Appendix E: Acute Treatment Algorithm

Part 1: Diagnostic Algorithm

≥ 20 weeks pregnant OR pregnant in last 6 weeks?



*Presenting Symptoms

- ▶ Headache, visual complaints (most common precursor to eclampsia)
- ▶ Altered mental status, seizure, CVA
- ▶ Abdominal pain-especially RUQ, epigastric pain
- ▶ SOB, pulmonary edema
- ▶ Oliguria

*If any of these are present with no other etiology, preeclampsia with severe features is suspected and magnesium sulfate should be considered.



First: MEASURE BP then SEND LABS

CBC, AST, ALT, LDH, serum creatinine, urine protein, urine analysis, uric acid (optional)







SBP < 140 / DBP < 90

NORMAL

SBP ≥ 160 / DBP ≥ 110 HYPERTENSIVE EMERGENCY

Repeat BP in 15 minutes If sustained ≥ 160/ ≥ 110



Initiate antihypertensives

IMMEDIATE

SBP 140-159 / DBP 90-109 HYPERTENSION



OB Evaluation

Within 60 minutes
Serial BP q15min

IF BP INCREASES TO SBP ≥ 160 OR DBP ≥ 110

Initiate antihypertensives

Notify provider if patient condition changes

OB Evaluation

Within 60 minutes

Serial BP q15min

Patients with symptoms have preeclampsia with severe features despite initial 'normal BP'

IF BP INCREASES TO SBP ≥ 160 OR DBP ≥ 110

Initiate antihypertensives

Notify provider if patient condition changes

Preeclampsia with severe features:

- SBP ≥160 mm Hg or DBP ≥ 110 mm Hg on 2 occasions at least 4 hours apart (unless antihypertensive therapy is initiated before this time)
- Thrombocytopenia
- ▶ Impaired liver function that is not accounted for by alternative diagnoses indicated by abnormally elevated liver enzymes or by severe persistent right upper quadrant or epigastric pain
- Renal insufficiency
- Pulmonary edema
- New-onset headache unresponsive to medication and not accounted for by alternative diagnoses
- Visual disturbances

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

Part 2: Antihypertensive Treatment Algorithm for Hypertensive Emergencies

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

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

*Hydralazine IV as Primary

Antihypertensive

*Labetalol IV as Primary Antihypertensive

Nifedipine PO as Primary Antihypertensive

Initial dose 20 mg labetalol IV Initial dose: 5 - 10 mg hydralazine IV

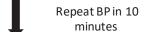
Initial dose: nifedipine 10 mg PO immediate release

Repeat BP in 10 minutes

Repeat BP in 20 minutes

Repeat BP in 20 minutes

SBP ≥ 160 and DBP ≥ 110 Give 40 mg labetalol IV SBP ≥ 160 and DBP ≥ 110 Give hydralazine 10 mg IV SBP ≥ 160 or DBP ≥ 110 Give nifedipine 20 mg PO



Repeat BP in 20 minutes Repeat BP in 20 minutes

SBP ≥ 160 and DBP ≥ 110 Give 80 mg labetalol IV

If SBP \geq 160 or DBP \geq 110

SBP ≥ 160 or DBP ≥ 110 Give nifedipine 20 mg PO

Repeat BP in 10 minutes

Convert to labetalol pathway Give labetalol 20 mg IV per algorithm Repeat BP in 20 minutes

SBP ≥ 160 and DBP ≥ 110 Give hydralazine 10 mg IV

Repeat BP in 20

Repeat BP in 10 minutes

SBP ≥ 160 or DBP ≥ 110

Convert to labetalol 20

minutes

SBP ≥ 160 or DBP ≥ 110

mg IV pathway

and obtain emergent

consultation from

maternal-fetal medicine,
internal medicine,
anesthesia or critical care
for transfer of care or

SBP \geq 160 and DBP \geq 110

Give labetal of 40 mg IV

and obtain emergent

consultation from

maternal-fetal medicine,
 anesthesia, internal

medicine, or critical care
for transfer of care or
continuous IV infusion

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Give hydralazine 10 mg IV and obtain emergent consultation from maternal-fetal medicine, anesthesia, internal medicine, or critical care for transfer of care or continuous IV infusion

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

Once BP threshold is achieved:

- > Q10 min for 1 hr
- ▶ Q15 min for 1 hr
- Q30 min for 1 hr
- ▶ Q1hr for 4 hrs

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

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

Part 3: Magnesium Dosing and Treatment Algorithm for Refractory Seizures

Magnesium: Initial Treatment

- 1. Loading Dose: 4-6 gm over 20-30 minutes (6 gm for BMI > 35)
- 2. Maintenance Dose: 1-2 gm per hour
- 3. Close observation for signs of toxicity
 - ▶ Disappearance of deep tendon reflexes
 - ▶ Decreased RR, shallow respirations, shortness of breath
 - ▶ Heart block, chest pain
 - Pulmonary edema
- 4. Calcium gluconate or calcium chloride should be readily available for treatment of toxicity

For recurrent seizures while on magnesium

- 1. Secure airway and maintain oxygenation
- 2. Give 2nd loading dose of 2-4 gm Magnesium over 5 minutes
- 3. If patient still seizing 20 minutes after 2nd magnesium bolus, consider one of the following:
 - Midazolam 1-2 mg IV; may repeat in 5-10 minOR
 - Diazepam 5-10 mg IV slowly; may repeat q15 min to max of 30 mg
 OR
 - Phenytoin 1,250 mg IV at a rate of 50 mg/min
 - ▶ Other medications have been used with the assistance of anesthesia providers such as:
 - Sodium thiopental
 - Sodium amobarbital
 - Propofol
- 4. Notify anesthesia
- 5. Notify neurology and consider head imaging

Seizures Resolve

- 1. Maintain airway and oxygenation
- 2. Monitor vital signs, cardiac rhythm/EKG for signs of medication toxicity
- 3. Consider brain imaging for:
 - ▶ Head trauma
 - Focal seizure
 - Focal neurologic findings
 - Other suspected neurologic diagnosis
- 4. Reassure patient with information, support
- 5. Debrief with team before shift end