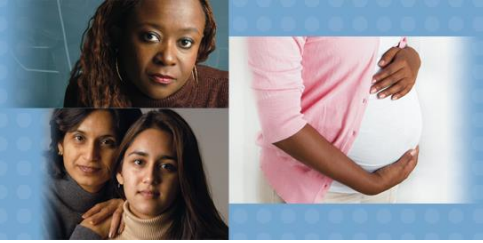



# Maternal Safety Bundle for Severe Hypertension in Pregnancy

REVISED APRIL 2018

Disclaimer: The following material is an example only and not meant to be prescriptive. ACOG accepts no liability for the content or for the consequences of any actions taken on the basis of the information provided.

EXAMPLE 3

# KEY ELEMENTS

| RISK ASSESSMENT & PREVENTION | READINESS & RESPONSE |
| --- | --- |
| • Diagnostic Criteria<br>• When to Treat<br>• Agents to Use<br>• Monitoring | • Complications & Escalation Process<br>• Further Evaluation<br>• Change of Status<br>• Postpartum Surveillance |

# TYPES OF HYPERTENSION

EXAMPLE 4

| | |
|---|---|
| Chronic Hypertension | ○ SBP ≥ 140 **or** DBP ≥ 90<br>○ Pre-pregnancy or <20 weeks |
| Gestational Hypertension | ○ SBP ≥ 140 **or** DBP ≥ 90<br>○ > 20 weeks<br>○ Absence of proteinuria or systemic signs/symptoms |
| Preeclampsia – Eclampsia | ○ SBP ≥ 140 **or** DBP ≥ 90<br>○ Proteinuria with or without signs/symptoms<br>○ Presentation of signs/symptoms/lab abnormalities but no proteinuria<br>**Proteinuria not required for diagnosis eclampsia seizure in setting of preeclampsia* |
| Chronic Hypertension & Superimposed Preeclampsia | |
| Preeclampsia with severe features *(ACOG Executive Summary on Hypertension in Pregnancy, October 2013)* | ○ Systolic BP of 160 mm Hg or higher, or diastolic BP of 110 mm HG or higher on 2 occasions at least 4 hours apart while the patient is on bed rest (unless antihypertensive therapy is initiated before this time)<br>○ Thrombocytopenia (platelet count less than 100,000/microliter)<br>○ Impaired liver function as indicated by abnormally elevated blood concentrations of liver enzymes (to twice normal concentration), severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by alternative diagnoses, or both<br>○ Progressive renal insufficiency (serum creatinine concentration greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease)<br>○ Pulmonary edema<br>○ New-onset cerebral or visual disturbances |

# DEFINITIONS



## SEVERE HYPERTENSION

- Systolic blood pressure ≥ 160 mm Hg **or**
- Diastolic blood pressure ≥ 110 mm Hg

## HYPERTENSIVE EMERGENCY

- Persistent, severe hypertension that can occur antepartum, intrapartum, or postpartum
- Defined as:
  - Two severe BP values (≥ 160/110) taken 15-60 minutes apart
  - Severe values do not need to be consecutive

# WHEN TO TREAT



## SEVERE HYPERTENSION

SBP ≥ 160 **or** DBP ≥ 110

- Repeat BP every 5 min for 15 min
- Notify physician after one severe BP value is obtained

## HYPERTENSIVE EMERGENCY

Persistent, severe hypertension that can occur antepartum, intrapartum, or postpartum
Two severe BP values (≥ 160/110) taken 15-60 minutes apart
Severe values do not need to be consecutive

- If severe BP elevations persist for 15 min or more, begin treatment ASAP. **Preferably within 60 min of the second elevated value**.
- If two severe BPs are obtained *within* 15 min, treatment may be initiated if clinically indicated

# FIRST LINE THERAPIES

EXAMPLE 7

- Intravenous labetalol
- Intravenous hydralazine
- Oral nifedipine

## Magnesium sulfate not recommended as antihypertensive agent

- Should be used for: seizure prophylaxis and controlling seizures in eclampsia
- IV bolus of 4-6 grams in 100 ml over 20 minutes, followed by IV infusion of 1-2 grams per hour. **Continue for 24 hours postpartum**
- If no IV access, 10 grams of 50% solution IM (5 g in each buttock)
- Contraindications: pulmonary edema, renal failure, myasthenia gravis

