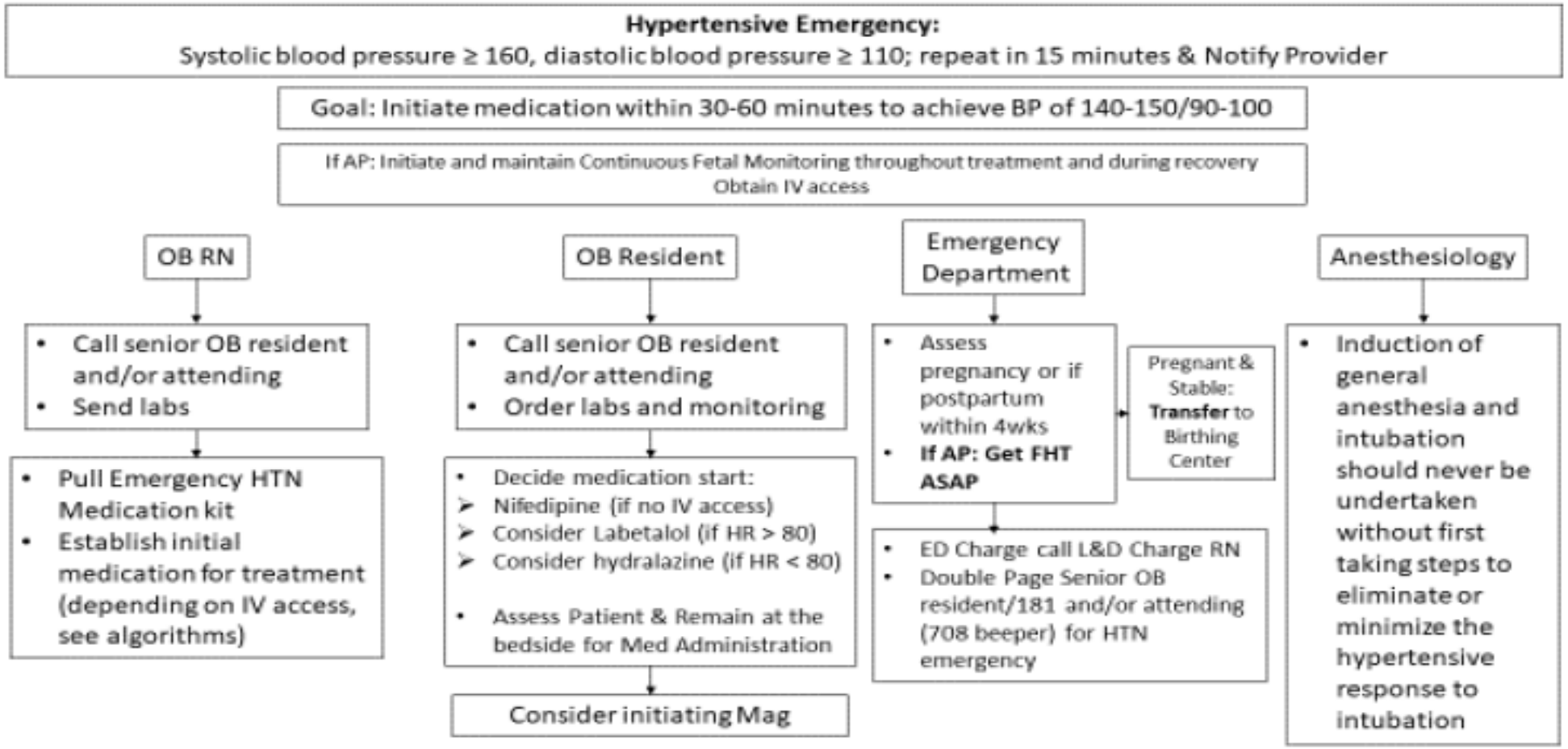
Response: IV labetalol or hydralazine is acceptable
Labetalol most common initial IV medication
If has relative bradycardia due to HTN (P<60) can consider hydralazine to start





Response: Multidisciplinary and role-specific

Hypertensive Emergency Treatment Algorithms



Response: Initiation of Magnesium for Severe Hypertension or Eclampsia and follow-up

(UVMMC does not increase bolus to 6 gm for high BMI, protocol is 4 gm bolus/2 gm/hr infusion)

Mg is not an antihypertensive

Should start when have severe hypertension (do not need to wait for assessment of protein)

MM note: we have had multiple issues with Mg infusions run too quickly at transport; we may recommend a bolus and not maintenance rate for transfer

- Consider MFM or Internal Medicine/Critical Care consultation if severe HTN persists OR at any time for neurologic symptoms
- In the event of eclampsia identify team leader, double page Anesthesia & OB and consider activating the Rapid Response Team
  - Place side rails up (padded) > protect airway > Pulse Oximetry > Supplemental O2: 100% non-rebreather > suction available > bag mask available > continuous EFM > place IV > draw labs

Seizure Prophylaxis for Preeclampsia

Magnesium Sulfate bolus 4-6 gms (over 20 minutes)
(lower dose for mild renal impairment (Cr >1.0), oliguria <30 cc/hr; lower dose if unknown)

↓

Magnesium Sulfate maintenance infusion 1-2 gms/hr
(lower dose for renal impairment as above)
Mg levels as ordered/clinically indicated

