Once you decide to expectantly manage a patient with preeclampsia, the balancing act begins. That means weighing fetal benefits against maternal risks, since the only justification for expectant management is to prolong pregnancy for fetal gain—there is no advantage to the mother.

The best approach is to classify the woman’s preeclampsia by the degree of severity and gestational age at the time of diagnosis, then follow recommendations tailored to that particular category.

This article offers guidelines for expectant management of mild and severe preeclampsia, preeclampsia superimposed on a preexisting medical condition, and intrapartum and postpartum care.

### Mild preeclampsia

The earlier preeclampsia develops, the greater the risk it will become severe. The need for hospitalization depends on gestational age, blood pressure, proteinuria levels, maternal symptoms, and reliability of the patient.

Preeclampsia is mild when systolic blood pressure reaches 140 to 159 mm Hg or diastolic pressure measures 90 to 109 mm Hg on at least 2 occasions more than 6 hours apart after 20 weeks’ gestation in a woman who previously had normal blood pressure. In preeclampsia, this hypertension is accompanied by proteinuria of 0.3 to 4.9 g in a 24-hour urine sample (1+ or 2+ by dipstick on 2 occasions).

**At or beyond 37 weeks’ gestation**

In general, women diagnosed with preeclampsia at this gestational age have pregnancy outcomes similar to those of normotensive gravidas. Thus, they benefit from induction of labor and delivery.

**32 to 36 weeks’ gestation**

Close maternal and fetal evaluation is essential. (It is assumed these women have no labor or membrane rupture and normal fetal testing; otherwise, delivery is indicated at 34 weeks or beyond.)

In general, hospitalization is indicated when any of the following circumstances are present (FIGURE 1):

- the patient is unreliable,
- 2 or more systolic blood pressure readings exceed 150 mm Hg,
- 2 or more diastolic blood pressure readings exceed 100 mm Hg,
- proteinuria occurs at a rate exceeding 1 g/24 hours, or
• persistent maternal symptoms are present.

**Before 32 weeks’ gestation**
These women are at high risk of progressing to severe disease. They also are more likely to have adverse perinatal outcomes such as intrauterine growth restriction (IUGR) (15% to 20%), preterm delivery (50%), and abruptio placentae (1% to 2%), compared with women diagnosed with preeclampsia at 32 to 36 weeks. In addition, they require more antenatal surveillance than women who develop preeclampsia later in pregnancy.

I recommend hospitalization at the time of diagnosis when women develop mild preeclampsia before 32 weeks.

**What and when to monitor**
Maternal evaluation should include:
• monitoring of blood pressure at least daily (at home or in the hospital),
• daily urine dipstick evaluation to monitor changes in proteinuria,
• twice-weekly platelet count and liver enzymes, and
• documentation of symptoms. (Instruct all women to report the onset of severe headaches, visual changes, altered mental status, epigastric or right upper quadrant pain, and any nausea or vomiting.)

Fetal evaluation should include:
• serial ultrasound every 3 weeks to estimate fetal weight and amniotic fluid status,
• nonstress testing every week, and
• daily fetal movement counts.

If a nonstress test is nonreactive, it should be confirmed by biophysical profile.

All testing should be promptly repeated if the maternal clinical condition deteriorates.

**No need for bed rest, diuretics, or antihypertensive medications**
Although expectantly managed patients with mild preeclampsia should be advised to restrict daily activity, there is no need for complete bed rest. Nor have diuretics or other antihypertensive drugs been shown to prolong gestation. On the contrary, these medications may mask severe preeclampsia.

**Antihypertensive medications** reduce the rate of severe hypertension but do not improve perinatal outcome. If these drugs are used to treat mild disease remote from term, hospitalize the patient and manage her as though she has severe preeclampsia.

**Hospitalization versus outpatient management**
Although she may be hospitalized at the time of diagnosis, a woman with preeclampsia may switch to outpatient management if systolic or diastolic blood pressure declines, proteinuria diminishes to 1 g/24 hours or less, and there are no maternal symptoms or evidence of severe IUGR. Otherwise, these women should remain hospitalized until delivery.

