



MICHIGAN ALLIANCE FOR INNOVATION  
ON MATERNAL HEALTH

## MI AIM Monthly Webinar

February 25, 2025



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ON MATERNAL HEALTH

## **MI AIM Hypertension Education**

**Madonna Ladouceur, DNP, RN, ACNS-BC, EFM-C**

**February 25, 2025**

# MI AIM 2025 Scorecard on HTN

Implementation (50 pts)	Severe HTN (20 pts)	
	All cases up to 20 chart abstractions per month	
	≥80% of cases had a post-partum follow up appointment <u>scheduled</u>  (FYI: no more than a 3 day follow up of an appointment scheduled from date of discharge for severe HTN event during birth admission & no more than a 7 day follow up appointment scheduled from discharge for an individual with a history of HTN)	5
	OR	
	Show any percent improvement in compliance for post-partum follow up appointment <u>scheduled</u> from calendar year 2024 vs. 2025	3
	AND	
	Average of ≥85% of cases time to treat severe range BP's < 60 minutes (include all cases that equal 160 systolic and/or 110 diastolic)  <i>For smaller hospitals with ≤15 cases that qualify for the denominator population – Average of ≥75% of cases time to treat severe range BP's &lt; 60 minutes (include all cases that equal 160 systolic and/or 110 diastolic)</i>	15
	OR	
	Show improvement in time to treat severe range BP's < 60 minute from calendar year 2024 (include all cases that equal 160 systolic and/or 110 diastolic)	15

# ACOG Recommendations

## POSTPARTUM

- **Antihypertensive therapy** is suggested for women with persistent postpartum hypertension, SBP of 150 mm Hg or DBP of 100 mm or higher on at least two occasions that are at least 4 hours apart. Persistent SBP of 160 mm Hg or DBP of 110 mm Hg or higher should be treated within 1 hour.
- **Blood pressure monitoring** is recommended 72 hours after delivery and/or outpatient surveillance (e.g., visiting nurse evaluation) within 3 days and again 7-10 days after delivery or earlier if persistent symptoms.

**ACOG**  
THE AMERICAN CONGRESS  
OF OBSTETRICIANS  
AND GYNCOLOGISTS

District II

# Follow up appointments

## 3 Day Postpartum BP Checks

Patients require a BP 3 days or less after discharge if they experience a persistent severe hypertension episode defined as:

- A systolic BP  $\geq 160$  mm Hg and/or diastolic BP  $\geq 110$  mm Hg that is not documented to have resolved within 15 minutes.

DC Day of the Week	Day Appointment is Needed By
Monday	Thursday
Tuesday	Friday
Wednesday	Friday
Thursday	Friday
Friday	Monday
Saturday	Tuesday
Sunday	Wednesday

