Hypertensive Disorders of Pregnancy

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This guideline has been updated with updates to multiple algorithms including hypertensive emergency and eclampsia, considerations for management of preeclampsia with elevated transaminases, and management of postpartum hypertension.

Highlights

- Preeclampsia without severe features/Gestational hypertension
  - Preeclampsia without severe features and gestational hypertension should be managed in the same fashion.
  - Patients with preeclampsia *without* severe features or gestational hypertension may qualify for outpatient management which includes weekly prenatal visits, weekly preeclampsia labs, twice weekly antenatal testing, and ability to perform home blood pressure monitoring.
  - Oral antihypertensive therapy should **NOT** be initiated in patients with preeclampsia without severe features or gestational hypertension managed as an outpatient.
- Preeclampsia with severe features
  - Patients with a diagnosis of preeclampsia with severe features who qualify for expectant management should be offered delivery as an alternative to inpatient expectant management.
- Postpartum Management
    - Management of postpartum patients with a diagnosis of any hypertensive disorder of pregnancy (HDP) during pregnancy or postpartum may include initiation of long acting antihypertensive to keep blood pressures < 150/110.
    - Postpartum patients may benefit from resumption of their pre-pregnancy antihypertensive medications.
    - The use of furosemide for postpartum patients with HDP should be individualized.

Background

Preeclampsia and/or chronic hypertension affect at least 10% of patients and the prevalence is increasing. In fact, chronic hypertension increased by 67% between 2000 and 2009. Sadly, 16% of maternal deaths are caused by or associated with hypertension. Therefore, accurate and prompt diagnosis and management are critical to prevent severe morbidity and even mortality. The purpose of this document is to summarize the diagnosis and management of each cause of hypertension in pregnancy.

Hypertension in pregnancy is divided into the following categories:

1. Preeclampsia: pregnancy-specific hypertensive disease with multisystem involvement that occurs after 20 weeks' gestation.
    a. Eclampsia: convulsive phase of the disorder.

2. Gestational hypertension: new-onset elevations of blood pressure (BP) after 20 weeks in the absence of proteinuria or systemic findings.
3. Chronic hypertension: hypertension that predates conception or is detected before 20 weeks. **This document does NOT discuss prenatal management of chronic hypertension.**
4. Chronic hypertension with superimposed preeclampsia: chronic hypertension with additional evidence of preeclampsia

While preeclampsia and gestational hypertension have different definitions, they fall within the same spectrum of **hypertensive disease of pregnancy (HDP)**.

Please see Table 1 for specific definitions and Figure 1 and Figure 2 for diagnostic algorithms.

Blood pressure diagnostic criteria for preeclampsia

For PFW, please see TCH PolicyTech for the policy on how to obtain an accurate blood pressure measurement to ensure that blood pressure measurement is standardized.

Severe range:* 160/110

Mild range:* 140/90

*Only one number needs to be above the threshold (systolic or diastolic) to meet criteria

Laboratory evaluation for preeclampsia

This document will refer to recommended labs as “Preeclampsia labs”, which include:

- Complete blood count (CBC) with platelets
- Complete Metabolic Panel **or** individual components of:
  - BUN and creatinine
  - Liver transaminases (AST, ALT)
- +/- Uric acid and LDH (does not aid in diagnosis)
- Urine protein evaluation

Proteinuria

Studies suggest that a protein: creatinine (P:C) ratio is highly predictive of 24-hour urine protein measurement and is useful in the detection of proteinuria.[1-4] While previous studies recommended a 24-hour urine protein as the gold standard to account for fluctuations in proteinuria throughout the day, newer data suggest that it may be unnecessary in most settings for diagnosis of preeclampsia. In fact, there are disadvantages to a 24-hour urine protein compared to a P:C ratio including expense, inconvenience, risk for inaccurate collections, and sensitivity to storage temperature which could lead to bacterial growth and interference in protein evaluation.[3] The P:C ratio has been reported to be predictive of total 24-hour protein results among patients with non-nephrotic range proteinuria.[5] However, it is important to note that the sensitivity and specificity have been reported to be in the 75-80% range.[6] Thus, if the presence of proteinuria would change clinical management (e.g. previable gestation or diagnosis of superimposed preeclampsia), a 24-hour urine may still be appropriate.

- Proteinuria can be defined as either of the following:
    - ≥300 mg of protein in a 24-hour urine collection
    - P:C ratio ≥0.3 (each measured as mg) in a random sample
- Qualitative determination (dipstick test) is discouraged for diagnostic use due to its variability.[7]

The PFW TexasAIM Hypertension Workgroup and BCM Ob/Gyn Perinatal Guidelines Committee recommend a P:C ratio rather than 24-hour urine protein in evaluation of proteinuria in the context of preeclampsia for most clinical situations. NOTE: For patients with preeclampsia, a delivery decision should not be based solely on the amount of proteinuria or change in the amount of proteinuria.

Severe features of preeclampsia

- Persistent cerebral or visual disturbances (e.g. headache not responsive to routine medications)
- Pulmonary edema
- Persistent RUQ or epigastric pain (not otherwise accounted for and unresponsive to treatment)
- Thrombocytopenia (platelets <100,000/uL)
- Renal insufficiency (in absence of other renal disease: creatinine > 1.1 mg/dL OR doubling of creatinine from baseline)
- Impaired liver function (ALT/AST greater than twice upper limit of normal)

Preeclampsia diagnostic criteria

Table 1: Diagnostic criteria for the hypertensive disorders of pregnancy

Figure 1: Diagnostic algorithm for patients **without** a history of chronic hypertension

Figure 2: Diagnostic algorithm for patients **with** a history of chronic hypertension

Table 1. Diagnostic criteria for the hypertensive disorders of pregnancy

Diagnosis	Gestational Age	Blood Pressure	Proteinuria	Signs/Symptoms
Gestational Hypertension	≥20 weeks gestation (no hypertension prior to 20 weeks)	SBP ≥140 or DBP ≥90 mmHg on two occasions at least 4 hours apart[a]	P:C ratio <0.3	Must have none
Preeclampsia without severe features		SBP ≥140 or DBP ≥90 mmHg on two occasions at least 4 hours apart <u>without</u> severe range blood pressures	P:C ratio ≥0.3	Must have none
Preeclampsia with severe features (includes patients with **gestational hypertension with severe range blood pressures**)[7]	≥20 weeks gestation (no hypertension prior to 20 weeks)	SBP ≥140 or DBP ≥90 mmHg on two occasions at least 4 hours apart WITH signs/symptoms OR SBP ≥160 or DBP ≥110 mmHg on two isolated occasions at least 4 hours apart OR OR SBP ≥160 or DBP ≥110 mmHg requiring acute antihypertensive therapy	Variable	<u>Any of the following</u>: • Severe hypertension as described to the left • Pulmonary edema • Cerebral or visual disturbances • Thrombocytopenia (platelet count <100K) • Renal insufficiency: serum creatinine >1.1 mg/dL OR doubling creatinine (in absence of other renal disease) • Impaired liver function: LFTs 2X normal AND/OR severe, persistent RUQ or epigastric pain (not otherwise accounted for and unresponsive to treatment) • HELLP Syndrome
Chronic hypertension		Variable[b]	Stable[c]	None
Chronic hypertension with superimposed preeclampsia *without* severe features		SBP <160 and DBP <110 mmHg	New-onset proteinuria or significant increase in baseline proteinuria	Absence of symptoms
Chronic hypertension with superimposed preeclampsia *with* severe features	Hypertension prior to pregnancy or diagnosed prior to 20 weeks' gestation	May see SBP ≥160 or DBP ≥110 mmHg despite escalation of antihypertensive therapy	May see new-onset proteinuria or increase from baseline proteinuria, but not required	<u>Any of the following</u>: • Rapidly escalating antihypertensive therapy • Pulmonary edema • Cerebral or visual disturbances • Thrombocytopenia (platelet count <100K) • Renal insufficiency: serum creatinine >1.1 mg/dL OR doubling creatinine (in absence of other renal disease) • Impaired liver function: LFTs 2X normal AND/OR severe, persistent RUQ or epigastric pain (not otherwise

			accounted for and unresponsive to treatment) • HELLP Syndrome
Chronic hypertension exacerbation	SBP ≥160 or DBP ≥110 mmHg requiring treatment (initiation or increase of long-acting antihypertensive medication)	Stable[c]	Absence of symptoms