After Initiation of MgSO4
Assess VS:
Q5 min during loading dose
Q30 min during maintenance infusion
***If AP: continuous O2 sat monitoring**
***If PP: check O2 sat with VS**

Can switch to q.60 min if one or more criteria are met:
-BP stable w/o increases for 2hrs
-No anti-hypertensives within last 6hrs
-Patient not in labor or in latent phase of labor

I/O's: Calculate hourly, end of shift, and 24hr
Check magnesium serum levels (if indicated)

Best Practice Guidelines:

- Magnesium sulfate is not recommended as an antihypertensive crisis, but does remain the drug of choice for seizure prophylaxis for women with acute-onset of severe hypertension during pregnancy and the postpartum period
- Regardless of the dx (gHTN, PEC w/severe features, or eclampsia) do not delay initiating MgSO4
- Therapeutic dose is unknown: seizures can occur at higher levels and seizure protection can occur at sub-therapeutic levels. ***Target range: 4-8mg/dL***
- Patients at risk of impending respiratory depression may require intubation and emergency administration of:
  - Calcium gluconate 10% solution: 10ml IV over 3 minutes
  - IV furosemide → to accelerate the rate of urinary excretion

Eclamptic Seizure

Magnesium Sulfate treatment for preeclampsia with severe features

- Call for assistance, OBGYN and Anesthesiology: place side rails up
- Protect airway
- Start Pulse oximetry
- Provide Supplemental oxygen: 100% non-rebreather
- Have suction available
- Have bag mask available
- If AP: initiate/continue Continuous EFM
- Place IV & draw labs

↓

Initiate MgSO4 bolus: 4-6 grams IV over 20 minutes
Infusion 1-2 gm/hr
Start strict I&O

↓

Treatment for recurrent seizure or Magnesium Sulfate contraindication:
- Lorazepam 2-4 mg IVx1 → may repeat in 10-15 minutes
- Diazepam 5-10 mg IV → q5-10 minutes (maximum dose 30 mg)

↓

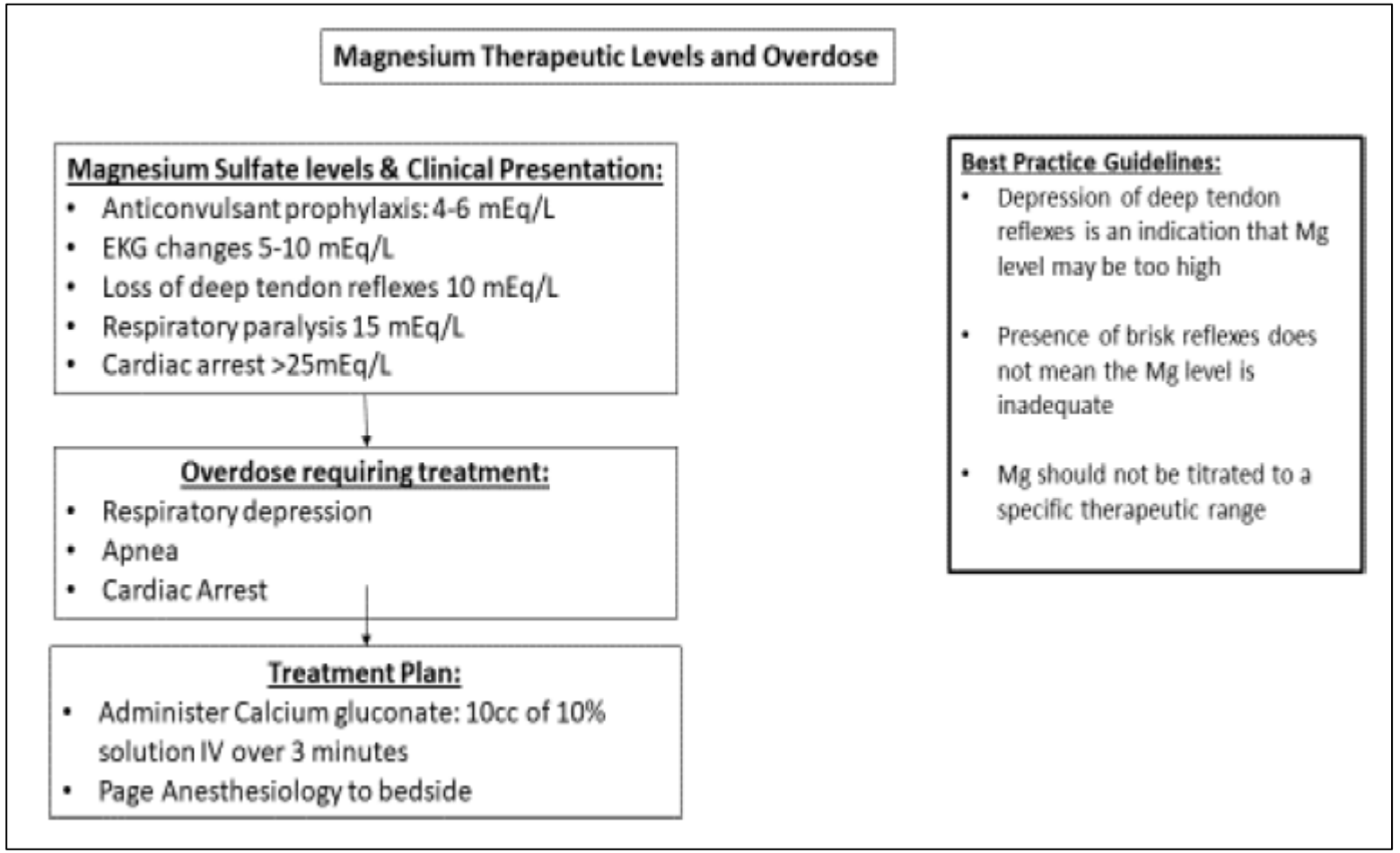
Treat Hypertension per algorithms

Best Practice Guidelines:

- Magnesium contraindications include: myasthenia gravis, & pulmonary edema
  - Use caution with patients in renal failure; dose adjustment may be needed
- Treat HTN per emergency HTN guidelines
- If persistent or recurrent seizure: Needs CNS imaging including MRV (with contrast)
- If Antepartum determine delivery planning when stable

Response: Magnesium therapeutic levels and toxicity

- Levels have not been clearly established; start bolus and infusion and do not necessarily titrate
- Have Calcium gluconate on unit when running Mg (treatment for Mg toxicity)



Hypertensive Emergency Checklist

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Hypertensive Emergency:

- **Two severe BP values (≥160/110) taken 15-60 minutes apart. Values do not need to be consecutive.**
- **May treat within 15 minutes if clinically indicated**

RECOGNITION:

☐ Call for assistance (Obstetrics Team)

Designate:

☐ Team Leader

☐ Check list reader/Recorder

☐ Primary RN

ACTION:

☐ Ensure side rails are up

☐ **Place IV; draw preeclampsia labs**

☐ **If Antepartum begin continuous fetal monitoring**

☐ **Send STAT labs and urine sample**

☐ Ensure medications appropriate given patient history

(Pull meds from Pyxis Virtual Kit)

☐ Antihypertensive therapy within 1 hour for persistent severe range BP

☐ **Following medication algorithms for VS monitoring and timing of additional medication dosing**

Birthing Center

☐ Administer seizure prophylaxis (magnesium sulfate first line agent, unless contraindicated)

☐ Antenatal corticosteroids (if <34 weeks gestation)

☐ Re-address VTE prophylaxis requirement

☐ Place indwelling urinary catheter

☐ Brain imaging if unremitting headache or neurological symptoms

☐ Debrief patient, family, obstetric team

Documentation:

PULL MEDICATION ALGORITHM

Present:: RN, OB, Anesthesiology (if indicated)

- Magnesium: 4 gm bolus then 2gm/hr IV
- Labetalol: 20 mg IV; escalate to 40 mgx1 then 80 mgx1, add hydralazine
- Hydralazine: 5 mg IV; escalate to 10 mgIVx1; add labetalol
- Nifedipine (immediate release): 10 mg pox1, escalate to 20 mg pox2; add labetalol 20 mg IV

Eclampsia Checklist

THE University of Vermont MEDICAL CENTER

RECOGNITION:

☐ Call for assistance (Obstetrics Team)

Designate:

☐ Team Leader

☐ Check list reader/Recorder

☐ Primary RN

Documentation:

ACTION:

☐ Ensure side rails are up

☐ Protect airway and improve oxygenation:

- Maternal pulse oximetry
- Supplemental oxygen (100% non-breather
  - Lateral decubitis position
  - Bag-mask ventilation available
  - Suction available

☐ If Antepartum begin continuous fetal monitoring

☐ Place IV; draw preeclampsia labs

☐ Ensure medications appropriate given patient history

(Pull meds from Pyxis Virtual Kit)

☐ Administer magnesium sulfate

☐ Administer Antihypertensive therapy if appropriate

☐ Develop delivery plan, if appropriate

☐ Debrief patient, family, obstetric team

Response: Postpartum follow-up

Postpartum follow-up visit:

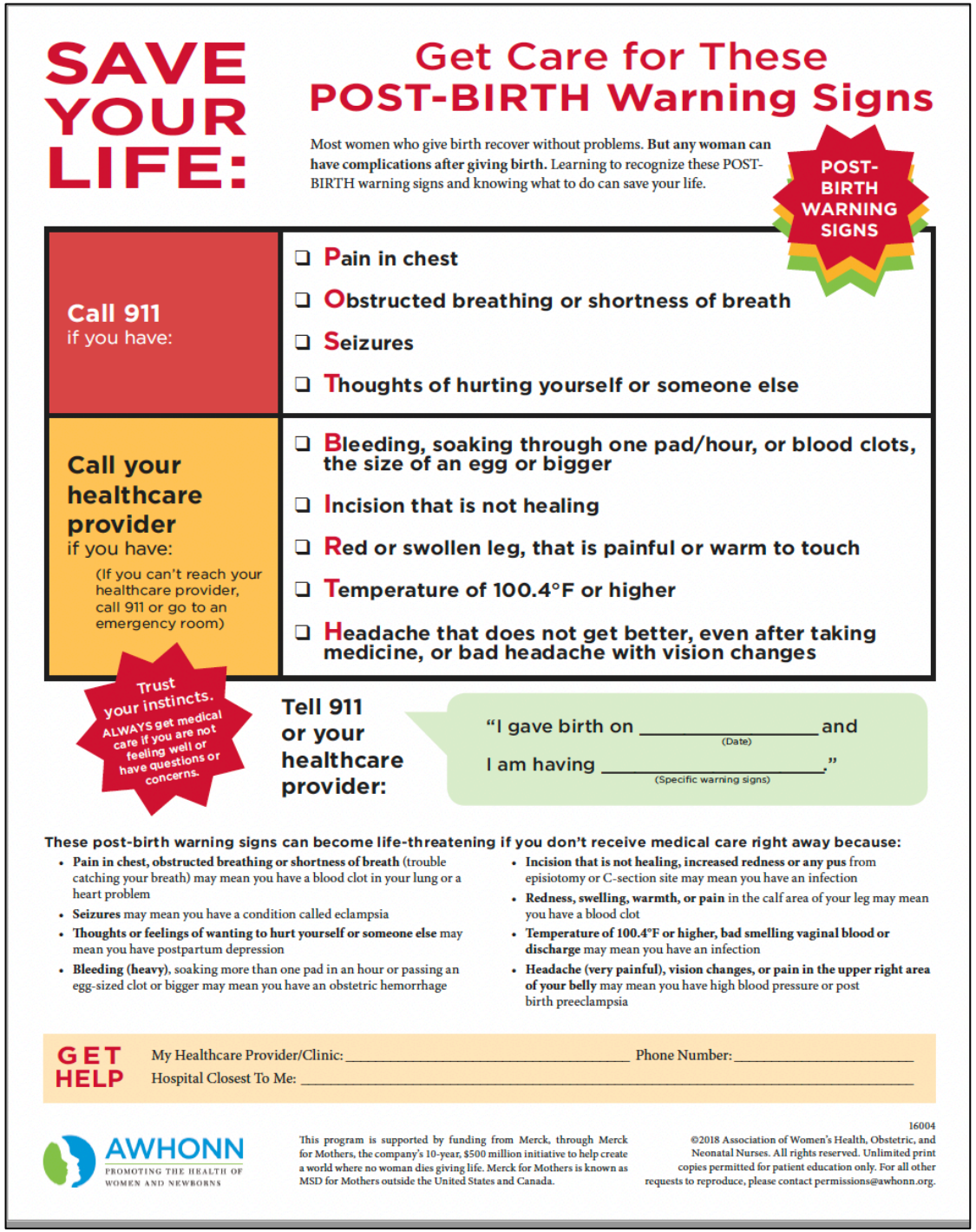
Discharging facility or obstetric provider should schedule postpartum follow-up (either in-person appointment or phone call) **within 3 days of discharge date.**

This visit should include:

- Blood pressure check
- Discussion of signs and symptoms of worsening hypertension
- Who to contact if signs and symptoms continue
- Information about where to go, such as urgent care facility or Emergency Department, if signs and symptoms worsen

Trauma-informed support for patients and identified support network

Discussions regarding birth events, follow-up care, resources, and appointments should be provided verbally and, ideally, in a written clinical summary that aligns with the person's health literacy, culture, language, and accessibility needs.



SAVE YOUR LIFE:

Get Care for These POST-BIRTH Warning Signs

Most women who give birth recover without problems. **But any woman can have complications after giving birth.** Learning to recognize these POST-BIRTH warning signs and knowing what to do can save your life.

POST-BIRTH WARNING SIGNS

Call 911 if you have:

- ❑ **P**ain in chest
- ❑ **O**bstructed breathing or shortness of breath
- ❑ **S**eizures
- ❑ **T**houghts of hurting yourself or someone else

Call your healthcare provider if you have:

(If you can't reach your healthcare provider, call 911 or go to an emergency room)

- ❑ **B**leeding, soaking through one pad/hour, or blood clots, the size of an egg or bigger
- ❑ **I**ncision that is not healing
- ❑ **R**ed or swollen leg, that is painful or warm to touch
- ❑ **T**emperature of 100.4°F or higher
- ❑ **H**eadache that does not get better, even after taking medicine, or bad headache with vision changes

Trust your instincts. ALWAYS get medical care if you are not feeling well or have questions or concerns.

Tell 911 or your healthcare provider:

"I gave birth on _____ (Date) and I am having _____ (Specific warning signs)."

These post-birth warning signs can become life-threatening if you don't receive medical care right away because:

- **Pain in chest, obstructed breathing or shortness of breath** (trouble catching your breath) may mean you have a blood clot in your lung or a heart problem
- **Seizures** may mean you have a condition called eclampsia
- **Thoughts or feelings of wanting to hurt yourself or someone else** may mean you have postpartum depression
- **Bleeding (heavy)**, soaking more than one pad in an hour or passing an egg-sized clot or bigger may mean you have an obstetric hemorrhage
- **Incision that is not healing, increased redness or any pus** from episiotomy or C-section site may mean you have an infection
- **Redness, swelling, warmth, or pain** in the calf area of your leg may mean you have a blood clot
- **Temperature of 100.4°F or higher, bad smelling vaginal blood or discharge** may mean you have an infection
- **Headache (very painful), vision changes, or pain in the upper right area of your belly** may mean you have high blood pressure or post birth preeclampsia

GET HELP

My Healthcare Provider/Clinic: _____ Phone Number: _____

Hospital Closest To Me: _____

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

This program is supported by funding from Merck, through Merck for Mothers, the company's 10-year, $500 million initiative to help create a world where no woman dies giving life. Merck for Mothers is known as MSD for Mothers outside the United States and Canada.