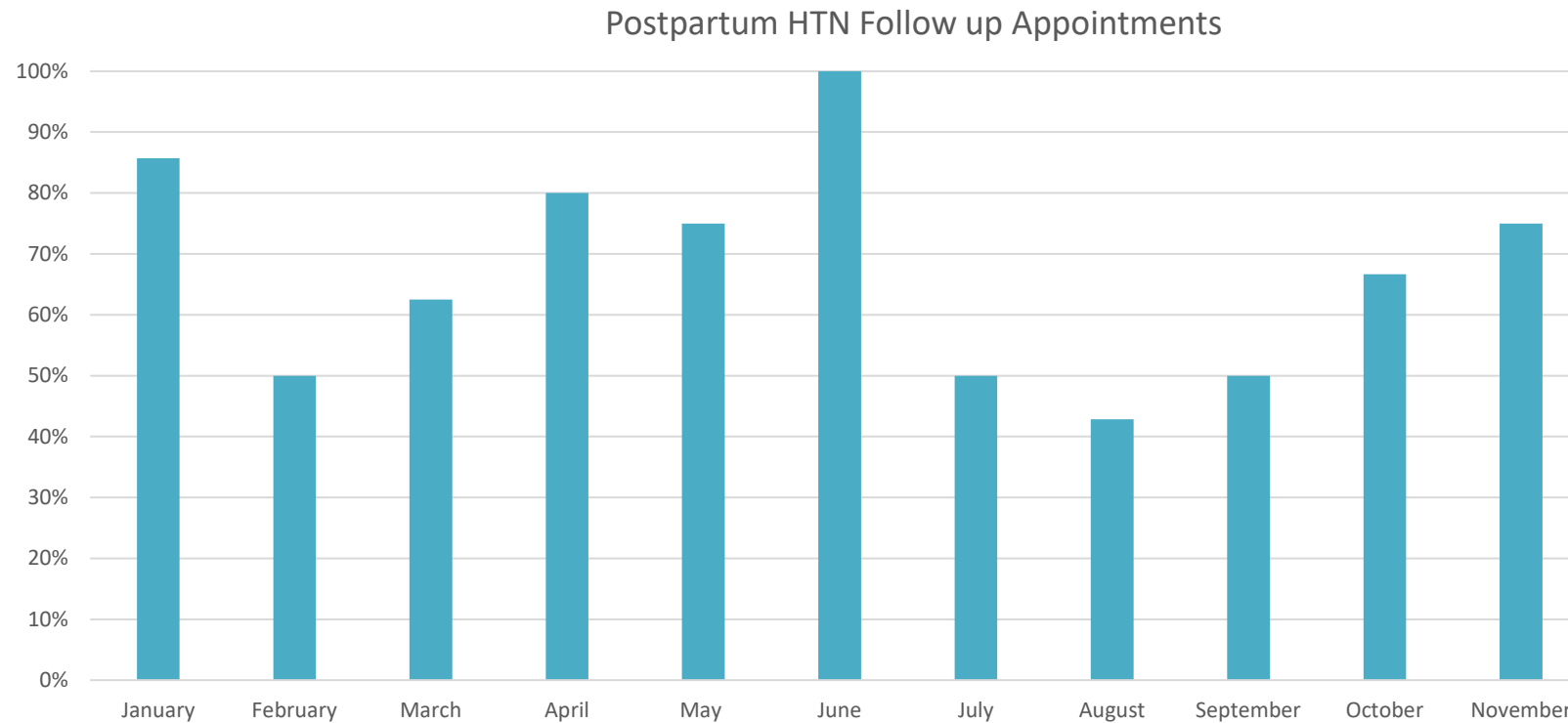
# 7 Day Postpartum BP Checks

Patients require a 7 day or less postpartum blood pressure check when they have a documented diagnosis of preeclampsia, gestational or chronic hypertension

DC Day of the Week	Day Appointment is Needed By
Monday	Monday
Tuesday	Tuesday
Wednesday	Wednesday
Thursday	Thursday
Friday	Friday
Saturday	Friday
Sunday	Friday

# Performance Improvement

2024 Annual  
compliance of  
65.8%



# Introduction of Nurse Navigator

- Reviews high risk patients
- Performs discharge teaching
- Provides AIM's maternal warning signs
- Schedules follow up appointments
- Provides blood pressure cuffs to qualifying patients
- In essence, works as an OB Case Manager

Discharged  
1/21:

Interdisciplinary D/C Plan					
<b>Special Instructions or Treatments</b>			Follow up with Dr. Malayev on Friday 1/24/25		
<b>Referrals for Continued Care:</b>			Please call 1-888-DMC-2500 for an appointment		
Home Care Agencies	DME Suppliers	Skilled Nursing Facilities	Dialysis Clinics Hospitals	Behavioral Health Contacts	Reason Ref
<Alpha>	<Alpha>	<Alpha>	<Alpha>	<Alpha>	<MultiAlpha>
<Alpha>	<Alpha>	<Alpha>	<Alpha>	<Alpha>	<MultiAlpha>
<Alpha>	<Alpha>	<Alpha>	<Alpha>	<Alpha>	<MultiAlpha>
<b>Personal Risk Factors</b>					
<b>Smoking Status: Cigarette use in the last 12 months</b>			<b>Smoking cessation material/support offered</b>		
<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown			<input type="radio"/> No tobacco use of any for <input type="radio"/> Refused/Declined counsel <input type="radio"/> Received counseling <input type="radio"/> Patient Accepts <input type="radio"/> Smoking Status Unknown. <input type="radio"/> Counseling not offered		
<b>Smoking Cessation Counseling provided?</b>					
<input type="radio"/> Yes <input type="radio"/> No			<input type="checkbox"/> Counseling provided <input type="checkbox"/> Quit plan developed <input type="checkbox"/> Extra treatment social support provided <input type="checkbox"/> Supplementary materials provided <input type="checkbox"/> Follow-Up contact scheduled <input type="checkbox"/> Other: <input type="checkbox"/> Intra treatment social support provided <input type="checkbox"/> Pharmacotherapy recommended as appropriate		
<b>Wound Care</b>					
Wound Location	Wound Dressing[s]	Attach Dressing with:	Clean wound with:	Frequency of Dressing Change	Wound Care Comments
<Alpha>	<Alpha>	<Alpha>	<Alpha>	<Alpha>	
<Alpha>	<Alpha>	<Alpha>	<Alpha>	<Alpha>	

## Severe HTN Checklist

“Capillaries in the Brain don’t care why the BP is elevated”

Notify MD after one severe BP value is taken

Repeat BP q5mins for 15 mins, Document reading

Initiate treatment within 1 hour of first severe BP

First Line Therapies : Labetalol, Hydralazine, Nifedipine(in the absence of an IV)

Order Pre-E labs

Initiate Seizure Prophylaxis

Antenatal Steroids

VTE Prophylaxis

Indwelling Catheter

Continuous EFM needed?