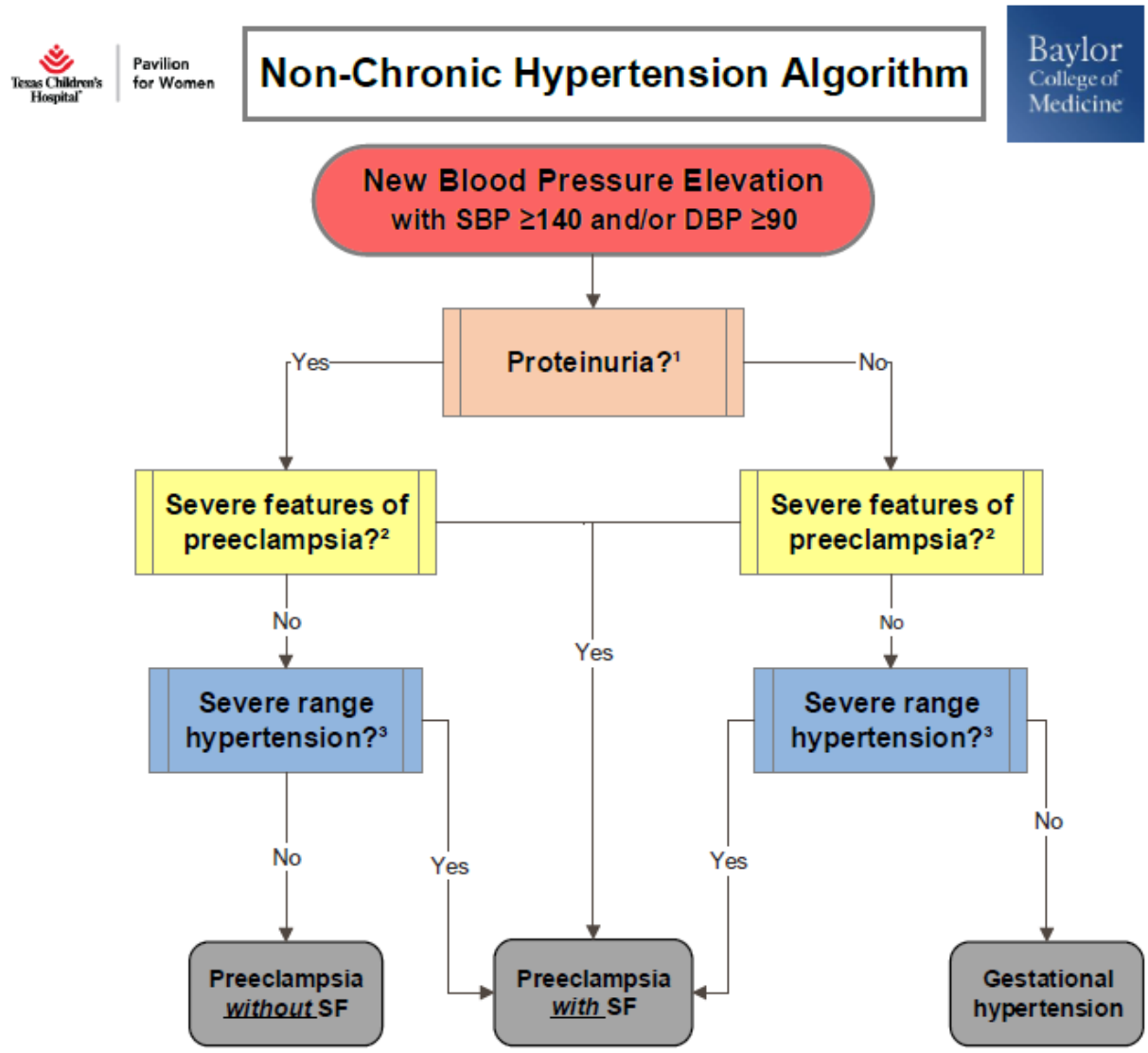
SBP= systolic blood pressure; DBP= diastolic blood pressure

[a]Patients who have severe range hypertension and no proteinuria should be diagnosed with preeclampsia with severe features and NOT gestational hypertension.

[b]Blood pressure may be normal in patients with a diagnosis preceding pregnancy. For patients diagnosed during pregnancy, they must have SBP ≥140 or DBP ≥90 mmHg on two occasions at least 4 hours apart.

[c]A P:C ratio should be evaluated upon diagnosis. A sudden worsening in proteinuria should be considered suspicious for superimposed preeclampsia.

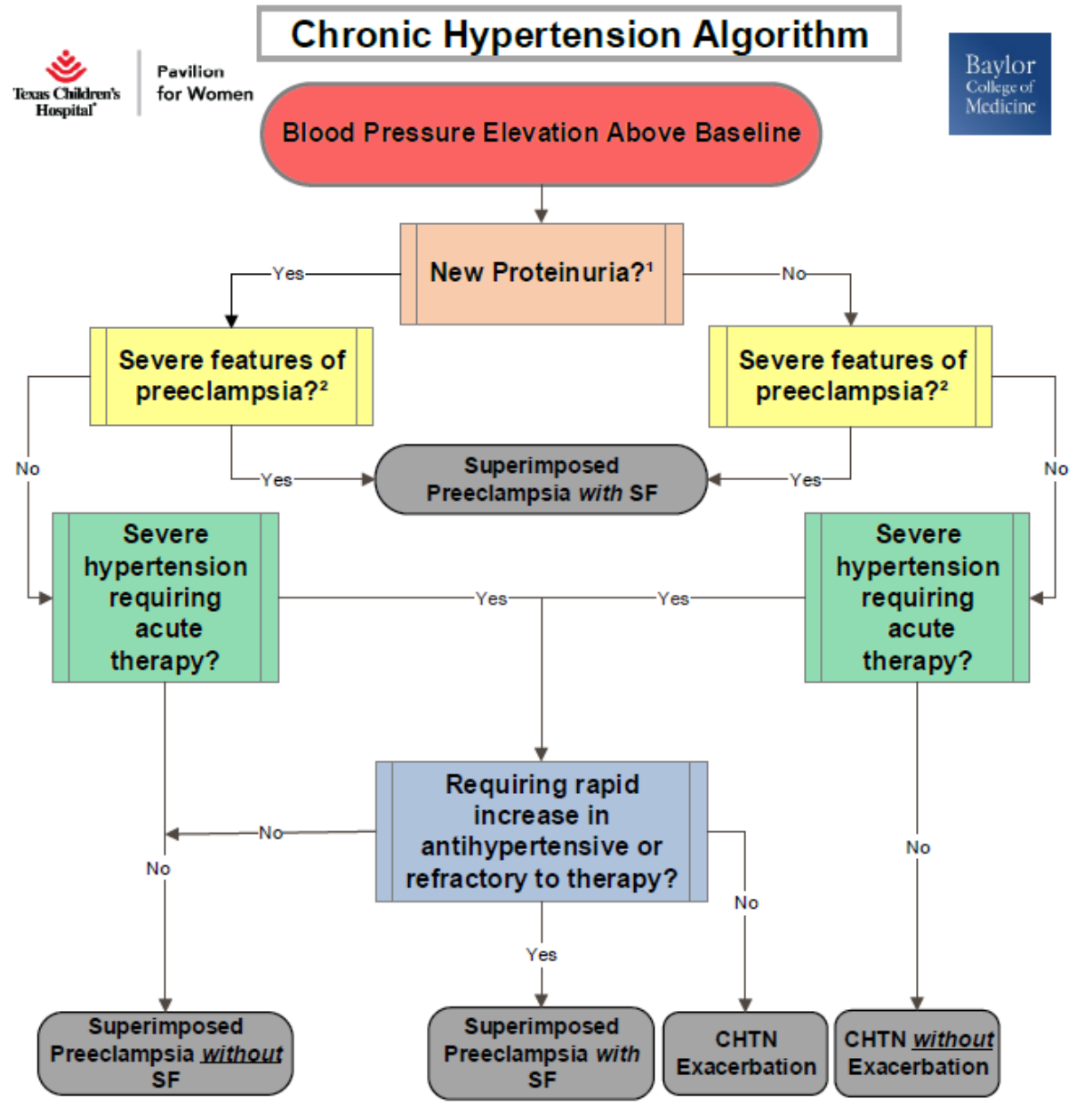
Figure 1. Diagnostic algorithm for patients with<u>OUT</u> a history of chronic hypertension



SF, severe features; Rx, therapy; CHTN, chronic hypertension
[1] **Proteinuria:** Proteinuria is defined as P:C >0.3.
[2] **Severe features of preeclampsia:** Pulmonary edema, Persistent headache or persistent visual changes, thrombocytopenia (platelet count <100K), renal insufficiency: serum creatinine >1.1 mg/dL OR doubling creatinine (in absence of other renal disease), impaired liver function: LFTs 2X normal AND/OR severe, persistent RUQ or epigastric pain (not otherwise accounted for and unresponsive to treatment), HELLP Syndrome.
[3] **Severe range hypertension:** Either severe range blood pressures requiring acute antihypertensive therapy OR at least two non-sustained severe range blood pressures measured at least 4 hours apart.

1/05/2022 v.1
Figure 1

Figure 2. Diagnostic algorithm for patients with a history of chronic hypertension



SF, severe features; Rx, therapy; CHTN, chronic hypertension

[1]**New Proteinuria:** If baseline proteinuria evaluation was < 300 mg/24hour or P:C < 0.3 and now 24 hour urine protein is > 300mg/24hour or P:C >0.3 then this abnormal and meets criteria for "new proteinuria". Similarly, if the patient has previous proteinuria or preexisting renal disease, then a 2-fold increase is abnormal and meets criteria for "new proteinuria"

[2] **Severe features of preeclampsia:** Pulmonary edema, Persistent headache or persistent visual changes, thrombocytopenia (platelet count <100K), renal insufficiency: serum creatinine >1.1 mg/dL OR doubling creatinine (in absence of other renal disease), impaired liver function: LFTs 2X normal AND/OR severe, persistent RUQ or epigastric pain (not otherwise accounted for and unresponsive to treatment), HELLP Syndrome

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Figure 2

Preeclampsia *without* severe features and gestational hypertension (includes superimposed preeclampsia w/o severe features)

Initial Triage Evaluation

If there is concern for preeclampsia without severe features or gestational hypertension (GHTN) from an outpatient visit, the patient should be sent to triage. Maternal and fetal evaluation in triage should consist of the following:

- Maternal evaluation
  - **Blood pressure** Q 15-30 min initially then individualize
  - Ask about **symptoms** consistent with severe features
  - Preeclampsia Labs

- Fetal evaluation
  - Ultrasonographic evaluation for estimated fetal weight (EFW) if none on record within the previous 2 weeks and amniotic fluid index (AFI) with umbilical artery Doppler interrogation if EFW <10th percentile
  - **Nonstress test (NST)**

- **Hospitalization** for patients < 37 weeks' gestation with new-onset hypertension for approximately 24 hours can be considered initially. **Delivery** is indicated for patients ≥ 37 weeks' gestation.