Postpartum discharge information about Hypertensive Emergency and Preeclampsia symptoms

Reporting and Systems Learning

Multidisciplinary Case Review: every case in low volume settings (include anesthesiology)

Reviews may assess and/or identify:

- Alignment with standard policies and procedures
- Appropriate updates to standard policies and procedures for future events
- Other opportunities for improvement, including identification of discriminatory practices and opportunities to improve respectful, equitable and supportive care.

Consistent issues should be reported via established pathways

Severe Emergency Hypertension Debrief Form

Criteria for multidisciplinary debrief:

1. Request of any team member
2. BP > 160/110, seizure or stroke
3. Severe Maternal Morbidity: received >4u PRBC (unanticipated; excludes uncomplicated planned cesarean hysterectomy); unplanned cesarean hysterectomy, patient admission to ICU
4. Maternal Death

When: As soon after event as possible

Who: As many people as possible that were part of event. Ideally debrief is done together but by separate interviews can occur as needed. At a minimum: Obstetric provider, Charge RN, and anesthesiology provider should be included.

How: The attending provider and/or Charge RN should call the team together and initiate the debrief session as well as collaborate to fill out the debrief form. Either the McClure 7 or Baird 7 Nurse Mangers and/or the Medical Director for the Birthing Center and Antepartum/Postpartum

Date:_____

Team Members Present for debrief:_____

	Yes	No	N/A	Comment
Was hypertension recognized appropriately?				
Did the woman appropriately receive magnesium SO4?				
Was severe hypertension treated in a timely fashion (<60 minutes)? If not, explain treatment delay.				
Was the woman delivered at the appropriate time relative to her hypertensive disease?				
Were any complications related to hypertensive disease managed appropriately?				

Date:_____ **University of Vermont Medical Center – Labor & Delivery/Baird 7 Debriefing Form** MRN:_____

Confidential and Privileged Information Pursuant to 26VSA Section 141-1143

This debriefing tool can be used by any member of the healthcare team for any potential high risk situation to improve teamwork and to help identify systems issues, communication concerns, or education needs. Leave this form in management's office mailbox to communicate any findings or need for follow-up.

Event type: (circle one)	Spontaneous Vaginal Delivery	Operative Vaginal Delivery	Precipitous Delivery	ϒ Leadership Team notified
	Scheduled Cesarean	STAT or Urgent Cesarean	Shoulder Dystocia	ϒ Team desires formal debrief
	Newborn Resuscitation	Maternal Stabilization	Retained Placenta	ϒ Team desires peer to peer support
	Obstetric Hemorrhage	Uterine Rupture	Hypertensive Crisis	ϒ Social Work consult initiated
				ϒ Team member desires EFAP support

Pre-delivery/event • Was there a team meeting prior to event? •Was the room/equipment set up? •Were the appropriate people notified?	
Communication/teamwork • Was communication clear and timely? • How did the team work together? • Did everyone know their roles and fill them?	
Kudos • What went well? • Positive feedback?	
Opportunities • What could have gone better? • What could be improved for the future? • Any equipment, supplies or systems issues?	
Documentation • Was the event thoroughly documented? • Is charting by all team members aligned? (timing, sequence of events, apgars, EBL, etc)	
Follow-up with patient and family • Does the patient need an opportunity to discuss the events? If so, who should follow- up and when?	

Completed by_____**Was a Safe Report completed?**_____**Did a formal Debrief occur?**_____**Does a formal Debrief need to be scheduled?**_____

Respectful, Equitable, and Supportive Care

Open, transparent, and empathetic communication with pregnant and postpartum people and their identified support network:

Establish and/or maintain a mechanism for patients, support network, and staff to identify inequitable care and episodes of miscommunication or disrespect.

- Develop plan to address reported cases of inequitable care, miscommunication, or disrespect

Inclusion of the patient as part of the multidisciplinary care team:

- Establishment of trust
- Informed, bidirectional shared decision-making
- Patient values and goals as the primary driver of this process

As Black, Indigenous, and Hispanic people experience maternal mortality and severe maternal morbidity at disproportionately higher rates because of systemic racism, but not race itself, it is necessary to mitigate bias by having a high index of suspicion for a contributing clinical condition, such as severe hypertension, in these populations.

Patient support networks may include nonfamilial supports, such as doulas and home visitors, who, with the postpartum person's permission, should be welcomed when any teaching or planning is provided.

2022

Resource Binder

A guide to accompany OB Drill Binders

Trainer Resources

The heart and science of medicine.