Delivery considered

Once BP is controlled (SBP < 160 and DBP <110) document as follows:

- Q 15 minutes for 2 hours

- Q 30 minutes for 1 hour

- Q hour for 4 hours

Control Environment: Padded side rails/quiet

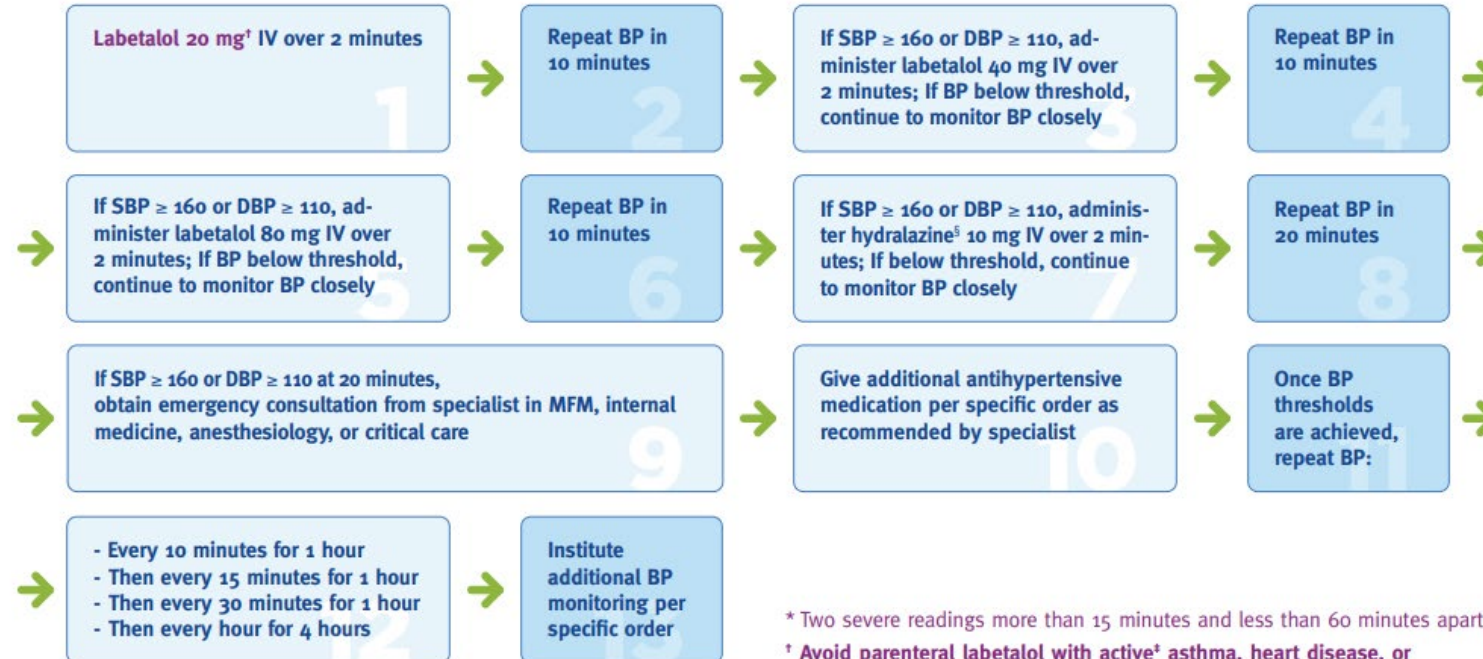
Patient education

Debrief completed with staff involved

# Labetalol Algorithm

EXAMPLE

Trigger: If severe elevations (SBP  $\geq 160$  or DBP  $\geq 110$ ) persist\* for 15 min or more **OR** If two severe elevations are obtained within 15 min and tx is clinically indicated



- Notify provider after one severe BP value is obtained
- Institute fetal surveillance if viable
- Hold IV labetalol for maternal pulse under 60
- Maximum cumulative IV-administered dose of labetalol should not exceed 300 mg in 24 hours
- There may be adverse effects and contraindications. Clinical judgement should prevail.