  Goals of such management include early identification of worsening preeclampsia and development of a management scheme that includes a plan for timely delivery. ***If no severe features manifest after an initial period of inpatient observation, then discharge and outpatient management can be considered.***

- For patients who are sent to **Ben Taub OBI** for evaluation of a hypertensive disorder of pregnancy, discharge from OBI and follow up may be considered in those with a NON-SEVERE diagnosis who meet ALL the following criteria:
  - 2 mild-range BPs at least 4 hours apart (1st BP can be the one from their referring clinic) and NO severe-range BPs
  - Normal preeclampsia labs: Cr, AST, ALT, Hgb/Hct, Platelet count (the presence of proteinuria does not preclude discharge)
  - Reassuring fetal testing: no late decels, normal AFI/MVP
  - Normal fetal growth (EFW and AC >10th%) on bedside ultrasound in OBI or documented within prior 2 weeks
  - No preeclampsia symptoms

- Patients should be discharged with the following plan
  - Follow up in High-Risk Ob clinic or their OB provider at PFW within 1 week
  - Antenatal testing within 1 week (ideally on same day as prenatal visit)
  - Pre-clinic preeclampsia labs
  - Home BP monitoring (if patient able to get home cuff)
  - Return precautions (symptoms, severe-range BPs)
  - If the patient is within 1 week of 37w0d, they should leave with a scheduled delivery date for 37w0d
  - If all the above cannot be accomplished at the time of discharge, ensure you have a valid phone number for the patient and call the patient within 24-48 hours to give them these appointments

Outpatient Management

Outpatient management is only acceptable for patients who have reliable transportation to and from the hospital, can come in for twice weekly testing and are felt to be capable of monitoring their blood pressure and symptoms.

In patients with GHTN, the progression to severe disease often develops within 1-3 weeks after diagnosis; whereas in patients with preeclampsia without severe features, the progression to severe disease could happen within days.[7]

The PFW TexasAIM Hypertension Workgroup and BCM Ob/Gyn Perinatal Guidelines Committee recommend identical outpatient management and timing of delivery for both GHTN and preeclampsia without severe features, as outlined below.

Medication

ACOG **recommends against use of antihypertensive medication in the setting of preeclampsia without severe features OR gestational hypertension**.[7] If the patient has severe hypertension requiring antihypertensive therapy, they should be managed in the same approach as with severe disease.

Laboratory evaluation

Preeclampsia labs should be repeated **at least weekly** while the patient remains outpatient. If any laboratory values meet criteria for severe features, the patient warrants admission. Admission for less severe lab abnormalities may be warranted but should be individualized.

Fetal Testing

Twice weekly antenatal testing at diagnosis.

At home blood pressure monitoring

The patient should monitor blood pressures **2 times per day and keep a log**. This should be sent into the provider via MyChart and/or reviewed at visits.

Bed Rest

Recommend against bedrest as it is not an effective treatment, does not prevent worsening of hypertension, and may cause adverse outcomes, such as deconditioning and increased risk of venous thromboembolism.[8]

Progression of disease

Patients should be counseled about signs and symptoms of disease progression (headache, visual disturbances, right upper quadrant or epigastric pain, etc.) **and when to return to the hospital and/or call their doctor's office (see patient education section)**. Patients who develop severe range blood pressures or any symptoms concerning for severe features should be admitted to the hospital.

Delivery timing

ACOG recommends delivery at 37 0/7 weeks' gestation or at diagnosis if diagnosed later.[7]

Intrapartum Management

- ☐ Initial maternal evaluation:
  - Evaluate for evidence of severe features.
  - Blood pressure Q 15-30 min initially then individualize
  - Preeclampsia Labs
    - **Repeat labs on admission and at least every 24 hours until delivery**
  - Physical exam and assessment of volume status
  - Strict intake and output monitoring

- ☐ Fetal Evaluation
  - Continuous fetal heart rate monitoring

- ☐ Magnesium sulfate is not recommended for patients without severe features.[7]
  If at any point the patient develops clinical or laboratory evidence consistent with preeclampsia with severe features, they should be started on Magnesium sulfate and the severe feature algorithm should be followed.

Preeclampsia with severe features (includes superimposed preeclampsia with severe features)

Preeclampsia with severe features can lead to lifelong morbidity and mortality. There is risk for damage to multiple organ systems including, but not limited to, the brain, kidneys, and liver. Therefore, a careful risk/benefit analysis must be performed when determining delivery timing. **ACOG recommends delivery** at 34 0/7 weeks or later if diagnosed later **for patients with severe features, as the maternal risk outweighs fetal benefit.** However, these patients are often delivered sooner due to worsening of symptoms, lab abnormalities, or blood pressures.

Patients with new onset severe range hypertension and no proteinuria (formerly severe gestational hypertension) should be diagnosed with preeclampsia with severe features.

Initial Evaluation and Management

Pregnancies ≥ 34 0/7 weeks gestation

- Admit for delivery.
  - ☐ Initial Maternal evaluation:
    - Blood pressure q15-30 minutes then individualize
    - Evaluate for symptoms consistent with severe features
    - Preeclampsia labs
    - Physical exam and assessment of volume status
    - Urine output

  - ☐ Fetal evaluation:
    - Continuous fetal heart rate monitoring

  - ☐ Administer acute antihypertensive therapy as needed for persistent severe hypertension
    Link to Figure 3: Hypertensive Emergency Checklist
  - ☐ Administer IV magnesium sulfate (4-6 g load over 20-30 minutes followed by 2 gm/hour with normal renal function)

  - ☐ Administration of corticosteroids should be individualized depending on length of anticipated labor. Can consider late preterm corticosteroids if delivery is expected to occur 12 hours or later after administration.[9] However, delivery should not be delayed in order to administer corticosteroids.

For more information regarding intrapartum management of preeclampsia with severe features, please see section entitled "Intrapartum management"

Pregnancies <34 0/7 weeks gestation

1. Admit to L&D or antepartum unit for initial evaluation

   - ☐ Maternal evaluation:
     - Blood pressure q15-30 minutes then individualize
     - Evaluate for symptoms consistent with severe features
     - Preeclampsia Labs
     - Physical exam and assessment of volume status
     - Urine output

- ☐ Fetal evaluation for viable pregnancies (gestational age of at least 23 0/7 weeks gestation):
    - Continuous or intermittent fetal heart rate monitoring (continuous monitoring recommended while on magnesium sulfate)
    - Ultrasonographic evaluation for:
        - EFW if none on record within the previous 2 weeks
        - Amniotic fluid volume assessment (AFI and/or max vertical pocket)
        - Umbilical artery Doppler interrogation if EFW and/or AC <10th percentile
        - Biophysical Profile (BPP) as clinically indicated

- ☐ Administer acute antihypertensive therapy as needed for persistent severe hypertension
  Link to Figure 3: Hypertensive Emergency Checklist

- ☐ Administer IV magnesium sulfate (4-6 g load over 20-30 minutes followed by 2 g/hour with normal renal function)

- ☐ Administer corticosteroids for fetal maturity if eligible (betamethasone 12mg IM every 24hrs x 2 doses).

2. After initial clinical and laboratory evaluation, a decision must be made for immediate delivery versus expectant management (**Table 2**). **For more information regarding inpatient expectant management of preeclampsia with severe features, please see section entitled "Expectant Management prior to 34 0/7 weeks"**

   Previously, fetal growth restriction was considered an indication for delivery. In the setting of normal parameters (i.e., amniotic fluid volume, Doppler findings, antenatal fetal testing), continuation of expectant management may be reasonable in the absence of other maternal-fetal criteria.

Table 2. Immediate Delivery vs. Expectant Management for Preeclampsia with Severe Features (contraindications to expectant management)

Category	
Immediate delivery (can await antenatal corticosteroid benefit, depending on gestational age and maternal severity of illness)[7]	• ≥34 0/7 weeks gestation • Labor • Uncontrolled severe hypertension not responsive to antihypertensives • Persistent headaches refractory to treatment • Persistent visual disturbances • Epigastric pain or RUQ pain unresponsive to repeat analgesics • Eclampsia • Stroke • Pulmonary edema • Myocardial Infarction • HELLP Syndrome • New-onset or worsening renal dysfunction (serum creatinine greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease) that does not improve with hydration • Nonviable fetus • Abnormal fetal testing • Fetal demise • Fetal umbilical artery Doppler velocimetry with persistent reversed end-diastolic flow
Expectant management	• <34 0/7 weeks gestation • Absence of persistent symptoms • Stable disease and does not meet any of the criteria for immediate delivery (as above)

While elevated transaminases is a diagnostic criterion for preeclampsia with severe features, they are not a contraindication to expectant management. In this setting, management should be individualized. MFM consultation should be considered.

Intrapartum management

☐ Maternal Evaluation
- Reevaluate regularly for clinical evidence of worsening disease (e.g. pulmonary edema)
- Blood pressure monitoring
- Preeclampsia Labs
  - **Repeat labs every 6-12 hours while in labor or sooner as clinically indicated**
- Physical exam and assessment of volume status
- Strict Intake/Output monitoring

☐ Fetal Evaluation
- Continuous fetal heart rate monitoring for viable pregnancies (gestational age of at least 23 0/7 weeks gestation)

☐ Administer acute antihypertensive therapy as needed for persistent severe hypertension
Link to Figure 3: Hypertensive Emergency Checklist

☐ Administer IV magnesium sulfate (4-6 g loading dose over 20-30 minutes followed by 2 g/hour with normal renal function)

- If Cesarean delivery is performed**, ACOG recommends the continued intraoperative administration of IV magnesium sulfate**.[7]
- Magnesium sulfate dosing will differ if there is evidence of renal dysfunction. Please see section on "Management of Preeclampsia Complications" for more information
- Magnesium sulfate is most often administered for 24 hours postpartum. Earlier discontinuation should be individualized.

