# Learn simply

## Chronic Hypertension

**Passion profession same**

**History and/or examination suggestive of chronic hypertension[2]**

Initial evaluation

- Consider further evaluation to identify an underlying cause[2]
- Evaluate for target organ damage[3]
- Review the risks to the pregnancy associated with chronic hypertension[4]
- Consider initiating or changing antihypertensive therapy[5,6]
- **Check baseline renal function (creatinine clearance) and preeclampsia lab tests (urinalysis, 24-hour urinary protein, CBC, liver function tests, renal function tests, uric acid)**

Further evaluation

- **Regular antepartum visits including BP checks, urinalysis**
- Fetal testing (weekly biophysical profiles with nonstress tests, serial ultrasound examinations for fetal growth) should be initiated after 32 weeks' gestation

**BP well controlled[7]**

- Continue regular antepartum visits
- Continue antihypertensive medications

*Schedule delivery at 39–40 weeks*

**Sustained elevation in BP[7]**

No evidence of preeclampsia

- Adjust antihypertensive medications, as needed
- Review symptoms/signs of preeclampsia
- Follow-up in 4–7 days

BP well controlled → Schedule delivery at 37 0/7–39 6/7

Sustained elevation in BP → Consider delivery at ≥ 36 0/7

Superimposed preeclampsia[8]

- **Antenatal corticosteroids, if indicated**
- Neonatology consult, if indicated
- **Consider MFM consultation**
- **Seizure prophylaxis, if indicated[9]**
- Minimal testing should include twice-weekly preeclampsia labs, maternal weight, fetal testing

- Deliver for severe preeclampsia at 34 0/7 weeks or earlier if necessary
- Deliver for mild preeclampsia at 37 0/7 weeks[10]

1. Hypertension is defined as systolic BP >140 mmHg and/or diastolic BP >90 mm Hg on two occasions at least 4 hours (but not more than 7 days) apart. Chronic hypertension refers to the presence of hypertension prior to pregnancy, whether or not the patient was on pharmacologic treatment.
2. Given that BP normally decreases in the first and early second trimester of pregnancy, the diagnosis should also be suspected in women with a sustained elevation in BP prior to 20 weeks of gestation. However, if BP was normal in the first trimester and then increases before 20 weeks of gestation, early preeclampsia should also be considered.

3. All women with pre-existing hypertension should be assessed either before pregnancy or early in pregnancy to rule out secondary (and potentially curable) hypertension, and to evaluate for evidence of target organ damage.
4. Most women with chronic hypertension have essential (primary) hypertension. Up to 10% of women have secondary hypertension, due most commonly to chronic kidney disease. Other causes may include renal artery stenosis and an underlying endocrinopathy (such as primary hyperaldosteronism, pheochromocytoma, and Cushing syndrome).

5. Baseline evaluation should include serum analysis for creatinine, electrolytes, uric acid, liver enzymes, and platelet count as well as urinary protein estimation. These values can be used for comparison if superimposed preeclampsia is suspected later in pregnancy.
6. Left ventricular function should be assessed in women with severe hypertension of more than 4 years duration either by electrocardiography (ECG) or echocardiography.

1. Chronic hypertension is associated with an increased risk of superimposed preeclampsia and higher rates of adverse maternal-fetal outcome, such as severe hypertension, cerebrovascular accident (stroke), uteroplacental insufficiency leading to fetal growth restriction, placental abruption, and stillbirth.
2. Pharmacologic treatment of mild hypertension has not been shown to improve pregnancy outcome.
3. The goals of treatment during pregnancy are to minimize acute maternal and fetal risks of severe hypertension. As such, it is rarely necessary to initiate antihypertensive therapy in early pregnancy. If a patient is well controlled on medications prior to pregnancy, it is usual to leave her medications unchanged.
4. The exceptions are the angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARB), which should be discontinued as soon as a positive pregnancy test is attained. First trimester exposure has been associated with cardiac and central nervous system anomalies, and use in the second and third trimester can result in progressive and irreversible renal injury as well as oligohydramnios and fetal growth restriction.
5. Drugs of choice include α-methyldopa, β-blockers (labetalol) or calcium channel blockers (nifedipine). Diuretic therapy is generally discouraged in pregnancy.

1. In the absence of maternal end organ damage, treatment is not recommended if the systolic BP remains <160 mmHg and the diastolic BP <105 mmHg. If end organ damage is present, BP goals are more strict (systolic BP <140 mmHg and diastolic BP <90 mmHg) to avoid progression of disease and its associated complications during pregnancy.

2. When antihypertensive therapy is initiated during pregnancy, it is suggested that BP be maintained between 120–160 mmHg systolic and 80–105 mmHg diastolic. Acute-onset, severe systolic hypertension (>160 mmHg) and/or severe diastolic hypertension (>110 mmHg) should be treated with antihypertensive therapy with the aim to achieve BP of 140–150/90–100 mmHg. First-line treatment for the management of acute-onset, severe hypertension includes intravenous labetalol, intravenous hydralazine, or oral nifedipine.

3. Preeclampsia is superimposed on chronic hypertension when there is a sudden increase in BP that was previously well controlled or an escalation of antihypertensive medications needed to control BP; or new onset of proteinuria or a sudden increase in proteinuria in pregnancy.
4. Superimposed preeclampsia can be further classified into with or without severe features.
5. The diagnosis of superimposed preeclampsia with severe features is established when any of the following are present:

   (i) severe-range BP despite escalation of antihypertensive therapy;
   (ii) thrombocytopenia (platelet count <100,000/microliter);
   (iii) elevated liver transaminases to twice normal concentrations;
   (iv) new-onset/worsening renal insufficiency (serum creatinine >1.1 mg/dL or a doubling of the creatinine in the absence of other renal disease);
   (v) pulmonary edema; or
   (vi) persistent cerebral or visual disturbances.

1. Intravenous magnesium sulfate is the drug of choice for seizure prophylaxis and should be given intrapartum and for at least 24 hours postpartum to prevent eclampsia. An IV loading dose of 4–6 g should be followed by a maintenance dose of 1–2 g/h. The use of magnesium sulfate therapy in superimposed preeclampsia without severe features is not recommended, but should be initiated if there is progression to severe disease either intrapartum or postpartum.
2. Delivery is the only effective treatment for superimposed preeclampsia. It is recommended in women with superimposed preeclampsia without severe features at or beyond 37–0/7 weeks. It is recommended in women with superimposed preeclampsia with severe features if the gestational age is at least 34–0/7 weeks. If the gestational age is <34–0/7 weeks and the diagnosis is superimposed preeclampsia by BP criteria alone, expectant management can be considered .
3. There is no proven benefit to routine delivery by cesarean; however, the probability of vaginal delivery decreases with decreasing gestational age. With labor induction, the likelihood of cesarean delivery is 93–97% at <28 weeks, 53–65% at 28–32 weeks, and 31–38% at 32–34 weeks. Preeclampsia and its complications always resolve following delivery (with the exception of stroke). Diuresis (>4 L/day) is the most accurate clinical indicator of resolution. Fetal prognosis is dependent largely on gestational age at delivery.