\* Two severe readings more than 15 minutes and less than 60 minutes apart

<sup>†</sup> Avoid parenteral labetalol with active<sup>‡</sup> asthma, heart disease, or congestive heart failure; use with caution with history of asthma. May cause neonatal bradycardia.

<sup>‡</sup> "Active asthma" is defined as:

- Ⓐ symptoms at least once a week, or
- Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
- Ⓒ any history of intubation or hospitalization for asthma.

<sup>§</sup> Hydralazine may increase risk of maternal hypotension.

Safe Motherhood Initiative

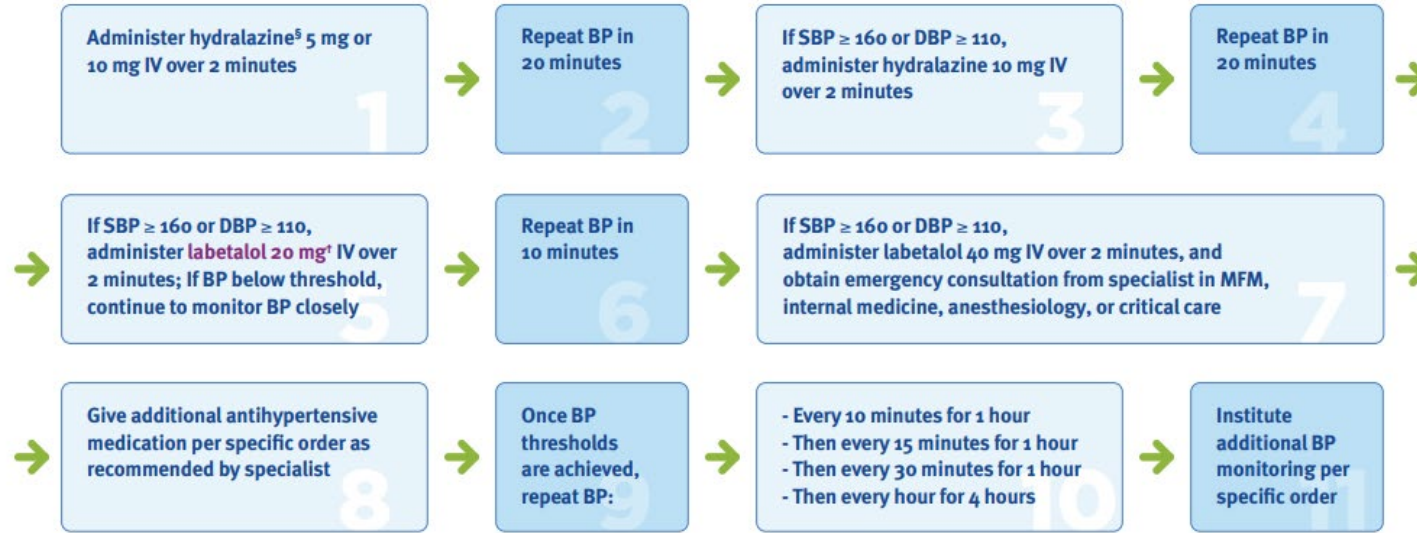
Revised February 2020



# Hydralazine Algorithm

EXAMPLE

Trigger: If severe elevations (SBP  $\geq 160$  or DBP  $\geq 110$ ) persist\* for 15 min or more **OR** If two severe elevations are obtained within 15 min and tx is clinically indicated



- Notify provider after one severe BP value is obtained
- Institute fetal surveillance if viable
- Hold IV labetalol for maternal pulse under 60
- There may be adverse effects and contraindications.
- Clinical judgement should prevail.

\* Two severe readings more than 15 minutes and less than 60 minutes apart

<sup>†</sup> **Avoid parenteral labetalol with active<sup>‡</sup> asthma, heart disease, or congestive heart failure; use with caution with history of asthma. May cause neonatal bradycardia.**

<sup>‡</sup> "Active asthma" is defined as:

- (A) symptoms at least once a week, or
- (B) use of an inhaler, corticosteroids for asthma during the pregnancy, or
- (C) any history of intubation or hospitalization for asthma.

<sup>§</sup> Hydralazine may increase risk of maternal hypotension.