In cases that begin with outpatient management, prompt hospitalization is indicated if there is clinical evidence that the disease is progressing (ie, new symp-

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**FIGURE 1**

**Criteria for mild preeclampsia in healthy women**

- Any of the following present?
  - 37 weeks’ gestation or more
  - Nonreassuring fetal status
  - Maternal indication for delivery
  - Labor or membrane rupture at 34 weeks or more

**Yes**
- Delivery

**No**
- Hospitalization

- Any of the following present?
  - 23-32 weeks’ gestation
  - Unreliable patient
  - Systolic pressure >150 mm Hg
  - Diastolic pressure >100 mm Hg
  - Proteinuria >1 g/24 hours
  - Maternal symptoms

**Yes**
- Maternal-fetal evaluation

**No**
- In-hospital or ambulatory management

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**FAST TRACK**

**Criteria for mild preeclampsia**
- 140-159 mm Hg systolic or 90-109 mm Hg diastolic on 2 occasions, 6 hours apart
- Proteinuria 0.3-4.9 g in 24 hours
Expectant management of preeclampsia

In mild preeclampsia, antihypertensive drugs may mask disease progression.

**FAST TRACK**

In mild preeclampsia, antihypertensive drugs may mask disease progression.

Symptoms, labor or rupture of membranes, vaginal bleeding, or increased blood pressures or proteinuria) or IUGR and/or oligohydramnios.

Instruct all women to report symptoms and changes in fetal movement.

When to deliver

Whether the gravida is hospitalized or an outpatient, delivery is indicated at 37 weeks. Earlier delivery may be warranted if nonreassuring maternal or fetal conditions develop. (FIGURE 1 summarizes management of mild preeclampsia.)

Severe preeclampsia

- Expectant management is safe in properly selected women with severe disease, although maternal and fetal conditions can deteriorate. Hospitalization and daily monitoring are required.

Preeclampsia is severe when any of the following are present:

- Systolic blood pressure of 160 mm Hg or higher or diastolic pressure of 110 mm Hg or above on 2 occasions at least 24 hours apart.

(FIGURE 2 summarizes treatment of severe preeclampsia.)
In severe disease, expectant management is warranted only between 23 and 32 weeks, and only if mother and fetus are stable.
Expectant management of preeclampsia

Use calcium-channel blockers to control blood pressure in pregnant women with diabetes.

Fetal growth restriction
results from impaired uteroplacental blood flow and is especially likely when preeclampsia develops before 32 weeks’ gestation (15% to 20%).

Abruptio placentae
usually occurs in <1% of pregnancies, but when preeclampsia develops early (before 32 weeks), the incidence is 1% to 2%. Uterine irritability, recurrent variable or late decelerations, and vaginal bleeding may be early signs.

Rupture of membranes, vaginal bleeding
are signs of disease progression and/or abruptio placentae.

Diabetes warrants aggressive therapy
Women with type 1 diabetes have a higher risk of preeclampsia, maternal and fetal morbidity, and perinatal mortality. These risks multiply in women who have hypertension and/or diabetic nephropathy. Worsening of retinopathy and nephropathy also is more likely in women who have hypertension. Thus, aggressive management of blood sugars with insulin should be accompanied by aggressive control of blood pressure, with the goal of keeping systolic pressure below 130 mm Hg and diastolic pressure below 85 mm Hg.

Choosing antihypertensive drugs. Calcium-channel blockers are preferred to control blood pressure during pregnancy in women with diabetes. Outside of pregnancy, angiotensin-converting enzyme (ACE) inhibitors are best to avert long-term complications, but avoid these drugs in pregnancy (along with angiotensin-receptor blockers), particularly beyond 16 weeks.

Delivery is indicated in all women with vascular diabetes mellitus beyond 34 weeks when preeclampsia is present.

Intrapartum management
Close fetal heart rate and maternal blood pressure monitoring are mainstays, along with magnesium sulfate and antihypertensive therapy.

All women with preeclampsia should receive continuous monitoring of fetal
Lowering blood pressure too rapidly during labor can reduce maternal organ perfusion, including uteroplacental blood flow.

Expectant management of preeclampsia

- Lowering blood pressure too rapidly during labor can reduce maternal organ perfusion, including uteroplacental blood flow.

- Prevent progression to eclampsia
  - Magnesium sulfate is the drug of choice in women with preeclampsia. Recent reviews indicate that it reduces the rate of convulsions from 2% to 0.6% in women with severe preeclampsia. In women with mild preeclampsia, the benefit of magnesium sulfate remains unclear.
  - I recommend IV magnesium sulfate during labor and postpartum when a woman has the indications listed in Table 2.
  - The dose of magnesium sulfate is 6 g IV loading over 20 minutes, followed by a maintenance dose of 2 g/hour.
  - Magnesium sulfate should be started before surgery (elective cesarean delivery) and continued for at least 12 hours postpartum (I prefer 24 hours).