Expectant Management prior to 34 0/7 weeks

After an initial 24-hour observation period on magnesium sulfate, patients at 23 0/7-33 4/7 weeks of gestation with adequately controlled BP, no persistent symptoms, and reassuring fetal testing can have their **magnesium sulfate discontinued** and can be monitored on the antepartum unit up to 34 0/7 weeks of gestation or are delivered for the development of a maternal or fetal indication (**Table 2**).

Expectant management should be performed only after maternal counseling regarding the benefits and risks of such treatment by the attending physician using principles of shared decision making and only after patient acknowledgement of acceptance of those risks. The benefits of expectant management are for fetal maturity only. There are no maternal benefits to expectant management. The maternal risks of expectant management include, but are not limited to, ICU admission, HELLP syndrome, recurrent severe hypertension, abruptio placentae, eclampsia, subcapsular liver hematoma, myocardial infarction, and stroke.[7] The perinatal risks of expectant management include stillbirth, neonatal death, perinatal asphyxia, and small for gestational age infant. Consultation with MFM, neonatology and anesthesiology should be considered.

Blood pressure

Blood pressure should be evaluated per the antepartum unit standard.

Any severe range blood pressure should trigger MEWS activation and timely treatment. **Goal blood pressures in this population are SBP 140-150s/DBP 80-100** using the Hypertensive Emergency Checklist.

Antihypertensive medication

Long-acting oral antihypertensive medications can be administered to maintain mild-range blood pressures in an effort to prolong the period of expectant management.[7]

Table 3. *Oral medications for management of hypertension in pregnancy*

Medication	Dose	Contraindications/Cautions
Labetalol	200-2,400mg/day orally in 2-3 divided doses, commonly initiated at 100-200 mg po q 12 hours	Avoid in patients with poorly controlled asthma or myasthenia gravis Use with caution in patients with heart disease or congestive heart failure
Nifedipine Extended Release (Procardia XL)	30-120mg/day in 1-2 divided doses, commonly initiated at 30-60 mg po once daily	Do NOT use sublingually

Symptom Monitoring

Assess for worsening disease that may preclude expectant management. New lab abnormalities, headaches that do not resolve with routine medication, new onset epigastric/RUQ pain, retrosternal pain or pressure, shortness of breath, visual changes, or other concerning symptoms warrant transfer to L&D for possible delivery.

Lab monitoring

Preeclampsia labs should be repeated daily for at least the first three days of expectant management and can then be transitioned to 2-3 times per week if they remain normal. More frequent monitoring may be indicated depending on patient status.

Fetal Monitoring

- ☐ Twice weekly antenatal testing (can be modified BPP or 10-point BPP)
- ☐ Ultrasonographic evaluation for EFW q3 weeks
- ☐ Weekly umbilical artery Doppler interrogation if EFW <10th percentile (more frequently if abnormal; please refer to BCM Ob/Gyn Perinatal Guideline on “Antepartum Surveillance Management Guidelines”)

Bed Rest

Recommend against bedrest as it is not an effective treatment, does not prevent worsening of hypertension, and may cause adverse outcomes, such as deconditioning and increased risk of venous thromboembolism.[8]

Delivery

Patients with preeclampsia with severe features undergoing expectant management should be delivered by 34 0/7 weeks’ gestation and may require delivery sooner due to development of worsening disease.

Maternal Fetal Medicine consultation

Consider consulting Maternal Fetal Medicine for further recommendations on frequency of lab monitoring, medication management, and delivery timing.

Maternal Fetal Medicine consultation is **required** if:

- ICU admission
- Antihypertensive drip (i.e. Nicardipine drip)

Figure 3. Hypertensive Emergency Checklist

Texas Children's Hospital Pavilion for Women

Hypertensive Emergency Checklist

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Recognize

If a patient has a severe range blood pressure (SBP ≥ 160 and/or DBP ≥ 110)

- ❑ Ensure blood pressure cuff appropriate size and blood pressure taken at the level of the heart with patient reclining at a 45-degree angle (NOT supine or lateral positioning)
- ❑ Repeat blood pressure in 5 minutes. If still severe range, initiate protocol below.

Respond

- ❑ Activate MEWS
- ❑ Team Huddle
- ❑ Call for assistance PRN (place IV, checklist)

Treat

- ❑ Place IV
- ❑ Send preeclampsia labs (CBC, CMP or AST/ALT and BUN/Cr, LDH, P:C ratio)
- ❑ Begin continuous fetal monitoring if viable gestational age (at least 23 0/7 weeks)
- ❑ Ensure side rails up (and padded)
- ❑ Repeat blood pressure 15 minutes after initial severe range. **If still severe, administer acute antihypertensive therapy**
- ❑ Follow antihypertensive therapy algorithm **on back of page**
- ❑ Consider initiation of Magnesium Sulfate 4-6 g bolus over 20-30 minutes then Magnesium sulfate 2g/hr maintenance therapy
- ❑ Consider initiation or uptitration of long acting antihypertensive

Monitor Blood Pressure

Even if blood pressures no longer severe range:

- ❑ Repeat every 15 minutes for 1 hour then
- ❑ Every 30 minutes for one hour then
- ❑ Every 1 hour for 4 hours
- ❑ Reactivate MEWS as necessary

Other considerations:

- ❑ Consider need for ICU consultation for refractory severe range blood pressures (may need Nicardipine gtt, which requires ICU admission and cardiac monitoring)
- ❑ Head imaging if unrelenting headache or neurological symptoms (CT or MRI)
- ❑ Give Antenatal Corticosteroids (if indicated)

Debrief

- ❑ Debrief with patient and family
- ❑ Debrief with Obstetric team

Document

- ❑ Physicians: use "MEWS" smart note. Fill out all fields, including medication given
- ❑ Nursing: use the "MEWS" flowsheet in the electronic medical record (EMR). Fill out all fields, including final disposition.

Figure 3 cont'd

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Hypertensive Emergency Checklist

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Medication protocols:

Immediate Release (IR) Nifedipine Protocol*

(Consider as initial agent due to ease of access and administration on any unit)

- ❑ Administer 10 mg PO IR Nifedipine
- ❑ Repeat BP in 20 minutes and record result
- ❑ If either BP is still severe-range, administer 20 mg PO IR Nifedipine
- ❑ Repeat BP measurement in 20 minutes and record result
- ❑ If either BP is still severe-range, administer 20 mg PO IR Nifedipine
- ❑ Repeat BP measurement in 20 minutes and record result
- ❑ If either BP is still severe-range, proceed with Labetalol or Hydralazine administration.

*Nifedipine has been associated with overshoot hypotension and tachycardia. (Do NOT administer sublingually, crush or chew)
*When used with magnesium sulfate, monitor maternal vital signs with specific attention to heart rate
***Nifedipine should be avoided in women with heart rate > 100 bpm and used with caution in women with heart failure**

IV Labetalol Protocol*

- ❑ Administer 20 mg IV Labetalol pushed over 2 minutes
- ❑ Repeat BP in 10 minutes and record result
- ❑ If either BP is still severe-range, administer 40 mg IV Labetalol pushed over 2 minutes
- ❑ Repeat BP in 10 minutes and record result
- ❑ If either BP is still severe-range, administer 80 mg IV Labetalol pushed over 2 minutes
- ❑ Repeat BP in 10 minutes and record result
- ❑ If either BP is still severe-range, proceed with Hydralazine administration (if not yet given).

*Labetalol should be used with caution in women with severe asthma (history of intubation, weekly symptoms, regular inhaler use or steroid use during pregnancy), and **avoided in women with a heart rate of < 70 bpm and/or heart failure**
***Maximum IV Labetalol dose: 300 mg in 24 hours**

IV Hydralazine Protocol*

- ❑ Administer 5-10 mg IV Hydralazine pushed over 2 minutes
- ❑ Repeat BP in 20 minutes and record result
- ❑ If either BP is still severe-range, administer 10 mg IV Hydralazine pushed over 2 minutes
- ❑ Repeat BP in 20 minutes and record results
- ❑ If either BP is still severe-range, proceed with Labetalol administration (if not yet given).

*Parenteral Hydralazine can increase the risk of overshoot hypotension and tachycardia
***Maximum IV Hydralazine dose: 25mg in 24 hours**

Antihypertensive Approach: Drugs and Thresholds for Treatment

- Acute-onset severe hypertension = (1) SBP of 160 mm Hg or more and/or DBP of 110 mm Hg or more that is confirmed on repeat ≥ 15 minutes later) OR (2) One or more repeat severe range blood pressures are documented at 15-60 min after episode onset, even if interspersed with non-severe BPs.
- Severe hypertension should be treated expeditiously with antihypertensive agents to prevent congestive heart failure, myocardial ischemia, renal injury or failure, and ischemic or hemorrhagic stroke.
- **The TexasAIM and PFW goal is to initiate treatment for acute-onset severe hypertension as soon as reasonably possible, and no later than 60 minutes from the first severe-range BP.**

  However, it is recommended to administer antihypertensive therapy as soon as reasonably possible after the criteria for acute-onset severe hypertension are met.

References:
Chronic Hypertension in Pregnancy, ACOG Practice Bulletin #203, January 2019; Gestational Hypertension and Preeclampsia, ACOG Practice Bulletin #222, June 2020. Society for Maternal-Fetal Medicine Special Statement: A quality metric for evaluating timely treatment of severe hypertension.

10/17/2025 v.4

Management of preeclampsia complications

Common complications of preeclampsia include renal insufficiency/dysfunction with or without oliguria and pulmonary edema.

Renal Dysfunction

Renal Insufficiency due to preeclampsia is defined as a creatinine of >1.1 mg/dL OR a doubling of baseline creatinine (for patients without a history of renal disease) OR oliguria, defined as < 30mL/hour x 4 hours OR less than 0.5 cc/kg/hour (actual body weight).

Renal dysfunction in the setting of preeclampsia is a **contraindication to expectant management**. Therefore, delivery is indicated.