ACOG The American College of Obstetricians and Gynecologists

AIM ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

PERINATAL QUALITY COLLABORATIVE VERMONT

VCHIP

THE University of Vermont MEDICAL CENTER

TABLE OF CONTENTS Continued

Visiting Nurses and Vermont Department of Health Interactions

Visiting Nursing:

- Plan for referral for discharge follow-up for every patient with preeclampsia
- Possible role in bp check within 3 days of discharge and weekly afterward

Vermont Department of Health:

- General public educational messaging
- Awareness/education of all family support structures re: the implications of maternal preeclampsia and follow-up

Reporting: AIM Process and Structural Measures: RedCap

AIM Preeclampsia/Hypertension Measures

Please complete the survey below.

Thank you!

Hospital Name _____

Month and year of data:
(mm_yyyy format) _____

Timely Treatment of Persistent Severe Hypertension

The number of pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension: _____

This number should exclude women with an exacerbation of chronic HTN

DEFINITIONS:
•Severe HTN is systolic BP ≥ 160 mm Hg, or diastolic BP ≥ 110, or both

Among those patients listed above, the number who were treated within 1 hour of severe hypertension onset with IV Labetalol, IV Hydralazine, or PO Nifedipine. The 1 hour is measured from the first severe range BP reading, assuming confirmation of persistent elevation through a second reading. _____

Percentage _____

Scheduling of Postpartum Blood Pressure and Symptoms Checks

Notes:
For the next section, exclude patients who were transferred out of your facility prior to discharge
• Blood pressure measurement and symptoms checks can be scheduled at any point during the 3- and 7-day time periods and do not necessarily require an in-person visit

The number of pregnant and postpartum people during their birth admission with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension _____

Among the above, how many had a postpartum blood pressure and symptoms check scheduled to occur within 3 days after their birth hospitalization discharge date _____

Percentage _____

The number of pregnant and postpartum people during their birth admission with a documented diagnosis of preeclampsia, gestational or chronic hypertension, excluding those who experienced persistent severe hypertension during their birth admission. _____

Among the above, number of patients who had a postpartum blood pressure and symptoms check scheduled to occur within 7 days after their birth hospitalization discharge date. _____

Percentage _____

Reporting: AIM Process and Structural Measures: RedCap

Patient Support After Persistent Severe Hypertension

Number of pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension ____

The number of those included above who received a verbal briefing on their persistent severe hypertension by their care team before discharge: ____

Percentage ____

Unit Drills

Report number of Drills
In this month, how many OB drills (In Situ and/or Sim Lab) were performed on your unit for any maternal safety topic? _____

At the end of this reporting period, what topics were covered in the OB drills?

- ☐ Hemorrhage
- ☐ Severe Hypertension
- ☐ Other

Provider Education

Provider education on severe hypertension and preeclampsia

At the end of this month, what cumulative proportion of OB physicians and midwives has completed (within the last 2 years) an education program on the Severe HTN/Preeclampsia bundle elements and the unit-standard protocol?
Report estimate in 10% increments (round up)

Notes:
This is meant to be an informal estimate by nursing leadership similar to the CDC mPINC survey to assess breastfeeding practices.
Cumulative means "Since the onset of the project, what proportion of the staff have completed the educational program?"

Provider education on respectful and equitable care

At the end of this month, what cumulative proportion of OB providers has completed within the last 2 years the last 2 years an education program on respectful and equitable care?
Report estimate in 10% increments (round up)

Same metric for RNs and ED providers (and ED RNs)

Reporting: AIM Process and Structural Measures: RedCap

Structural Measures:

Patient Event Debriefs: Has your department established a standardized process to conduct debriefs with patients after a severe event?

Notes: Include patient support networks during patient event debriefs, as requested
• Severe events may include the The Joint Commission sentinel event definition, severe maternal morbidity, or fetal death

Not Started | In process | Completed

(Place a mark on the scale above)

Clinical Team Debriefs: Has your department established a system to perform regular formal debriefs with the clinical team after cases with major complications?

Notes: Major complications will be defined by each facility based on volume, with a minimum being The Joint Commission Severe Maternal Morbidity Criteria

Not Started | In process | Completed

(Place a mark on the scale above)

Multidisciplinary Case Reviews: Has your hospital established a process to perform multidisciplinary systems-level reviews on cases of severe maternal morbidity (including, at a minimum, birthing patients admitted to the ICU or who received ≥ 4 units RBC transfusions)?

Notes: For greatest impact, we suggest that in addition to the minimum instances for review, hospital teams also implement missed opportunity reviews for key bundle process measures (e.g., instances in which acute onset severe hypertension was not treated within 1 hour) in both unit debriefs and multidisciplinary case reviews

Not Started | In process | Completed

(Place a mark on the scale above)

Reporting: AIM Process and Structural Measures: RedCap

Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to measuring blood pressure?

Not Started | In process | Completed

(Place a mark on the scale above)

Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to treatment of severe hypertension/preeclampsia?

Not Started | In process | Completed

(Place a mark on the scale above)

Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to the use of seizure prophylaxis, including treatment for overdose?

Not Started | In process | Completed

(Place a mark on the scale above)

Patient Education Materials on Urgent Postpartum Warning Signs:
Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?

Not Started | In process | Completed

(Place a mark on the scale above)

Emergency Department (ED) Screening for Current or Recent Pregnancy:
Has your ED established or continued standardized verbal screening for current pregnancy and pregnancy in the past year as part of its triage process?