## Anticonvulsants (for recurrent seizures or when magnesium is C/I):

- **Lorazepam**: 2-4 mg IV x 1, may repeat x 1 after 10-15 min
- **Diazepam**: 5-10 mg IV every 5-10 min to max dose 30 mg
- **Phenytoin**: 15-20 mg/kg IV x 1, may repeat 10 mg/kg IV after 20 min if no response. Avoid with hypotension, may cause cardiac arrhythmias.
- **Keppra**: 500 mg IV or orally, may repeat in 12 hours. Dose adjustment needed if renal impairment.

**There may be adverse effects and additional contraindications. Clinical judgement should prevail*

Revised July 2017

# Labetalol Algorithm

**Example**

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

1. **Labetalol 20 mg**† IV over 2 minutes
2. Repeat BP in 10 minutes
3. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 40 mg** IV over 2 minutes; If BP below threshold, continue to monitor BP closely
4. Repeat BP in 10 minutes
5. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 80 mg** IV over 2 minutes; If BP below threshold, continue to monitor BP closely
6. Repeat BP in 10 minutes
7. If SBP ≥ 160 or DBP ≥ 110, administer **hydralazine**§ **10 mg** IV over 2 minutes; If below threshold, continue to monitor BP closely
8. Repeat BP in 20 minutes
9. If SBP ≥ 160 or DBP ≥ 110 at 20 minutes, obtain emergency consultation from specialist in MFM, internal medicine, anesthesiology, or critical care
10. Give additional antihypertensive medication per specific order as recommended by specialist
11. Once BP thresholds are achieved, repeat BP:
12. - Every 10 minutes for 1 hour
    - Then every 15 minutes for 1 hour
    - Then every 30 minutes for 1 hour
    - Then every hour for 4 hours
13. Institute additional BP monitoring per specific order

- 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 220 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

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

‡ "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.

§ Hydralazine may increase risk of maternal hypotension.

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# Hydralazine Algorithm

**Example**

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

1. Administer **hydralazine† 5 mg or 10 mg** IV over 2 minutes
2. Repeat BP in 20 minutes
3. If SBP ≥ 160 or DBP ≥ 110, administer **hydralazine 10 mg** IV over 2 minutes
4. Repeat BP in 20 minutes
5. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 20 mg*** IV over 2 minutes; If BP below threshold, continue to monitor BP closely
6. Repeat BP in 10 minutes
7. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 40 mg** IV over 2 minutes, and obtain emergency consultation from specialist in MFM, internal medicine, anesthesiology, or critical care
8. Give additional antihypertensive medication per specific order as recommended by specialist
9. Once BP thresholds are achieved, repeat BP:
   - Every 10 minutes for 1 hour
   - Then every 15 minutes for 1 hour
   - Then every 30 minutes for 1 hour
   - Then every hour for 4 hours
10. Institute additional BP monitoring per specific order

- 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 hydralazine should not exceed 25 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

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

‡ "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.

§ Hydralazine may increase risk of maternal hypotension.

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# Oral Nifedipine Algorithm

**EXAMPLE**

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

1. **Oral nifedipine[§] 10 mg**
2. Repeat BP in 20 minutes
3. If SBP ≥ 160 or DBP ≥ 110, administer **oral nifedipine 20 mg**; If below threshold, continue to monitor BP closely
4. Repeat BP in 20 minutes
5. Give additional round of oral **nifedipine 20 mg**
6. If SBP ≥ 160 or DBP ≥ 110, administer **IV labetalol[†] 40 mg**; If below threshold, continue to monitor BP closely. Obtain emergency consultation from specialist in MFM, internal medicine, anesthesiology, or critical care.
7. Give additional antihypertensive medication per specific order as recommended by specialist
8. Once BP thresholds are achieved, repeat BP:
   - Every 10 minutes for 1 hour
   - Then every 15 minutes for 1 hour
   - Then every 30 minutes for 1 hour
   - Then every hour for 4 hours
9. Institute additional BP monitoring per specific order

- Notify provider after one severe BP value is obtained
- Institute fetal surveillance if viable
- Capsules should be administered orally and not punctured or otherwise administered sublingually
- There may be adverse effects and contraindications. Clinical judgement should prevail.