- No Oliguria

  - ☐ Strict intake and output monitoring

  - ☐ Check serum magnesium levels every 4-6 hours
    Goal magnesium level is 4.8-9.6 mg/dL[7]

  - ☐ Check preeclampsia labs every 6 hours

  - ☐ Total IV fluid intake should not exceed 125mL/hr

  - ☐ Alter magnesium sulfate administration:
    If creatinine abnormal but ≤ 1.5 mg/dL, can administer magnesium sulfate 4-6g bolus and 1g/hr maintenance. *STOP maintenance if the patient becomes symptomatic or magnesium level is > 9.6 mg/dL.*[7]

    If creatinine > 1.5 mg/dL, only administer magnesium sulfate 4-6g bolus and do **NOT** administer maintenance infusion. Re-bolus as necessary to maintain therapeutic magnesium levels.

  - ☐ Continuous pulse oximetry
    Please see section on pulmonary edema if this diagnosis is suspected

  - ☐ Care should be taken when ordering nephrotoxic agents (i.e. gentamicin, NSAIDs)

- Oliguria

  Oliguria may be present secondary to intrarenal vasospasm related to preeclampsia. This is common during labor and delivery and typically resolves within 24 hours postpartum.[7] Close monitoring of fluid status and labs is recommended.

  - ☐ Evaluate the patient's fluid status

    Evaluate thirst, mucous membranes, heart and lung auscultation, recent intake and output, urine output trend.
    Can consider point of care ultrasound to evaluate the inferior vena cava diameter (< 2cm is considered intravascular depletion)

- **If evidence of hypovolemia**, a fluid challenge of 500-1,000 mL of normal saline or lactated Ringer's solution may be administered over 30 minutes. If urine output does not respond to an initial fluid challenge, additional challenges should be withheld pending delivery as this may increase the risk for pulmonary edema.[10]
- **If no evidence of hypovolemia**, do NOT administer fluid bolus as this may place the patient at increased risk for pulmonary edema.
- **Do not administer a diuretic solely to increase the urine output as this may lead to further depletion of intravascular volume**

☐ Strict intake and output monitoring

☐ Check serum magnesium levels every 4-6 hours
Goal magnesium level is 4.8-9.6 mg/dL[7]

☐ Check preeclampsia labs every 4-6 hours

☐ Alter magnesium sulfate administration:

Administer magnesium sulfate 4-6g bolus over 20-30 minutes only. Do NOT administer maintenance**.** Re-bolus as necessary to maintain therapeutic magnesium levels.

☐ Continuous pulse oximetry
Please see section on pulmonary edema if this diagnosis is suspected

☐ Care should be taken when ordering nephrotoxic agents (i.e. gentamicin, NSAIDs)

Pulmonary Edema

Patients with preeclampsia are at higher risk of developing pulmonary edema due to endothelial damage with subsequent third spacing of fluid. This risk substantially increases with fluid over-resuscitation.

Pulmonary edema in the setting of preeclampsia is a **contraindication to expectant management**. Therefore, delivery is indicated.

☐ Perform physical exam

☐ Continuous pulse oximetry

☐ Provide and titrate oxygen to maintain saturations > 95%

☐ Order stat chest X-ray

☐ Administer 20mg IV Furosemide and re-administer as indicated
Diuresis should not be delayed for benefit of obtaining a chest X-Ray as pulmonary edema can be treated while awaiting radiographic confirmation. Demonstration of B-lines on point of care ultrasonography (if available) can also guide initial clinical management.

- ☐ Magnesium sulfate therapy should be individualized in this setting

- ☐ If the patient is unresponsive to diuresis or clinical status declines, consider ICU consultation and work up for other causes of hypoxemia such as cardiac dysfunction or pulmonary embolus.

Isolated Elevated Transaminases

The liver transaminases, AST and ALT, are commonly elevated in patients and are markers of hepatocellular injury (NOT dysfunction). Elevation diagnostic of preeclampsia with severe features is diagnosed as 2x the upper limit of normal (based on lab reference ranges). These are commonly called "LFTs" in clinical practice, but it important to remember that this is a misnomer as they are markers of liver injury and not markers of liver function or liver dysfunction. However, liver injury can lead to liver dysfunction and elevated transaminases are considered severe features.

There is currently no ACOG or SMFM guidance regarding management of elevated transaminases as few studies have addressed this clinical question. While they are not listed as a contraindication to expectant management, they do warrant close monitoring to ensure that worse hepatic injury does not develop.

The BCM OB/Gyn perinatal guidelines committee suggests that management of patients with preeclampsia with severe features and elevated transaminases be individualized based on shared decision making with the patient and provider concern. This may warrant delivery even prior to 34 weeks gestation.

Initial Evaluation

- ☐ Evaluate other severe features that would make expectant management contraindicated
- ☐ Evaluate liver function (platelets, PT/INR, glucose)
- ☐ Evaluate for markers of hemolysis that would suggest the patient is developing HELLP syndrome (peripheral smear, LDH)
- ☐ MFM Consultation is recommended

Eclampsia: Diagnosis, management and prevention

Eclampsia is defined by "new-onset tonic-clonic, focal, or multifocal seizures in the absence of other causative conditions such as epilepsy, cerebral arterial ischemia and infarction, intracranial hemorrhage, or drug use."[7]

The key components of eclampsia prevention are delivery and magnesium sulfate. Magnesium sulfate is recommended for the treatment of eclampsia as well as for prevention of eclampsia in patients with preeclampsia with severe features and patients with chronic hypertension with superimposed preeclampsia with severe features.

The most common preeclampsia symptoms that precede a seizure are neurologic in nature: severe occipital or frontal headache, visual changes, or altered mental status (at least 75% of the time). **Approximately 36 symptomatic patients would need to be treated with magnesium sulfate to prevent one seizure (NNT =36).**[7] At least 20% of patients who develop eclampsia do NOT demonstrate signs or symptoms of preeclampsia before their initial seizure.

Acute Management during seizure

Link to Figure 4: Eclampsia Checklist Protocol

Persistent Seizure Activity Unresponsive to Magnesium

If seizures recur/persist despite additional boluses of magnesium sulfate:

- □ Consult neurology
- □ Anesthesia should be called to bedside for consideration of an advanced airway
- □ Add another anticonvulsant agent as a single dose:
    - Lorazepam (Ativan): 2-4 mg IV
    - Midazolam (Versed): 1-2 mg IV or IM
    - Diazepam (Valium): 1-10 mg IV
- □ Consider other causes of seizure activity
    - Stat neuroimaging

Management following seizure

- Continue magnesium sulfate 2g/hr for at least 24 hours postpartum depending on symptoms
- Continuous fetal heart rate monitoring
    - During the seizure, fetal bradycardia can occur due to maternal hypoxia and hypercarbia. Following seizure activity, Sibai (2005) states, "fetal heart rate changes can include bradycardia, transient late decelerations, decreased beat-to-beat variability, and compensatory tachycardia. Changes in uterine activity can include increased frequency and tone. These changes usually resolve spontaneously within 3–10 minutes after the termination of convulsions and the correction of maternal hypoxemia. **The patient should not be rushed for an emergency Cesarean delivery based on these findings**, **especially if the maternal condition is not stable**. It is advantageous to the fetus to allow in utero recovery from hypoxia and hypercarbia due to maternal convulsions. However, if the bradycardia and/or recurrent late decelerations persist beyond 10–15 minutes despite all resuscitative efforts, then a diagnosis of abruptio placentae or non-reassuring fetal status should be considered."[11]
- Treatment of severe range blood pressures: vital signs during a seizure can be erroneous, therefore we recommend repeating the measurement and treating promptly once persistent severe range blood pressures are validated after the seizure has resolved.
- Delivery
    - An eclamptic seizure is not an indication for Cesarean delivery. Route of delivery should depend on gestational age, anticipated length of induction and maternal and fetal clinical status.
- Follow up laboratory assessment
    - Labs should be repeated every 4-6 hours until they show signs of stability/improvement
- Neuroimaging should be considered for persistent neurologic symptoms (e.g. severe headache).
- Debrief with patient, family, and obstetric team

Figure 4. Eclampsia Checklist Protocol

Texas Children's Hospital
Pavilion for Women

ECLAMPSIA CHECKLIST PROTOCOL

Baylor College of Medicine

Recognize

New-Onset tonic-clonic, focal or multifocal seizure activity without other known cause

Respond

- ❑ Activate Rapid Response Team
- ❑ Notify **covering** physician immediately
- ❑ Designate team roles
  - -Team leader
  - -Recorder
  - -Primary RN
  - -Records reviewer

Protect Patient and Airway

- ❑ Ensure side rails up
- ❑ Place patient in left lateral decubitus position
- ❑ Continue pulse oximetry
  - -Provide supplemental oxygen with 10 L non-rebreather mask
- ❑ Obtain code cart, Ambu bag, and suctioning equipment

Treat

- ❑ Start two large bore peripheral IVs (PIV) and draw labs
- ❑ Treat severe hypertension per the Hypertensive Emergency Checklist
- ❑ Initiate magnesium sulfate
- ❑ Continuous fetal monitoring *following* the eclamptic seizure
- ❑ Deliver if still pregnant
  - -Develop a delivery plan
  - -Move to operating room if fetal bradycardia persists

Recommended Labs

1. Complete Blood Count (CBC)
2 .Complete Metabolic Panel (CMP)
3. PT/INR, PTT, Fibrinogen
4. Type and Cross x2 units pRBCs

Escalation of care

If persistent seizure activity:

- ❑ Administer second line anticonvulsant agent if seizures persist >2-3 min
  - -Lorazepam (Ativan): 2-4mg IV **(readily available on all units)** OR
  - -Midazolam (Versed): 1-2mg IV or IM *OR*
  - -Diazepam (Valium): 1-10mg IV
- ❑ Consult
  - -Critical Care Team
  - -Neurology
  - -Anesthesiology for an advanced airway
- ❑ Obtain advanced airway (consult anesthesiology)

Initial Magnesium Sulfate Dosing

With peripheral IV

- ❑ Magnesium 4-6g loading dose over 30 minutes
- ❑ 2g/hr maintenance *if* normal renal function; if creatinine is ≥ 1.1 mg/dL start 1 g/hour

No peripheral IV access

Magnesium Sulfate 10g IM (5g in each buttock- 2 vials)

Location: Pedi/Adult Code Cart

Contraindication to Magnesium: Myasthenia Gravis

Debrief

- ❑ Team Huddle (during event and post event)
- ❑ Debrief with patient and family

Document

- ❑ Nursing: use the "RRT" flowsheet in the electronic medical record(EMR). Fill out all fields, including final disposition.

