Appendix E: Acute Treatment Algorithm

Part 1: Diagnostic Algorithm

≥ 20 weeks pregnant OR pregnant in last 6 weeks?

*YES

*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 ≥ 160 / DBP ≥ 110
- HYPERTENSIVE EMERGENCY
- Repeat BP in 15 minutes
- If sustained ≥ 160/ ≥ 110
- OB Evaluation IMMEDIATE
- Initiate antihypertensives

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

SBP < 140 / DBP < 90
- NORMAL
- 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.

### Labetalol IV as Primary Antihypertensive

- **Initial dose**: 20 mg labetalol IV
- Repeat BP in 10 minutes
- SBP ≥ 160 and DBP ≥ 110
  - Give 40 mg labetalol IV
  - Repeat BP in 10 minutes
  - SBP ≥ 160 and DBP ≥ 110
    - Give 80 mg labetalol IV
    - Repeat BP in 10 minutes
    - SBP ≥ 160 and DBP ≥ 110
      - Give hydralazine 10 mg IV
      - Repeat BP in 10 minutes
      -SBP ≥ 160 and DBP ≥ 110
      - 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

### Hydralazine IV as Primary Antihypertensive

- **Initial dose**: 5 - 10 mg hydralazine IV
- Repeat BP in 20 minutes
- SBP ≥ 160 and DBP ≥ 110
  - Give hydralazine 10 mg IV
  - Repeat BP in 20 minutes
  - If SBP ≥ 160 or DBP ≥ 110
    - Convert to labetalol pathway
    - Give labetalol 20 mg IV per algorithm
    - Repeat BP in 10 minutes
    - SBP ≥ 160 or DBP ≥ 110
      - Give labetalol 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

### Nifedipine PO as Primary Antihypertensive

- **Initial dose**: nifedipine 10 mg PO immediate release
- Repeat BP in 20 minutes
- SBP ≥ 160 or DBP ≥ 110
  - Give nifedipine 20 mg PO
  - Repeat BP in 20 minutes
  - SBP ≥ 160 or DBP ≥ 110
    - Give nifedipine 20 mg PO
    - Repeat BP in 20 minutes
    - SBP ≥ 160 or DBP ≥ 110
      - Convert to labetalol 20 mg IV pathway and obtain emergent consultation from maternal-fetal medicine, internal medicine, anesthesia 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.*

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**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 min
   - Diazepam 5-10 mg IV slowly; may repeat q15 min to max of 30 mg
   - 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

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