Risk reduction and successful, safe clinical outcomes for women with preeclampsia or eclampsia require avoidance and management of severe systolic and severe diastolic hypertension. How to integrate standardized order sets into everyday safe practice in the United States is a challenge. Increasing evidence indicates that standardization of care improves patient outcomes (1). Introducing into obstetric practice standardized, evidence-based clinical guidelines for the management of patients with preeclampsia and eclampsia has been demonstrated to reduce the incidence of adverse maternal outcomes (2, 3). With the advent of pregnancy hypertension guidelines in the United Kingdom, care of maternity patients with preeclampsia or eclampsia has been demonstrated to reduce the incidence of adverse maternal outcomes (2, 3). The degree of systolic hypertension (as opposed to the level of diastolic hypertension or relative increase or rate of increase of mean arterial pressure from baseline levels) may be the most important predictor of cerebral injury and infarction. In a recent case series of 28 women with severe preeclampsia and stroke, all but 1 woman had severe systolic hypertension (greater than or equal to 160 mm Hg) just before a hemorrhagic stroke, and 54% died, whereas only 13% had severe diastolic hypertension (greater than or equal to 110 mm Hg) in the hours preceding stroke (6). A similar relationship between severe systolic hypertension and risk of hemorrhagic stroke has been observed in nonpregnant adults (7). Thus, systolic BP of 160 mm Hg or greater is widely adopted as the definition of severe hypertension in pregnant or postpartum women with preeclampsia or eclampsia have been developed.

Emergent Therapy for Acute-Onset, Severe Hypertension With Preeclampsia or Eclampsia

**ABSTRACT:** Acute-onset, persistent (lasting 15 minutes or more), severe systolic (greater than or equal to 160 mm Hg) or severe diastolic hypertension (greater than or equal to 110 mm Hg) or both in pregnant or postpartum women with preeclampsia or eclampsia constitutes a hypertensive emergency. Severe systolic hypertension may be the most important predictor of cerebral hemorrhage and infarction in these patients and if not treated expeditiously can result in maternal death. Intravenous labetalol and hydralazine are both considered first-line drugs for the management of acute, severe hypertension in this clinical setting. Close maternal and fetal monitoring by the physician and nursing staff are advised. Order sets for the use of labetalol and hydralazine for the initial management of acute, severe hypertension in pregnant or postpartum women with preeclampsia or eclampsia have been developed.
malize BP, but to achieve a range of 140–160/90–100 mmHg in order to prevent repeated, prolonged exposure of the patient to severe systolic hypertension, with subsequent loss of cerebral vasculature autoregulation. When this happens, maternal stabilization should occur before delivery, even in urgent circumstances (10). When acute-onset, severe hypertension is diagnosed in the office setting, the patient should be sent to the hospital expeditiously for treatment. Also, if transfer to a tertiary center is likely (eg, for preterm severe preeclampsia), BP should be stabilized and other measures instituted as appropriate, such as magnesium sulfate before transfer. Another risk for severe hypertension is endotracheal intubation, an intervention that is well known to increase BP sometimes to severe levels that require emergent therapeutic intervention (10). Induction of general anesthesia and intubation should never be undertaken without first taking steps to eliminate or minimize the hypertensive response to intubation. Close maternal and fetal monitoring by the physician and nursing staff are advised during the treatment of acute-onset, severe hypertension, and judicious fluid administration is recommended even in the case of oliguria. After initial stabilization, the team should monitor BP closely and institute maintenance therapy as needed.

**Recommendations**

**First-Line Therapy**

Intravenous labetalol and hydralazine are both considered first-line medications for the management of acute-onset, severe hypertension in pregnant and postpartum women; less information currently exists for the use of calcium channel blockers for this clinical indication. Patients may respond to one drug and not the other. Magnesium sulfate is not recommended as an antihypertensive agent, but magnesium sulfate remains the drug of choice for seizure prophylaxis in severe preeclampsia and for controlling seizures in eclampsia. Box 1 and Box 2 outline order sets for the use of labetalol and hydralazine for the initial management of acute-onset, severe hypertension in pregnant or postpartum women with preeclampsia or eclampsia (11). Although both medications are appropriately used for the treatment of hypertensive emergencies in pregnancy, each agent can be associated with adverse effects. Parenteral hydralazine may increase the risk of maternal hypotension (systolic BP 90 mm Hg or less) (11). Parenteral labetalol may cause neonatal bradycardia and should be avoided in women with asthma or heart failure (12, 13). No significant changes in umbilical blood flow have been observed with the use of either labetalol or hydralazine (14), and maternal and perinatal outcomes are similar for both drugs (15). If intravenous access is not yet obtained and treatment for acute-onset, severe hypertension is urgently needed, a 200 mg-dose of labetalol can be administered orally and repeated in 30 minutes if an appropriate improvement is not observed (5).

**Second-Line Therapy**

In the rare circumstance that intravenous bolus labetalol or hydralazine or both fail to relieve acute-onset, severe hypertension and are given in successive appropriate doses such as those outlined in the order sets (see Box 1 and Box 2), emergent consultation with an anesthesiologist, maternal–fetal medicine subspecialist, or critical care specialist to discuss second-line intervention is recommended. Second line alternatives to consider include labetalol or nicardipine by infusion pump (16–18).

**Box 1. Order Set for Severe Intrapartum or Postpartum Hypertension Initial First-Line Management With Labetalol**

1. Notify physician if systolic BP measurement is greater than or equal to 160 mm Hg or if diastolic BP measurement is greater than or equal to 110 mm Hg.
2. Institute fetal surveillance if undelivered and fetus is viable.
3. Administer labetalol (20 mg IV over 2 minutes).
4. Repeat BP measurement in 10 minutes and record results.
5. If either BP threshold is still exceeded, administer labetalol (40 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.
6. Repeat BP measurement in 10 minutes and record results.
7. If either BP threshold is still exceeded, administer labetalol (80 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.
8. Repeat BP measurement in 10 minutes and record results.
9. If either BP threshold is still exceeded, administer hydralazine (10 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.
10. Repeat BP measurement in 20 minutes and record results.
11. If either BP threshold is still exceeded, obtain emergency consultation from maternal–fetal medicine, internal medicine, anesthesia, or critical care specialists.
12. Give additional antihypertensive medication per specific order.
13. Once the aforementioned BP thresholds are achieved, repeat BP measurement every 10 minutes for 1 hour, then every 15 minutes for 1 hour, then every 30 minutes for 1 hour, and then every hour for 4 hours.
14. Institute additional BP timing per specific order.

Abbreviations: BP, blood pressure; IV, intravenously.

*See text for important adverse effects and contraindications.

Transplacental passage is minimal, as are changes in umbilical artery Doppler velocimetry (19).

Sodium nitroprusside should be reserved for extreme emergencies and used for the shortest amount of time possible because of concerns about cyanide and thiocyanate toxicity in the mother and fetus or newborn and increased intracranial pressure with potential worsening of cerebral edema in the mother (11). Once the hypertensive emergency is treated, a complete and detailed evaluation of maternal and fetal well-being is needed with, among many issues, consideration of need for subsequent pharmacotherapy and appropriate timing of delivery.

References


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