10.20.2025 v.2

Postpartum care of all patients with hypertension in pregnancy

Postpartum BPs and symptoms of preeclampsia **should continue to be managed in the same manner as during the antepartum and intrapartum period.**

Blood pressure usually decreases within 48 hours after delivery but increases again 3-6 days postpartum.[12,13] In patients with chronic hypertension, blood pressure in the postpartum period is often higher compared with antepartum levels, particularly in the first 1–2 weeks postpartum.[14] Even patients who were not treated during pregnancy may require treatment with antihypertensive medication in the postpartum period.

Postpartum inpatient management

- Long-acting antihypertensive therapy should be initiated/increased in the postpartum period when the SBP is ≥ 150 mm Hg and/or DBP ≥ 100 mm Hg with the goal of maintaining SBP ≤ 140 mm Hg and DBP ≤ 90 mm Hg.[14,15] **The decision to start medications for people with SBP between 140-150 mm Hg and DBP between 90-100 mm Hg should be based on provider preference**.

  See **Figure 5** for Management of Postpartum Hypertension in Patients **not** Already Taking Long-Acting Antihypertensive Medication

  Therapy should be initiated for SBPs ≥ 150 mg Hg and/or DBP ≥ 100 mm Hg.

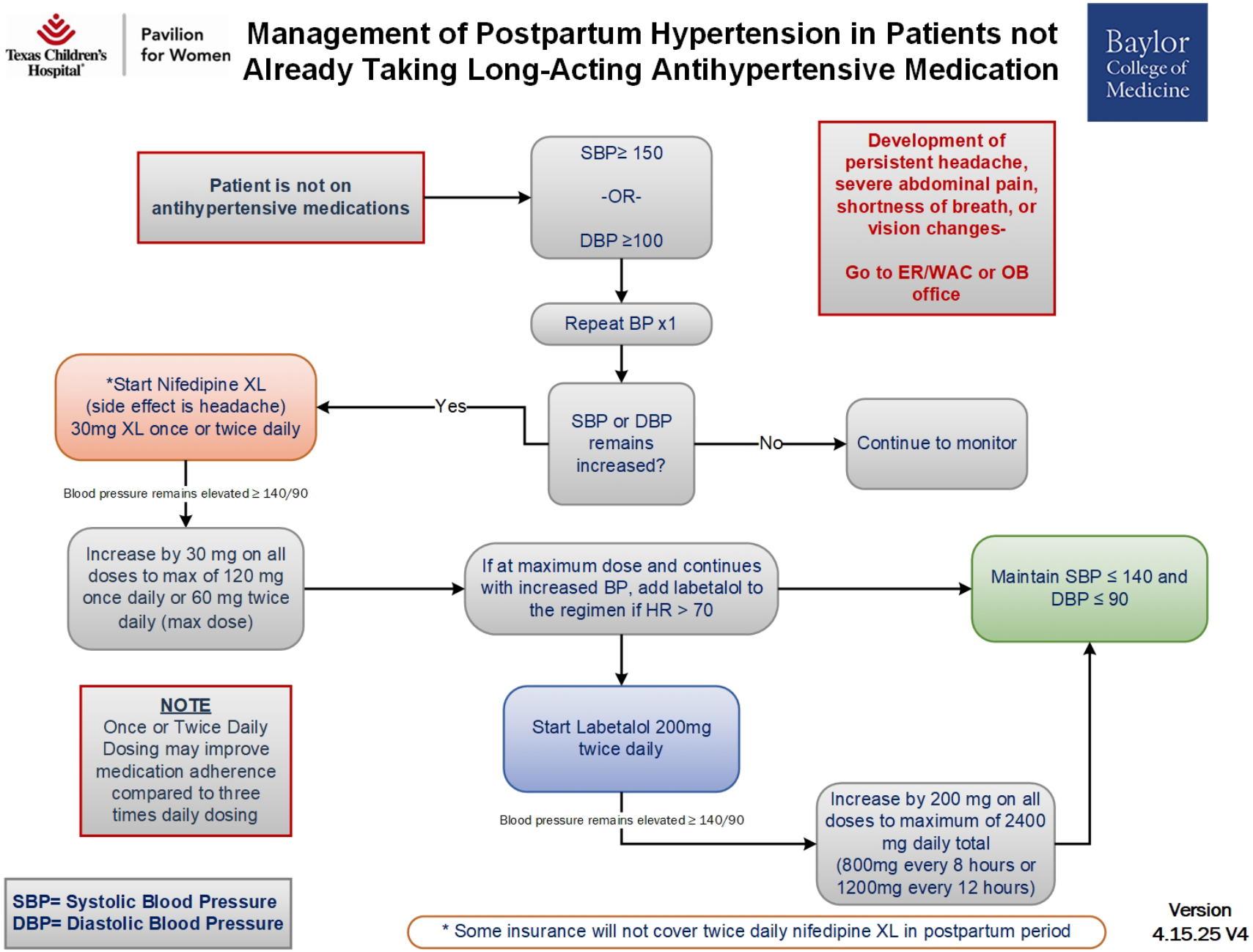
  See **Figure 6** for Management of Postpartum Hypertension in Patients Already Taking Long-Acting Antihypertensive Medication

  Therapy should be adjusted postpartum to maintain a SBP < 140 mm Hg and a DBP < 90 mm Hg.

- Nifedipine XL and Labetalol are the agents of choice for postpartum HTN (see **Figure 5** **and** **Figure 6** for dosing). **However, Nifedipine monotherapy has been associated with lower incidence of readmission and should be considered first line**.[16,17*]
- Other antihypertensive agents may be necessary depending on the patient's history (e.g. chronic kidney disease). Reinitiation of pre-pregnancy antihypertensives, such as ACE inhibitors, can be considered. Consider MFM or Cardiology/IM consultation for guidance on these medication adjustments.
  - *ACE inhibitors are safe to use during breastfeeding.*
  - *Avoid Methyldopa secondary to its association with depression.*
- There is conflicting evidence regarding the efficacy of routine oral diuretic use in patients with hypertensive disorders of pregnancy. Given that there may be some patients who do benefit, use should be individualized. **The BCM OB/Gyn Perinatal Guidelines Committee recommends discussion with MFM regarding utility, route and dosage**.

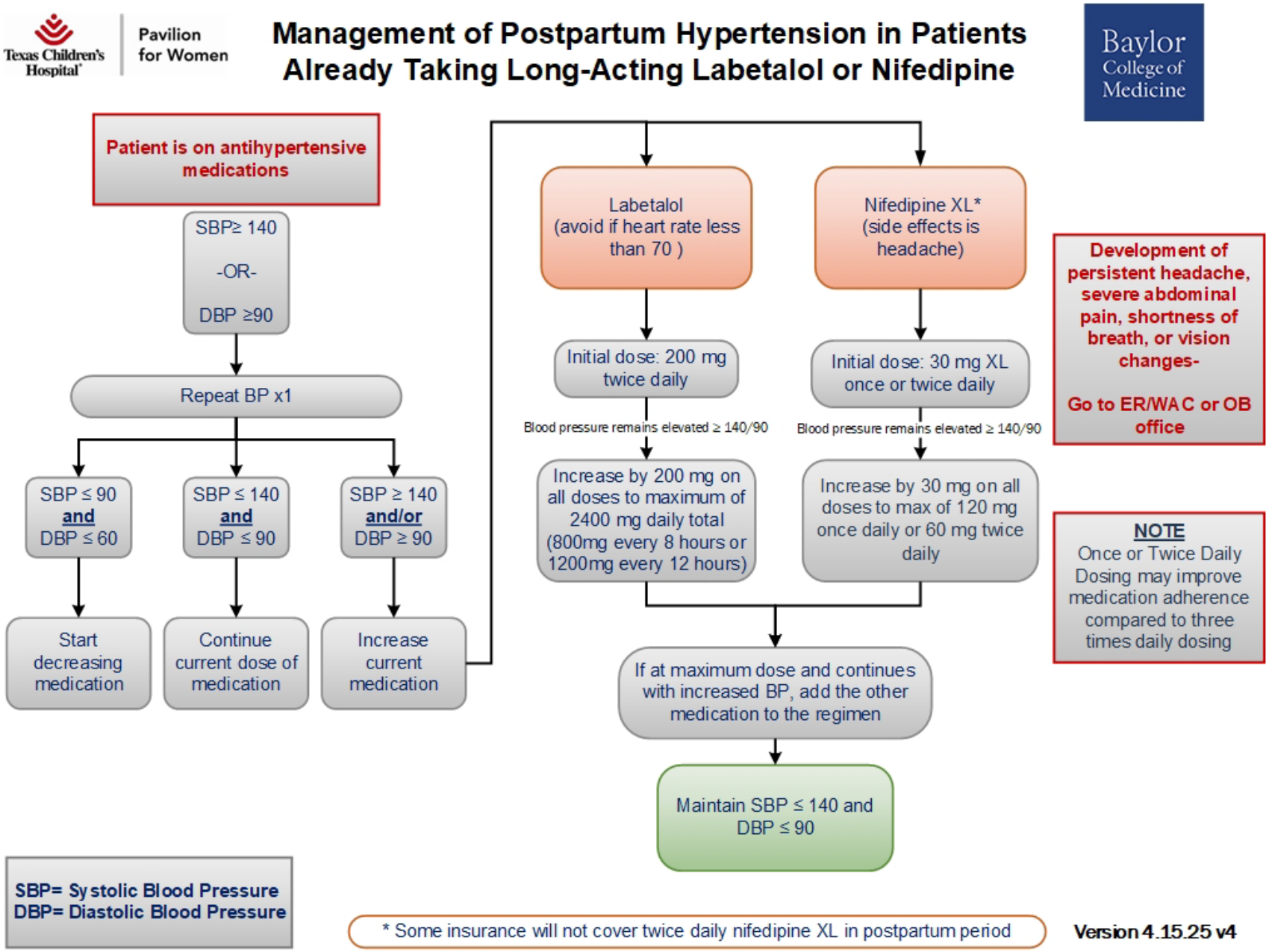
[*] A 2025 RCT evaluating 323 patients randomized to receive labetalol or Nifedipine to treat postpartum hypertension. After controlling for confounders the adjusted Odds Ratio for readmission was 0.12 (95% CI 0.02-0.56) for the Nifedipine group. A 2024 retrospective study demonstrated that discharge with a prescription for labetalol only was associated with a 63% greater incidence of postpartum readmission than discharge without a prescription for antihypertensive medication. In contrast, discharge with a prescription for nifedipine only and discharge with a prescription for multiple antihypertensive medications were associated with 26% and 47% lower incidence rates of postpartum readmission, respectively. This was true even after adjustment for clinical and demographic factors, including last inpatient blood pressure and type of hypertensive disorder of pregnancy. In models with labetalol monotherapy as the reference group, nifedipine and 2 or more antihypertensive medications were associated with 50% and 62% lower incidence rates of readmission, respectively.