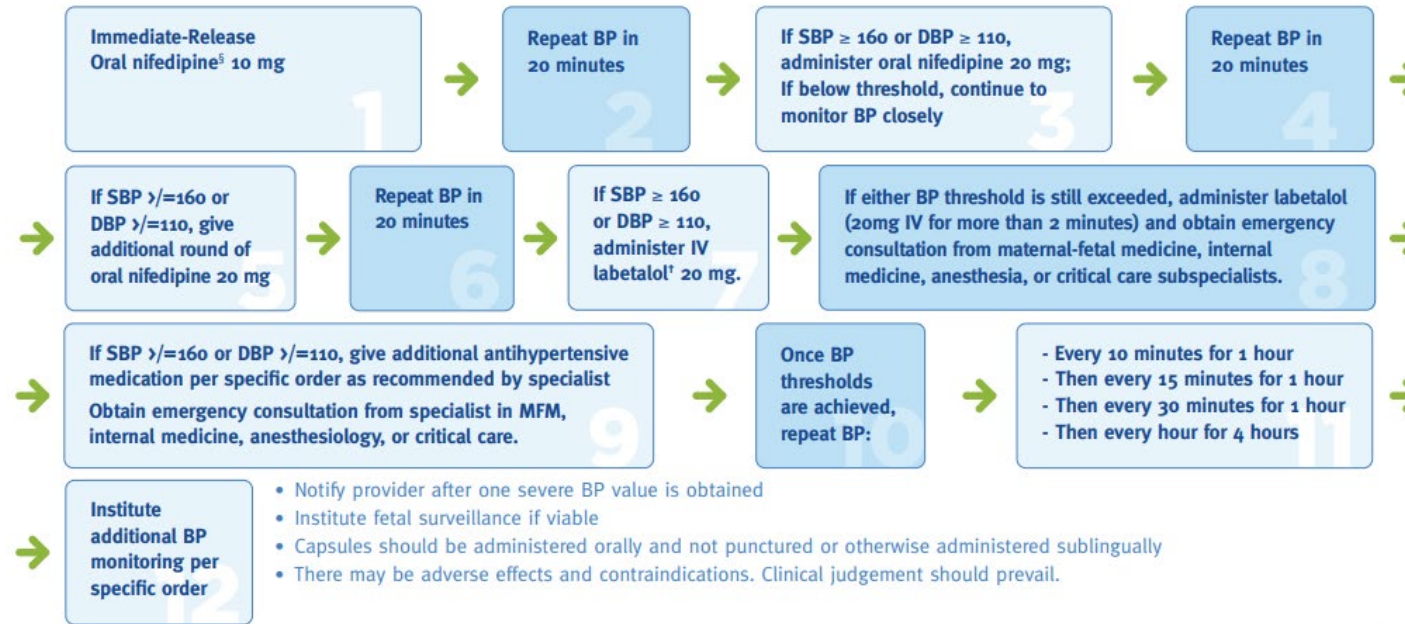
## Safe Motherhood Initiative

Revised February 2020



# Immediate-Release Oral Nifedipine Algorithm EXAMPLE

Trigger: If severe elevations (SBP  $\geq 160$  or DBP  $\geq 110$ ) persist\* for 15 min or more **OR** If two severe elevations are obtained within 15 min and tx is clinically indicated



\* Two severe readings more than 15 minutes and less than 60 minutes apart

<sup>§</sup> Immediate-release oral nifedipine has been associated with an increase in maternal heart rate and may overshoot hypotension.

<sup>†</sup> **Avoid parenteral labetalol with active<sup>‡</sup> asthma, heart disease, or congestive heart failure; use with caution with history of asthma. May cause neonatal bradycardia.**

<sup>‡</sup> "Active asthma" is defined as:

- Ⓐ symptoms at least once a week, or
- Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
- Ⓒ any history of intubation or hospitalization for asthma.

**Safe Motherhood Initiative**

Revised February 2020





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# Michigan Medicine Severe HTN Follow-Up

Jourdan E. Triebwasser  
February 25, 2025



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# Severe HTN follow-up

- ACOG recommends follow-up within 72 hours of discharge for those with severe HTN because postpartum exacerbations are common
- SMFM Patient Safety and Quality Committee Metric (ICD-based)

CPT codes qualifying for numerator

Office visit new patient: 99201, 99202, 99203, 99204, 99205  
Office visit established patient: 99211, 99212, 99213, 99214, 99215  
Office consultation: 99241, 99242, 99243, 99244, 99245  
Hospital observation: 99218, 99219, 99220  
Hospital observation with same-day discharge: 99234, 99235, 99236  
Hospital initial care: 99221, 99222, 99223  
Emergency department visit: 99281, 99283, 99284, 99285  
Telemedicine visit: 99421, 99422, 99423  
Telephone visit (provider): 99441, 99442, 99443  
Telephone visit (nonphysician): 98966, 98967, 98968  
Remote physiological monitoring: 99457