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

§ Oral nifedipine has been associated with an increase in maternal heart rate and may overshoot hypotension.

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

‡ "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.

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# ADDITIONAL THERAPY RECOMMENDATIONS



## IF NO IV ACCESS AVAILABLE:

- Initiate algorithm for oral nifedipine, or
- Oral labetalol, 200 mg **Repeat in 30 min if SBP remains ≥ 160 or DBP ≥ 110 and IV access still unavailable*

## SECOND LINE THERAPIES (if patient fails to respond to first line tx):

Recommend emergency consult with:

- Maternal Fetal Medicine
- Internal Medicine
- Anesthesiology
- Critical Care
- Emergency Medicine

*May also consider:*

✓ Labetalol or nicardipine via infusion pump

✓ Sodium nitroprusside for extreme emergencies **Use for shortest amount of time due to cyanide/thiocyanate toxicity*

# MONITORING BLOOD PRESSURE



## MATERNAL

- Once BP is controlled (<160/110), measure
  - ✓ Every 10 minutes for 1 hour
  - ✓ Every 15 minutes for next hour
  - ✓ Every 30 minutes for next hour
  - ✓ Every hour for 4 hours

- Obtain baseline labs:
  - ✓ CBC
  - ✓ Platelets
  - ✓ LDH
  - ✓ Liver Function Tests
  - ✓ Electrolytes
  - ✓ BUN creatinine
  - ✓ Urine protein

## FETAL

- Fetal monitoring surveillance as appropriate for gestational age

EXAMPLE

# Hypertensive Emergency Checklist

## 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

- ☐ Call for Assistance
- ☐ Designate:
  - ◯ Team leader
  - ◯ Checklist reader/recorder
  - ◯ Primary RN
- ☐ Ensure side rails up
- ☐ Ensure medications appropriate given patient history
- ☐ Administer seizure prophylaxis (magnesium sulfate first line agent, unless contraindicated)
- ☐ Antihypertensive therapy within 1 hour for persistent severe range BP
- ☐ Place IV; Draw preeclampsia labs
- ☐ Antenatal corticosteroids (if <34 weeks of gestation)
- ☐ Re-address VTE prophylaxis requirement
- ☐ Place indwelling urinary catheter
- ☐ Brain imaging if unremitting headache or neurological symptoms
- ☐ Debrief patient, family, and obstetric team

† "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.

## Magnesium Sulfate

Contraindications: Myasthenia gravis; avoid with pulmonary edema, use caution with renal failure

**IV access:**

- ☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
- ☐ Label magnesium sulfate; Connect to labeled infusion pump
- ☐ Magnesium sulfate maintenance 1-2 grams/hour

**No IV access:**

- ☐ 10 grams of 50% solution IM (5 g in each buttock)

## Antihypertensive Medications

For SBP ≥ 160 or DBP ≥ 110
*(See SMI algorithms for complete management when necessary to move to another agent after 2 doses.)*

- ☐ **Labetalol** (initial dose: 20mg); **Avoid parenteral labetalol with active asthma, heart disease, or congestive heart failure; use with caution with history of asthma**
- ☐ **Hydralazine** (5-10 mg IV* over 2 min); **May increase risk of maternal hypotension**
- ☐ **Oral Nifedipine** (10 mg capsules); Capsules should be administered orally, not punctured or otherwise administered sublingually

** Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours*

***Note:** If first line agents unsuccessful, emergency consult with specialist (MFM, internal medicine, OB anesthesiology, critical care) is recommended*

## Anticonvulsant Medications

For recurrent seizures or when magnesium sulfate contraindicated

- ☐ **Lorazepam (Ativan):** 2-4 mg IV x 1, may repeat once after 10-15 min
- ☐ **Diazepam (Valium):** 5-10 mg IV q 5-10 min to maximum dose 30 mg