- When treating hypertension in labor, avoid “hypotensive overshoot”
  - The goal of intrapartum treatment is to lower maternal blood pressure without causing precipitous hypotensive overshoot that may lead to reduced maternal organ perfusion, particularly uteroplacental blood flow.
  - Such acute lowering of maternal blood pressure is a common cause of nonreassuring fetal heart rate patterns during labor.

- What blood pressure necessitates treatment?
  - There is no doubt that severe levels of hypertension should be treated to avoid potential cerebrovascular and cardiovascular complications in healthy women.
  - However, there is disagreement about what constitutes severe hypertension.
  - In previously healthy women, I recommend antihypertensive therapy for systolic pressures of 170 mm Hg or above and/or diastolic pressures of 110 mm Hg or above.
  - For women with diabetes, renal disease, or left ventricular cardiac disease,

### Table 1: Likelihood of maternal complications

<table>
<thead>
<tr>
<th>Disease progresses during labor (from mild to severe)</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclampsia</td>
<td>• Mild disease</td>
</tr>
<tr>
<td></td>
<td>• Severe preeclampsia</td>
</tr>
<tr>
<td>Stroke (encephalopathy or hemorrhage)</td>
<td>Mainly with severe or early onset disease</td>
</tr>
<tr>
<td>Pulmonary edema</td>
<td>Usually associated with fluid overload or long-standing chronic hypertension</td>
</tr>
</tbody>
</table>

### Table 2: When to give prophylactic magnesium sulfate

<table>
<thead>
<tr>
<th>Use intrapartum and for at least 12 hours postpartum</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the patient has:</td>
</tr>
<tr>
<td>• Severe hypertension or preeclampsia</td>
</tr>
<tr>
<td>• Mild preeclampsia with symptoms</td>
</tr>
<tr>
<td>• Mild hypertension plus symptoms or thrombocytopenia</td>
</tr>
<tr>
<td>• HELLP syndrome (Hemolysis, elevated liver enzymes, and low platelets)</td>
</tr>
</tbody>
</table>
antihypertensive medications should be used to keep systolic pressure below 140 mm Hg and diastolic pressure below 90 mm Hg during labor and postpartum. Further, patients in congestive heart failure or with left ventricular diastolic dysfunction should receive furosemide in addition to antihypertensive drugs.

Choosing a drug. My drugs of choice are IV labetalol and oral nifedipine. These 2 drugs, along with IV hydralazine, are the most commonly recommended medications for severe hypertension in pregnancy (TABLE 3).

Although many authorities prefer hydralazine, recent data indicate that, compared with IV labetalol and oral nifedipine, IV hydralazine is associated with more maternal side effects and worse perinatal outcomes (more fetal distress in labor).

Postpartum management!! Because preeclampsia can worsen, or first appear, in the postpartum period, extra vigilance is important, and pharmacotherapy may be appropriate.

Management of preeclampsia does not end with delivery of the fetus and the placenta. These events do signal the beginning of the curative process, but complications can occur in the postpartum period. Indeed, in some women, the disease
process worsens immediately postpartum. Therefore, women with diagnosed preeclampsia or severe gestational hypertension require close monitoring of blood pressure and maternal symptoms and accurate measurement of fluid intake and urine output. Some of these women are at increased risk for pulmonary edema; exacerbation of severe hypertension; eclampsia; and hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome.

**Treating postpartum hypertension**
Women who continue to have severe hypertension (systolic pressure at or above 155 mm Hg or diastolic pressure of 105 mm Hg or higher) will benefit from oral nifedipine (10 mg every 6 hours) or long-acting nifedipine (10 to 20 mg twice daily), the drugs of choice because of their favorable effects on renal function.

Women with severe hypertension also may require diuretics for better control of blood pressure, as may women with a history of congestive heart failure or left ventricular dysfunction.

Start women with vascular diabetes mellitus or diabetic nephropathy on ACE inhibitors immediately postpartum.

 Patients can be discharged home once blood pressure is stable, provided there are no maternal symptoms of preeclampsia.

**Postpartum preeclampsia can develop even in healthy women**
Because severe hypertension or preeclampsia may develop for the first time in the postpartum period, it is important to educate all gravidas about the signs and symptoms. All health-care providers should be on the lookout for these symptoms as well.

**BIBLIOGRAPHY**


The author reports no financial relationships relevant to this article.