CPT codes qualifying for denominator

Any 1 or more of the following:  
Vaginal delivery: 59400, 59409, 59410  
Cesarean delivery: 59510, 59514, 59515  
VBAC: 59610, 59612, 59614  
Cesarean after TOLAC: 59618, 59620, 59622

Excludes management of spontaneous abortion: 59812, 59820, 59821, 59830  
Management of induced abortion: 59840, 59841, 59850, 59851, 59852, 59855, 59856, 59857, 59866  
Management of hydatidiform mole: 59870, 59100  
Management of ectopic pregnancy: 59120, 59121, 59130, 59135, 59136, 59140, 59150, 59151

ICD-10 codes and drug codes qualifying for denominator

Severe preeclampsia: O14.10, O14.12, O14.13, O14.14, O14.15  
HELLP syndrome: O14.20, O14.22, O14.23, O14.24, O14.25  
Eclampsia: O15.00, O15.02, O15.03, O15.1, O15.2, O15.9  
Severe hypertension: I16.0, I16.1, I16.2  
Injectable hydralazine: RxCUI 966571  
Injectable labetalol: RxCUI 896771

ICD-10 does not include a specific code for severe preeclampsia superimposed on preexisting hypertension

# Michigan Medicine–MIHEART

- Remote BP monitoring for 10 days after hospital discharge
  - Included: cHTN, gHTN, preE, HELLP, eclampsia, maternal cardiac comorbidities
- Patients given BP cuff at discharge if no cuff at home
- Twice daily text reminders to send in BP
- Automated feedback based on SBP/DBP
  - Flagged values to provider inbox if SBP  $\geq 150$  or DBP  $\geq 100$
- Virtual “check-out” visit with CNM at 10 days
  - Review meds
  - Counsel on risks of HDP

## Discharge at 24 Hours

- No severe features
- Normotensive postpartum

## Discharge at 48 hours

- **No severe BP on day of discharge**
- **Includes med start day of discharge if enrolling in MiHEART**

## Continue inpatient care

- Current symptoms
- BP severe or not controlled on meds
- Worsening labs


About high blood pressure in pregnancy

Preeclampsia, gestational hypertension, and HELLP syndrome are diseases of high blood pressure (hypertension) during pregnancy. The immediate risks to your health last up to one month after you deliver. Risks include seizure, stroke, organ damage, coma and death. The first week after delivery is when your blood pressure is most likely to rise and put you at risk for these complications.


Stay healthy from home

You are enrolled in MI-HEART to track your blood pressure from home. We hope to catch rising blood pressure before it becomes a problem so we can keep you out of the hospital and safe at home. You will send your blood pressure to us via text message. Unless directed by a doctor or midwife, you will not need to come back for a blood pressure check at the doctor's or midwife's office.


Call OB Triage at 734-764-8134 right away if you have any of the following warning signs or if you just don't feel right:




Severe headache




Stomach pain




Hand or face swelling



Seeing spots



Difficulty breathing



Nausea or vomiting

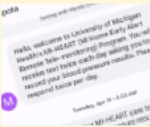
Patient brochure

You are ready to start!

- Let's confirm your phone number and review the following texting tips:
- Texting is not secure and, therefore, may be seen by others. By choosing to communicate via text, you are aware of this possibility.
  - Do not use text for urgent issues or emergencies. If you are having an emergency, call 911 or go to the nearest emergency department.
  - If you do not want to text, you need to schedule an office visit within one week after your delivery to check your blood pressure. Let us know if you prefer an office visit before you leave the hospital.
  - Message and data rates may apply.

How to check your blood pressure

If you have been using a blood pressure cuff during your pregnancy, you can continue to use it for this program. If you have not been using one, we will give you one to keep and use throughout the program. Instructions on how to use the blood pressure cuff are in the box. It is easy to use. Just follow the steps below:



1. You will get a text reminder to check your blood pressure two times a day.

2. Sit and relax for five minutes before taking your pressure. When you are ready to check your pressure, take off any thick clothing and sit with your feet on the floor.



3. Place the cuff just above your elbow with the cord along the inside of your arm. Wrap the cuff a little tight. Rest your arm on a table at the level of your heart.

4. Press the start button. Wait 30 seconds and your blood pressure will display.

How to report your blood pressure

We will send you text messages twice a day. We will ask for both the top and bottom number of your blood pressure. We also will ask if you have any symptoms of preeclampsia, including a headache, vision changes or abdominal pain.

You will check your blood pressure twice a day for 10 days. We will text you when the 10 days are over.