Figure 5. *Management of Postpartum Hypertension in Patients not Already Taking Long-Acting Antihypertensive Medication*



Adapted from Hoppe, et al.[15]

Figure 6. *Management of Postpartum Hypertension in Patients Already Taking Long-Acting Antihypertensive Medication*



Adapted from Hoppe, et al.[15]

Discharge Planning

- Patients with hypertensive disorders of pregnancy should not be discharged until they are asymptomatic and BPs are well-controlled for at least 24 hours (SBPs <150 mmHg and DBPs <100, with or without long-acting antihypertensive therapy). See **Figure 7** for **Discharge Checklist**.[*18]
- All patients should receive **education** on preeclampsia, even if they don't have a diagnosis of a hypertensive disorder of pregnancy.
- Efforts should be made to ensure that all patients with hypertension have access to a home BP cuff prior to discharge. This may include consulting Social Work to assist with barriers to access.

Outpatient Follow Up

Follow up should occur within 3-5 days of discharge (ideally within 72 hours of discharge) for patients with any of the following:

- Received rapid-acting antihypertensive medication(s) during the delivery hospitalization
- Preeclampsia with severe features (including superimposed)
- Eclampsia

Follow up should occur within 7-10 days of discharge for patients with a hypertensive disorder who do not meet criteria for earlier follow up.

Refer to **Figure 7** for timing of scheduled outpatient follow up for patients with Hypertension.

Refer to **Figure 8** for triage during Postpartum In person/Telemedicine Visit for Hypertension

Refer to **Figure 9** for triage during OB Triage Visit for Patients with Hypertension in the Postpartum Period

[*]A 2021 study by Bruce et al. evaluated the features of those with hypertension readmissions postpartum. They found that 90% of patients were readmitted within 10 days of delivery (median readmission was day 5). Patients with one elevated BP within 24 hours prior to discharge (either SBP≥140 mm Hg or DBP≥90 mm Hg) had nearly twice the odds of readmission. Those with two or more elevated BPs had 3 times the odds of readmission. Those who had severe features, were ≥30 years old, or who received magnesium sulfate and/or acute antihypertensive therapy were also more likely to be readmitted. The authors conclude that **high risk patients should have contact with a physician after discharge by postpartum day #5.**[18]

Figure 7. *Postpartum Discharge Checklist for Patients with Hypertension*

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Checklist for Postpartum Discharge of Women with Hypertensive Disorders

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Adapted from SMFM Special Statement: Checklist for postpartum discharge for women with hypertensive disorders

10/23/2025 v.2
Figure 7

Patient Education *(provided at discharge and document in the electronic medical record)*

- ❑ Provide all education in patient's own language and reinforce education handouts (via interpreter if necessary).
- ❑ Review warning symptoms and when to seek medical care.
- ❑ Discuss antihypertensive medications including dosage, schedule, potential side effects, hold parameters, and impact on breastfeeding.
  - ○ Ideally, facilitate prescription refill prior to discharge and confirm mother has medications in hand before discharge
- ❑ Discuss the diagnosis, recurrence risk in future pregnancy, and recommendation for low-dose aspirin to reduce recurrence risk.

When to call clinic:

- ❑ SBP ≥150 mmHg and/or DBP ≥100 mmHg on two occasions 4 hours apart with no symptoms

When to go to hospital:

- ❑ SBP ≥140 mmHg and/or DBP ≥90 mmHg with headache not improved with acetaminophen, vision changes, chest pain, shortness of breath, or upper abdominal pain
- ❑ No ability to take BP at home with symptoms of headache not improved with acetaminophen, vision changes, chest pain, shortness of breath, or upper abdominal pain
- ❑ SBP ≥160 mmHg or DBP ≥110 mmHg on two readings 5 minutes apart with or without symptoms
- ❑ Seizure (call 911)

Follow-up

- ❑ Ensure patient has contact information for obstetrical provider (phone, electronic patient portal).
- ❑ Ensure patient has scheduled follow-up (in-person or telehealth).
- ❑ Patients with the following should have a schedule office visit/telehealth* for BP check within 3-5 days of discharge (ideally within 72 hours):
  - ▪ Received rapid-acting antihypertensive medication(s) during delivery hospitalization
  - ▪ Preeclampsia with severe features (including superimposed)
  - ▪ Eclampsia
- ❑ All other patients should have a scheduled office visit/telehealth* for BP check at 7 to 10 days after delivery and 6 weeks after and delivery (comprehensive postpartum follow up), sooner if necessary
- ❑ Evaluate and address barriers to care, such as:
  - o Transportation and childcare for visit(s)
  - o Access to telephone if needed to call provider or reschedule appointments
  - o Access to interpretation services if needed
  - o Resources to fill/pick up prescription(s)
  - o **If any barriers are identified, consult Social Work prior to discharge**
- ❑ If patient has home blood pressure cuff:
  - o Provide instruction on how to measure blood pressure.
  - o Ensure literacy, ability to read and interpret numbers
  - o Review frequency of home BP monitoring: patients should take BP 1-2 times daily after discharge until at least 7-10 days postpartum.
  - o Discuss target blood pressures (systolic less than 150 mm Hg; diastolic less than 100 mm Hg).
  - o Discuss blood pressures requiring prompt notification (systolic 160 mm Hg or greater; diastolic 110 mm Hg or greater).
- ❑ Create a postpartum check-in plan for the first 2-3 weeks postpartum:
  - o Ask mother to identify 1 or 2 people who can call her at least once daily after discharge from the hospital if she will be home alone.
  - o Advise mother and family to post emergency contact information in a readily available place at home; make sure key family members are aware.

**Telehealth visits are only appropriate if the patient has a home blood pressure cuff upon discharge.*

Figure 8. *Telemedicine/Ambulatory Postpartum Hypertension Visit*

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Telephone/Telehealth/Office Visit Triage

Postpartum Signs and Symptoms of Hypertensive Disorders of Pregnancy

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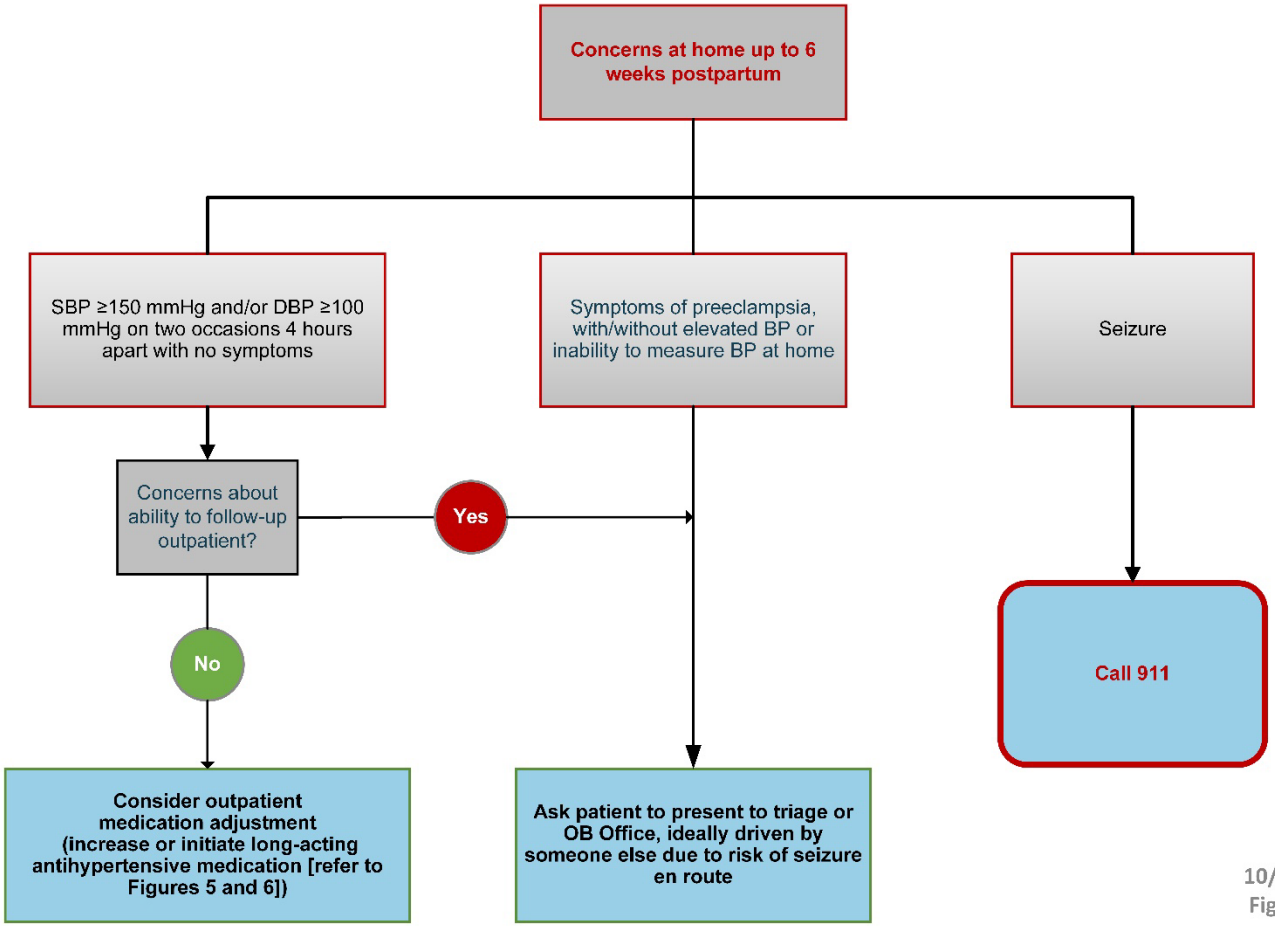