Not Started | In process | Completed

(Place a mark on the scale above)

This bundle is unique in the emphasis of ALL providers in the system to know if a patient is pregnant/postpartum when has severe hypertension

- We will meet with each hospital to review collection of Process and Structural measures
- Each hospital may need different approach to keeping track: each hospital is not a common event, manual approach may be needed

<u>Future AIM Webinars:</u>

- Multisystem Reviews and Debriefs

Need to know what you want: we are considering:
- Equitable care implementation
- Patient and family support after an event

Suggestions?

AIM
ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

<u>Goal:</u>
Reduction of maternal morbidity and mortality by implementation of specific perinatal safety bundles and longitudinal measurement of outcomes: severe maternal morbidity, implementation of process and structural measures

Severe Hypertension in Pregnancy Patient Safety Bundle (2022)
Core Data Collection Plan

Outcome

Metric	Name	Description	Notes
O1	Severe Maternal Morbidity (excluding transfusion codes alone)	**Report N/D** **Denominator:** All qualifying pregnant and postpartum people during their birth admission **Numerator:** Among the denominator, those who experienced severe maternal morbidity, excluding those who experienced transfusion alone	Disaggregate by race and ethnicity, payor
O2	Severe Maternal Morbidity among People with Preeclampsia (excluding transfusion codes alone)	**Report N/D** **Denominator:** All qualifying pregnant and postpartum people during their birth admission with preeclampsia **Numerator:** Among the denominator, those who experienced severe maternal morbidity, excluding those who experienced transfusion alone	Disaggregate by race and ethnicity, payor

Outcome Measures:

Plan:
Extract discharge data by codes

Process Measures: RedCap

Process

Metric	Name	Description	Notes
P1	Timely Treatment of Persistent Severe Hypertension	**Report N/D** **Denominator:** Pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who were treated within 1 hour with IV Labetalol, IV Hydralazine, or PO Nifedipine. The 1 hour is measured from the first severe range BP reading, assuming confirmation of persistent elevation through a second reading.	• Disaggregate by race/ethnicity, payor • Full measurement specifications can be found in this SMFM Special Statement

From Epic/EMR:

Need to build this metric

Some hospitals may need to be manual and need a process to keep track of patients that had severe hypertension (most hospitals <5/year)

Logic something like:

- Pull bps on M7 and B7 >=160/110
- Pull med administration for those times (goal: within an hour)

Metric	Name	Description	Notes
P2	Scheduling of Postpartum Blood Pressure and Symptoms Checks	**P2A: Severe Hypertension During the Birth Admission** **Report N/D** **Denominator:** Pregnant and postpartum people during their birth admission with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who had a postpartum blood pressure and symptoms check scheduled to occur within 3 days after their birth hospitalization discharge date **P2B: All Other Hypertensive Disorders During Pregnancy** **Report N/D** **Denominator:** Pregnant and postpartum people during their birth admission with a documented diagnosis of preeclampsia, gestational or chronic hypertension, excluding those who experienced persistent severe hypertension during their birth admission (**see P2A**) **Numerator:** Among the denominator, those who had a postpartum blood pressure and symptoms check scheduled to occur within 7 days after their birth hospitalization discharge date	• Disaggregate by race/ethnicity, payor • Exclude those who were transferred out of your facility prior to discharge • Blood pressure measurement and symptoms checks can be scheduled at any point during the 3- and 7-day time periods and do not necessarily require an in-person visit • Planning and considerations should be made for patients with weekend discharges and/or those with 3- and 7-day follow up periods that fall on the weekend. These patients should be included in the denominator as part of quality measurement • See **ACOG Committee Opinion 736 on Optimizing Postpartum Care**

Process Measures: RedCap

Postdischarge follow-up within 3 days (severe HTN) or 7 days (mild HTN):

Look in discharge section if the date they are scheduled to return is included: might need to figure out how to document, an RN phone call with bp discussion acceptable

(Hint: start providing prescriptions for blood pressure cuffs to ALL pts with HTN)

Metric	Name	Description	Notes
P3	OB Provider Education	**P3A: Provider education on severe hypertension and preeclampsia** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of delivering physicians and midwives has completed within the last two years **an education program on Severe Hypertension/ Preeclampsia** that includes the unit-standard protocols and measures? **P3B: Provider education on respectful and equitable care** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB providers has completed within the last 2 years the last 2 years **an education program on respectful and equitable care?**	

Process Measures: RedCap

HTN: Provider education q2 yrs (mandatories)

Need to send out to everyone q2 yrs and put link into Cornerstone (requested)

Respectful and Equitable care education: Provider education

Mandatory DEI in Cornerstone

Metric	Name	Description	Notes
P4	OB Nursing Education	**P4A: Nursing education on severe hypertension and preeclampsia** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB nurses (including L&D and postpartum) has completed within the last two years **an education program on Severe Hypertension/Preeclampsia** that includes the unit-standard protocols and measures? **P4B: Nursing education on respectful and equitable care** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB nurses (including L&D and postpartum) has completed within the last 2 years **an education program on respectful and equitable care?**	
P5	ED Provider & Nursing Education – Hypertension and Pregnancy	**Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of clinical ED providers and nursing staff has completed within the last 2 years education on signs and symptoms of severe hypertension and preeclampsia in pregnant and postpartum people?	