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EXAMPLE

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- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails are up
- ✓ Administer seizure prophylaxis
- ✓ Antihypertensive therapy within 1 hr for persistent severe range BP
- ✓ Place IV; Draw PEC labs
- ✓ Antenatal corticosteroids is <34 wks gestation
- ✓ Re-address VTE prophylaxis requirement
- ✓ Place indwelling urinary catheter
- ✓ Brain imaging if unremitting headache or neurological symptoms
- ✓ Debrief patient, family, OB team

# Eclampsia Checklist

- ☐ Call for Assistance
- ☐ Designate
  - ○ Team leader
  - ○ Checklist reader/recorder
  - ○ Primary RN
- ☐ Ensure side rails up
- ☐ Protect airway and improve oxygenation:
  - ○ Maternal pulse oximetry
  - ○ Supplemental oxygen (100% non-rebreather)
    - ☐ Lateral decubitis position
    - ☐ Bag-mask ventilation available
    - ☐ Suction available
- ☐ Continuous fetal monitoring
- ☐ Place IV; Draw preeclampsia labs
- ☐ Ensure medications appropriate given patient history
- ☐ Administer magnesium sulfate
- ☐ Administer antihypertensive therapy if appropriate
- ☐ Develop delivery plan, if appropriate
- ☐ Debrief patient, family, and obstetric team

† "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.

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## MAGNESIUM SULFATE

Contraindications: Myasthenia gravis; avoid with pulmonary edema, use caution with renal failure

**IV access:**
- ☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
- ☐ Label magnesium sulfate; Connect to labeled infusion pump
- ☐ Magnesium sulfate maintenance 1-2 grams/hour

**No IV access:**
- ☐ 10 grams of 50% solution IM (5 g in each buttock)

## ANTIHYPERTENSIVE MEDICATIONS

For SBP ≥ 160 or DBP ≥ 110
*(See SMI algorithms for complete management when necessary to move to another agent after 2 doses.)*

- ☐ **Labetalol** (initial dose: 20mg); **Avoid parenteral labetalol with active asthma, heart disease, or congestive heart failure; use with caution with history of asthma**
- ☐ **Hydralazine** (5-10 mg IV* over 2 min); **May increase risk of maternal hypotension**
- ☐ **Oral Nifedipine** (10 mg capsules); Capsules should be administered orally, not punctured or otherwise administered sublingually

** Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours*

***Note:** If persistent seizures, consider anticonvulsant medications and additional workup*

## ANTICONVULSANT MEDICATIONS

For recurrent seizures or when magnesium sulfate contraindicated

- ☐ **Lorazepam (Ativan)**: 2-4 mg IV x 1, may repeat once after 10-15 min
- ☐ **Diazepam (Valium)**: 5-10 mg IV q 5-10 min to maximum dose 30 mg

## FOR PERSISTENT SEIZURES

- ☐ Neuromuscular block and intubate
- ☐ Obtain radiographic imaging
- ☐ ICU admission
- ☐ Consider anticonvulsant medications



- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails are up
- ✓ Protect airway + improve oxygenation
- ✓ Continuous fetal monitoring
- ✓ Place IV; Draw PEC labs
- ✓ Administer antihypertensive therapy if appropriate
- ✓ Develop delivery plan
- ✓ Debrief patient, family, OB team

# COMPLICATIONS & ESCALATION PROCESS

EXAMPLE 15

## MATERNAL (pregnant or postpartum)

- CNS (seizure, unremitting headache, visual disturbance)
- Pulmonary edema or cyanosis
- Epigastric or right upper quadrant pain
- Impaired liver function
- Thrombocytopenia
- Hemolysis
- Coagulopathy
- Oliguria **<30 ml/hr for 2 consecutive hours*

## FETAL

- Abnormal fetal tracing
- IUGR

→ **Prompt evaluation and communication:** If undelivered, plan for delivery

# MONITORING CHANGE OF STATUS



*Once patient is stabilized, consider*:

## SEIZURE PROPHYLAXIS

- Magnesium sulfate (if not already initiated)

## TIMING & ROUTE OF DELIVERY

- **Eclampsia** → Delivery after stabilization

- **HELLP/Severe preeclampsia/ Chronic hypertension + superimposed preeclampsia** → Vaginal delivery, if attainable in reasonable amount of time