What to expect after you text us

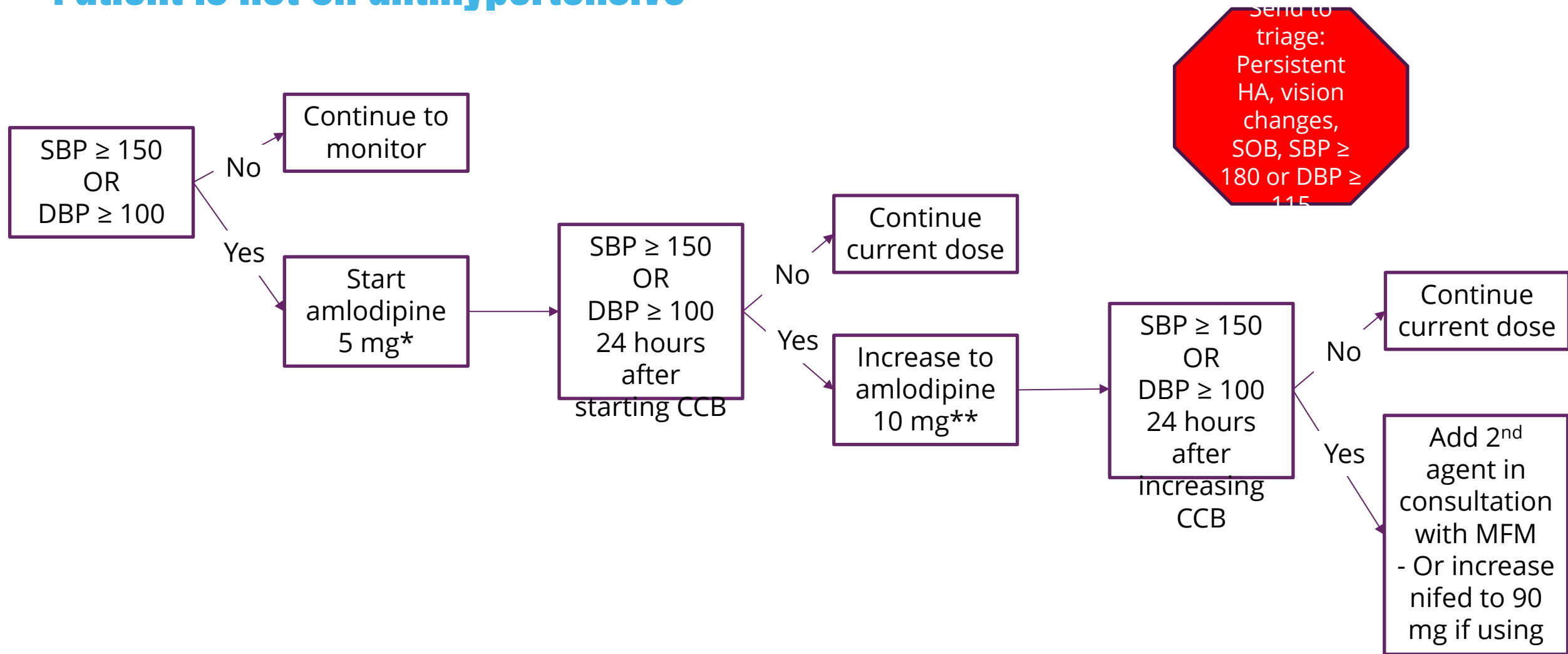
We use a computer system to send you reminders and respond to your texts. A health care provider also reviews your blood pressure numbers within 24 hours.

You will get feedback on your blood pressure by text, so you know what to do next. We may call you to discuss blood pressure medicine or ask about your symptoms.

Epic tracking for providers

SMS Days	SMS Reply Days	SMS/Days %	Texts Asked	Texts Answered	Text %
4	↑ Scroll to selection (row)		19	19	100.00%
10	5	50.00%	32	18	56.25%
1	1	100.00%	3	2	66.67%
0	0		0	0	
8	4	50.00%	27	17	62.96%