Process Measures: RedCap

HTN: RN education q2 yrs (mandatories)

Need to send out to everyone q2 yrs and put link into Cornerstone (requested)

Respectful and Equitable care education: RN education

Mandatory DEI in Cornerstone

Measure: % of Providers and RNs that received education in the last 2 years

Metric	Name	Description	Notes
P6	Unit Drills	**Report # of drills and the drill topics** **P6a:** **Report integer** At the end of this reporting period, how many OB drills (In Situ and/or Sim Lab) were performed on your unit for any maternal safety topic? **P6b:** **Report TRUE/FALSE for the following drill topics: Hemorrhage, Severe Hypertension, Other** At the end of this reporting period, what topics were covered in the OB drills?	Ideally, drills related to severe hypertension will cover all sequelae, such as preeclampsia

Process Measures: RedCap

In situ (quick) drills and simulations

Structure

Metric	Name	Description	Notes
S1	Patient Event Debriefs	Has your department established a standardized process to conduct debriefs with patients after a severe event?	• Include patient support networks during patient event debriefs, as requested • Severe events may include the The Joint Commission sentinel event definition, severe maternal morbidity, or fetal death
S2	Clinical Team Debriefs	Has your department established a system to perform regular formal debriefs with the clinical team after cases with major complications?	Major complications will be defined by each facility based on volume, with a minimum being The Joint Commission Severe Maternal Morbidity Criteria

Structural Measures: RedCap

With patients: Practice these regularly in Quick Drills AND debrief for pretty much any uncommon event

For clinical team: Formal debrief after each event; PRACTICE, PRACTICE, PRACTICE with Quick Drills

Metric	Name	Description	Notes
S3	Multidisciplinary Case Reviews	Has your hospital established a process to perform multidisciplinary systems-level reviews on cases of severe maternal morbidity (including, at a minimum, birthing patients admitted to the ICU or who received ≥ 4 units RBC transfusions)?	For greatest impact, we suggest that in addition to the minimum instances for review defined in S3, hospital teams also implement missed opportunity reviews for key bundle process measures (e.g., instances in which acute onset severe hypertension was not treated within 1 hour) in both unit debriefs and multidisciplinary case reviews
S4	Unit Policy and Procedure	Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to: • **S4A:** Measuring blood pressure • **S4B:** Treatment of severe hypertension/preeclampsia, • **S4C:** The use of seizure prophylaxis, including treatment for overdose	

Structural Measures: RedCap

Multidisciplinary Reviews: ensure you hospital has a structure for these (a point peron to call and tell them you need one).

Because of the multidisciplinary nature of this diagnosis especially important

HTN Diagnosis and Treatment Policy/Guideline:
Should have one
Can share ours as eample

Structural Measures: RedCap

Metric	Name	Description	Notes
S5	Patient Education Materials on Urgent Postpartum Warning Signs	Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?	
S6	Emergency Department (ED) Screening for Current or Recent Pregnancy	Has your ED established or continued standardized verbal screening for current pregnancy and pregnancy in the past year as part of its triage process?	

Patient Education:

- During pregnancy and especially postpartum
- Combine with HTN
- Written materials provided (in correct language) at discharge
- If you have issues with getting documents in specific languages check with us

Do you want a webinar on Language access?

Emergency Room Screening:
Very important
We used 6 weeks since after this should go to PCP

Structural Measures: RedCap

Metric	Name	Description
S5	Patient Education Materials on Urgent Postpartum Warning Signs	Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?
S6	Emergency Department (ED) Screening for Current or Recent Pregnancy	Has your ED established or continued standardized verbal screening for current pregnancy and pregnancy in the past year as part of its triage process?

Patient Education:
Discharge follow-up:

VNA:

- VNA referral can count as a visit and should be utilized to help bridge inpt and outpt care (need to figure out documentation of that visit for chart-very important)
- Each hospital should include VNA in their roll out with the focus on PP follow-up and support
- We will be including VNA in all the Webinars, consider inclusion in other hospital based education
- Include in any multidisciplinary review (organized by the hospital/practice)

Optional

Metric	Name	Description	Notes
OP1	Patient Support After Persistent Severe Hypertension	**Report N/D** **Denominator:** Pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who received a verbal briefing on their persistent severe hypertension by their care team before discharge	• Disaggregate by race and ethnicity, payor • The denominator criteria are established for the purposes of standardized data collection and reporting and are not meant to represent all instances in which a verbal briefing with a patient may be appropriate

Structural Measures: RedCap

Patient Support: specific discussion about severe HTN by care team (can be RN): this would include DC planning and fu bp check in 3 days

VCHIP
Vermont Child Health Improvement Program
UNIVERSITY OF VERMONT LARNER COLLEGE OF MEDICINE

PERINATAL QUALITY COLLABORATIVE VERMONT

Mission: optimizing care and health outcomes in pregnancy and infancy through collaboration and continuous quality improvement.

Implementation of the
Severe Hypertension in Pregnancy Safety Bundle:
Definition, Diagnosis, and Treatment of Hypertension in Pregnancy

Marjorie Meyer MD
Carole McBride, PhD
Samantha Bellinger

AIM
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Severe Hypertension in Pregnancy Patient Safety Bundle (2022)
Element Implementation Details

Questions?