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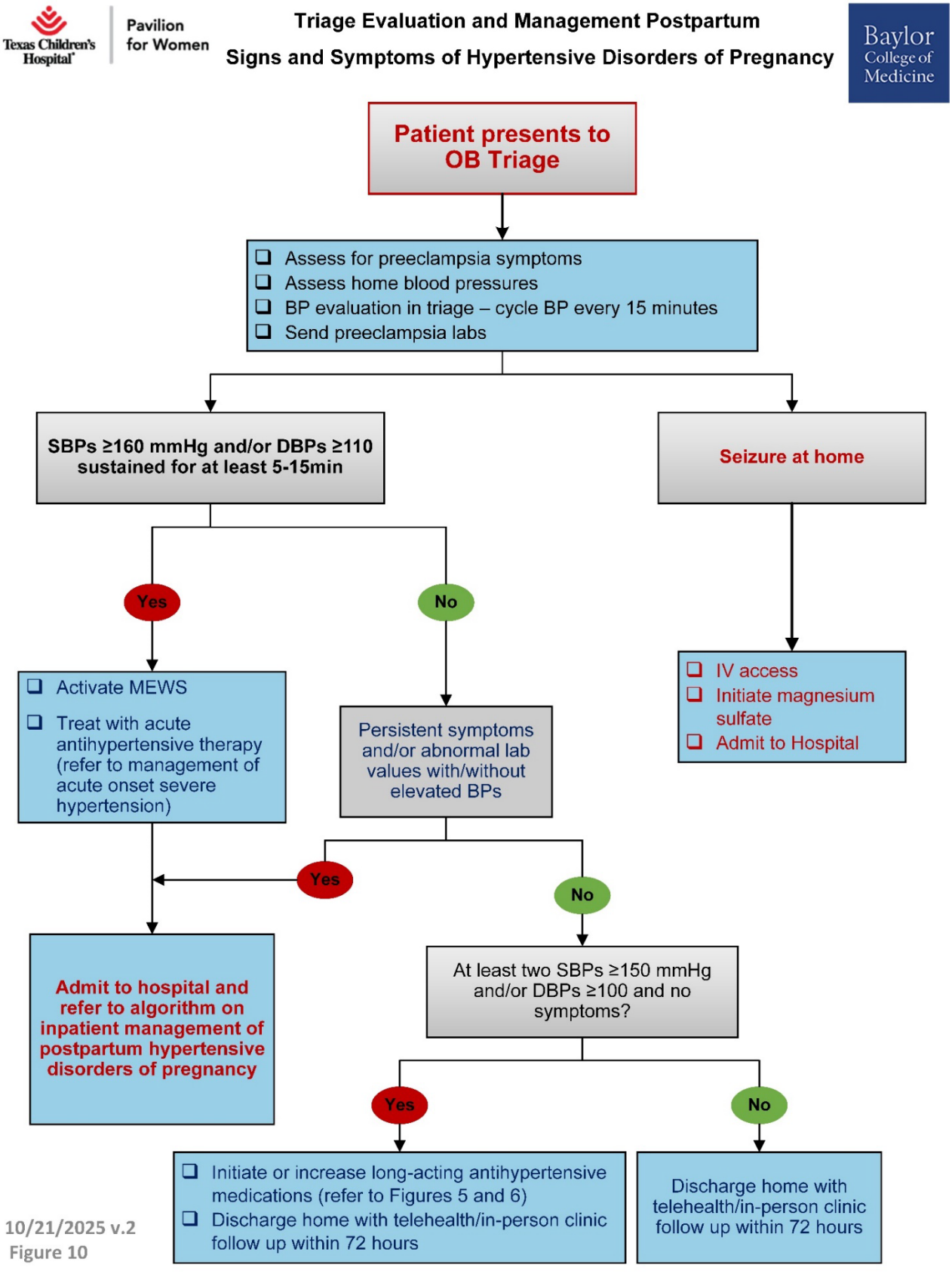
Figure 9

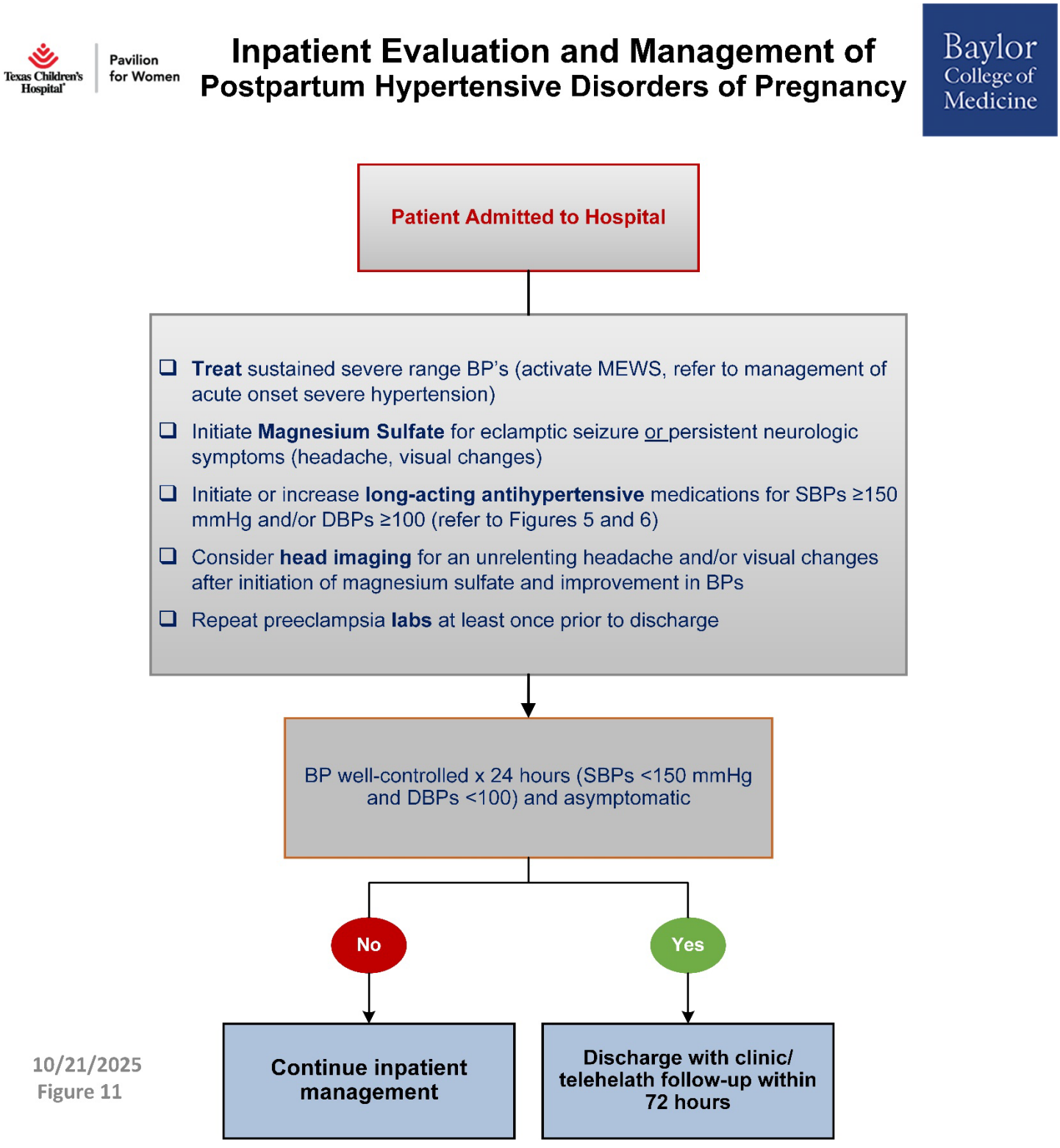
Figure 9. *OB Triage Evaluation of Patients with Postpartum Hypertension*



Readmission and Follow Up

Refer to **Figure 10** to guide the clinical management of patients readmitted for management of hypertension.

Figure 10. *Inpatient Management of Patients admitted with Postpartum Hypertension*



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