- **≥ 34 weeks** → Deliver

## MATERNAL BP

- Continue control with oral agents
- Target range of 140-150/90-100

## IF PRETERM (<34 WKS) & EXPECTANT MGMT PLANNED

- Antenatal corticosteroids
- Subsequent pharmacotherapy

- **HELLP (Gestational age of fetal viability to 33 6/7 wks)**

✓ Delay delivery for 24-48 hours if maternal and fetal condition remains stable

✓ Contraindications to delay in delivery for fetal benefit of corticosteroids:

- Uncontrolled hypertension
- Eclampsia
- Pulmonary edema
- Suspected abruption placenta
- Disseminated intravascular coagulation,
- Nonreassuring fetal status
- Intrauterine fetal demise

# GUIDELINES FOR DOCUMENTATION

EXAMPLE 17

| ON ADMISSION | ASSESSMENT & PLAN |
|---|---|
| ✓ **Complete history**<br><br>✓ **Complete physical exam + preeclampsia symptoms:**<br>○ Unremitting headaches<br>○ Visual changes<br>○ Epigastric pain<br>○ Fetal activity<br>○ Vaginal bleeding<br><br>✓ **Baseline BPs throughout pregnancy**<br><br>✓ **Meds/drugs throughout pregnancy** (illicit & OTC)<br><br>✓ **Current vital signs**, inc. O2 saturation<br><br>✓ **Current and past fetal assessment:**<br>○ FHR monitoring results<br>○ Est. fetal weight<br>○ BPP, as appropriate | ✓ **Indicate diagnosis of preeclampsia**<br>○ If no dx, indicate steps taken to exclude preeclampsia<br><br>✓ **Antihypertensives taken** (if any)<br>○ Specific medications<br>○ Dose, route, frequency<br>○ Current fetal status<br><br>✓ **Magnesium sulfate** (if initiated for seizure prophylaxis)<br>○ Dose, route, duration of therapy<br><br>✓ Delivery assessment<br>○ If indicated, note: timing, method, route<br>○ If not indicated, describe circumstances to warrant delivery<br><br>✓ Antenatal corticosteroids if < 34 weeks of gestation<br><br>***NOTE:*** *Continue ongoing documentation every 30 min until patient stabilized at < SBP 160 or DBP 110* |

# POSTPARTUM SURVEILLANCE

EXAMPLE 18

Necessary to prevent additional morbidity as preeclampsia/eclampsia can develop postpartum

## INPATIENT

- Measure BP every 4 hours after delivery until stable
- Do not use NSAIDs for women with elevated BP
- Do not discharge patient until BP is well controlled for at least 24 hours

## OUTPATIENT

- For pts with preeclampsia, visiting nurse evaluation recommended:

✓ Within 3-5 days

✓ Again in 7-10 days after delivery (earlier if persistent symptoms)

## ANTIHYPERTENSIVE THERAPY

- Recommended for persistent postpartum HTN: SBP ≥ 150 or DBP ≥ 100 on at least two occasions at least 4 hours apart
- Persistent SBP **≥** 160 or DBP **≥** 110 should be treated within 1 hour

EMERGENCY DEPARTMENT

# Postpartum Preeclampsia Checklist

**IF PATIENT < 6 WEEKS POSTPARTUM WITH:**

- BP ≥ 160/110 or
- BP ≥ 140/90 with unremitting headache, visual disturbances, epigastric pain

- ☐ Call for Assistance
- ☐ Designate:
  - ○ Team leader
  - ○ Checklist reader/recorder
  - ○ Primary RN
- ☐ Ensure side rails up
- ☐ Call obstetric consult; Document call
- ☐ Place IV; Draw preeclampsia labs
  - ○ CBC
  - ○ PT
  - ○ PTT
  - ○ Fibrinogen
  - ○ Chemistry Panel
  - ○ Uric Acid
  - ○ Hepatic Function
  - ○ Type and Screen
- ☐ Ensure medications appropriate given patient history
- ☐ Administer seizure prophylaxis
- ☐ Administer antihypertensive therapy
  - ○ Contact MFM or Critical Care for refractory blood pressure
- ☐ Consider indwelling urinary catheter
  - ○ Maintain strict I&O - patient at risk for pulmonary edema
- ☐ Brain imaging if unremitting headache or neurological symptoms

[1] "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.