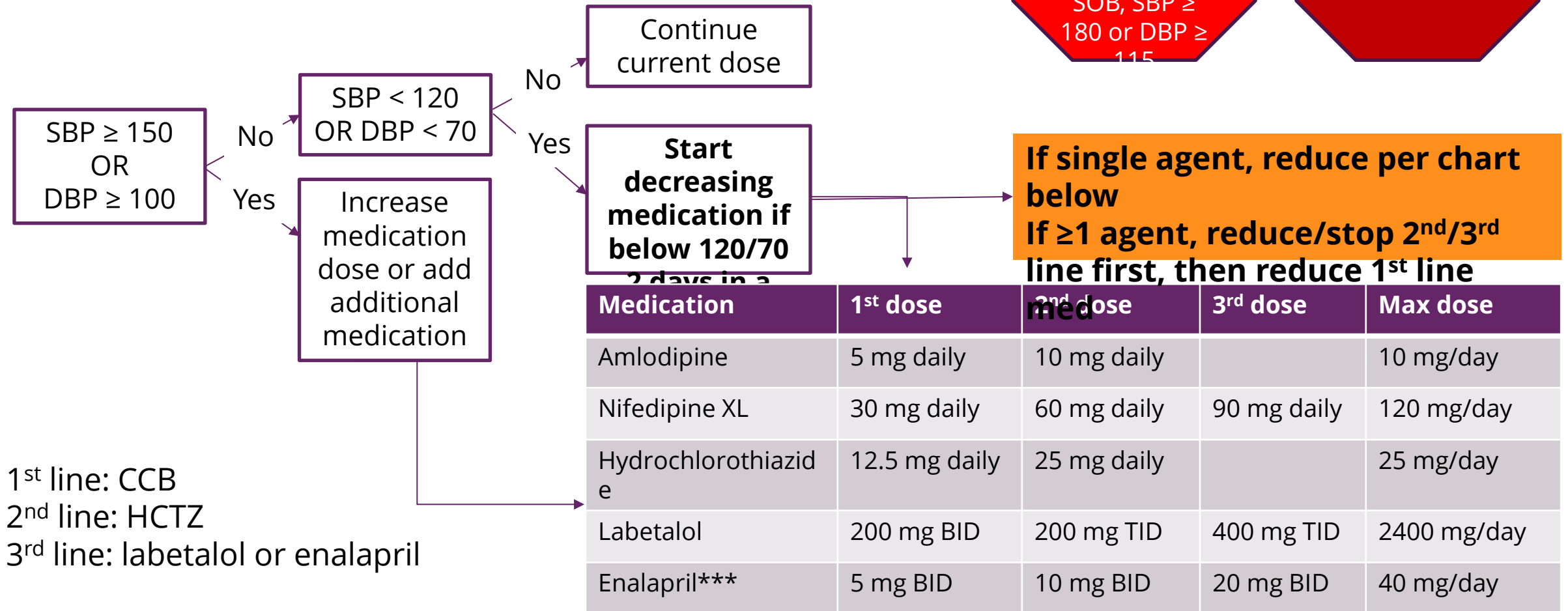
# Patient is not on antihypertensive



\* Nifedipine XL may be preferred CCB with some insurers, start with 30 mg daily. Headache is common side effect

\*\* Nifedipine XL 60 mg daily

# Patient on antihypertensive



1<sup>st</sup> line: CCB  
 2<sup>nd</sup> line: HCTZ  
 3<sup>rd</sup> line: labetalol or enalapril

\* Nifedipine XL may be preferred CCB with some insurers, start with 30 mg daily. Headache is common side

\*\* Nifedipine XL 60 mg daily

\*\*\* Needs CMP 1 week after initiating therapy

# Strengths/Limitations

- High levels of patient engagement
- Consistent CNM team with MFM back-up managing antihypertensives and counseling
- Limitations:
  - Currently only available for English-speaking/reading patients
  - Patients who decline MiHEART (uncommon) or ineligible have BP check scheduled in office
    - Less consistent guidance and management strategies



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# Hypertension in Pregnancy (HDP) Mi AIM Education

Federico G. Mariona, MD, MBA, FACOG. FACS

Operations Committee, MiAIM

Michigan Perinatal Associates

**February 25, 2025**

**FUTURE**  
**INNOVATE**  
**CREATE**  
**AUTOMATE**  
**VALIDATE**

## FUTURE (cont)

- Keystone Center Statewide Large Scale Analytic Clinical Data
- Birth centers with dedicated obstetrical IT collaboration
- Multistage process
- Nontraditional clinical variables, social determinants of health
- Risk stratification, weighted score if feasible
- Emphasize clarity and simplicity
- Maternal Levels of Care

## **FUTURE (cont)**

### **CLINICAL OUTCOMES DAILY ENTRY (CODE)**

- Precision medicine, EHR based, AI supported
- Prenatal screening (predictive analytics)
- Strong practitioner adherence
- Strong birth center administrative leadership support for innovation
- Validation

### **OBJECTIVE**

**Convert this initiative into a successful clinical care program**

## FUTURE (cont)

### CHALLENGES

- IT Vulnerability, AI mistrust
- Resistance to change
- Trustable, reliable, high quality, timely data
- Variability in quality of care
- Proprietary algorithms
- Funding