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## MAGNESIUM SULFATE

Contraindications: Myasthenia gravis; avoid with pulmonary edema, use caution with renal failure

**IV access:**

- ☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
- ☐ Label magnesium sulfate; Connect to labeled infusion pump
- ☐ Magnesium sulfate maintenance 1-2 grams/hour

**No IV access:**

- ☐ 10 grams of 50% solution IM (5 g in each buttock)

## ANTIHYPERTENSIVE MEDICATIONS

For SBP ≥ 160 or DBP ≥ 110
*(See SMI algorithms for complete management when necessary to move to another agent after 2 doses.)*

- ☐ **Labetalol** (initial dose: 20mg); **Avoid parenteral labetalol with active asthma, heart disease, or congestive heart failure; use with caution with history of asthma**
- ☐ **Hydralazine** (5-10 mg IV* over 2 min); **May increase risk of maternal hypotension**
- ☐ **Oral Nifedipine** (10 mg capsules); Capsules should be administered orally, not punctured or otherwise administered sublingually

** Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours*

***Note:** If first line agents unsuccessful, emergency consult with specialist (MFM, internal medicine, OB anesthesiology, critical care) is recommended*

## ANTICONVULSANT MEDICATIONS

For recurrent seizures or when magnesium sulfate contraindicated

- ☐ **Lorazepam (Ativan)**: 2-4 mg IV x 1, may repeat once after 10-15 min
- ☐ **Diazepam (Valium)**: 5-10 mg IV q 5-10 min

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- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails up
- ✓ Call OB consult; Document call
- ✓ Place IV; Draw PEC labs
- ✓ Administer seizure prophylaxis
- ✓ Administer antihypertensive therapy
- ✓ Consider indwelling urinary catheter. Maintain strict I&O
- ✓ Brain imaging if unremitting headache or neurological symptoms

# DISCHARGE PLANNING

EXAMPLE
20

## All patients receive information on preeclampsia:

- ✓ Signs and symptoms
- ✓ Importance of reporting information to health care provider as soon as possible
- ✓ Culturally-competent, patient-friendly language

## All new nursing and physician staff receive information on hypertension in pregnancy and postpartum

## FOR PATIENTS WITH PREECLAMPSIA

- ✓ BP monitoring recommended 72 hours after delivery
- ✓ Outpatient surveillance (visiting nurse evaluation) recommended:
  - Within 3-5 days
  - Again in 7-10 days after delivery (earlier if persistent symptoms)

# POST-DISCHARGE EVALUATION

EXAMPLE 21

## ELEVATED BP AT HOME, OFFICE, TRIAGE

**Postpartum triggers:**

- SBP ≥ 160 or DBP ≥ 110 or
- SBP ≥ 140-159 or DBP ≥ 90-109 with unremitting headaches, visual disturbances, or epigastric/RUQ pain

↓

- Emergency Department treatment (OB /MICU consult as needed)
- AntiHTN therapy suggested if persistent **SBP ≥ 150 or DBP ≥ 100** on at least two occasions at least 4 hours apart
- Persistent **SBP ≥ 160 or DBP ≥ 110** should be treated within 1 hour

↓

Good response to antiHTN treatment and asymptomatic

↓

Admit for further observation and management
(L&D, ICU, unit with telemetry)

↓

Signs and symptoms of eclampsia, abnormal neurological evaluation, congestive heart failure, renal failure, coagulopathy, poor response to antihypertensive treatment

↓

Recommend emergency consultation for further evaluation (MFM, internal medicine, OB anesthesiology, critical care)

# CONCLUSION



- **Systolic BP ≥ 160 or diastolic BP ≥ 110** warrant:
  - ✓ Prompt evaluation at bedside
  - ✓ Treatment to decrease maternal morbidity and mortality

- Risk reduction and successful clinical outcomes require avoidance/management of severe systolic and diastolic hypertension in women with:
  - ✓ Preeclampsia
  - ✓ Eclampsia
  - ✓ Chronic hypertension + superimposed preeclampsia

- Increasing evidence indicates that standardization of care improves patient outcomes

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