BELIEVE MIDWIFERY SERVICES

TITLE: HYPERTENSIVE DISORDERS OF PREGNANCY

EFFECTIVE DATE: November 7th, 2013

POLICY STATEMENT:
Hypertensive disorders of pregnancy are the second leading cause of maternal death in the United States. They also contribute significantly to stillbirths and neonatal morbidity and mortality (National High Blood Pressure Education Program Working Group [NHBPEP], 2000). Hypertensive disorders can result in cerebral hemorrhage, disseminated intravascular coagulation (DIC), hepatic failure, acute renal failure, and abruption placentae (Flack, Peters, Mehra, & Nassar, 2002).

The pathogenesis, classification, and treatment of high blood pressure in pregnancy differ from nonpregnant care, especially as there are two patients to consider simultaneously and because severe complications can occur rapidly within hours of the initial diagnosis. In addition, the risk of serious sequelae of preeclampsia can persist up to five days postpartum (Peters & Flack, 2004).

BLOOD BORNE PATHOGEN EXPOSURE CATEGORY: I (Involves exposure to blood, body fluids, or tissues)

FUNCTION: Care of Clients

POINTS OF EMPHASIS:
Elevated blood pressure may occur in pregnancy secondary to a prepregnancy condition or from two pregnancy-specific disorders: preeclampsia and gestational hypertension. The impact of high blood pressure on pregnancy is related more to the underlying pathology of the condition than to the actual elevation in pressure.

The optimal management of hypertensive disorders in pregnancy begins with an accurate diagnosis, as the treatment and prognosis vary significantly based on the etiology of the hypertension. Accurate diagnosis begins with accurate measurement of blood pressure.

Accuracy of BP measurement is a significant concern in pregnancy. Conventional BP measurement is subject to a variety of errors arising from the client, the person taking the measurement, and/or the environment. To reduce these errors, 24-hour ambulatory monitoring may be used. The ambulatory method gives an average BP reading for 24 hours as determined by multiple readings taken during a client’s normal home and work routine. Some studies have found ambulatory monitoring to be a more sensitive predictor of progression to severe hypertension in women whose BP measurements in the clinic is higher than 140/90 mm Hg (Peters & Flack, 2004).

Classification of Hypertension
The NHBPEP (2000) recommends the use of four categories: chronic hypertension, preeclampsia-eclampsia, preeclampsia superimposed on chronic hypertension, and gestational (transient/chronic) hypertension.

<table>
<thead>
<tr>
<th>NHBPEP Classification</th>
<th>Description</th>
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<tr>
<td>I. Chronic hypertension</td>
<td>Hypertension prior to conception, or before the 20th week gestation</td>
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<tr>
<td>II. Preeclampsia-Eclampsia</td>
<td>Preeclampsia-systemic disease with hypertension accompanied by proteinuria after 20th week of gestation; Eclampsia-convulsive stage of the disease</td>
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<tr>
<td>III. Preeclampsia superimposed on chronic HTN</td>
<td>Hypertensive women who develop new onset proteinuria; proteinuria before 20th week gestation, or sudden uncontrolled hypertension</td>
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For many women, a hypertensive disorder of pregnancy is not a preventable condition, and we are still left with preeclampsia as a ‘disease of theories’ (Roberts and Cooper, 2001). However, risk factors are identifiable by effective history-taking, routine antenatal assessment and screening and prevention of escalation of the woman’s symptoms-all clearly within the scope of modern obstetrics and midwifery care (Fallon & Engle, 2008).
Gestational hypertension is relative benign disorder with good outcomes, which is one reason the NHBPEP eliminated the term pregnancy-induced hypertension.

Preeclampsia

Home care and outpatient management of mild preeclampsia has been encouraging for a select group of women (Peters & Flack, 2004).

<table>
<thead>
<tr>
<th>Signs of Mild Preeclampsia</th>
<th>Signs of Preeclampsia Superimposed on Chronic Hypertension</th>
<th>Signs of Severe Preeclampsia (one or more of the following should be present)</th>
</tr>
</thead>
</table>
| 1. Mild elevation in BP   | In women with hypertension and no proteinuria early in pregnancy (< 20 weeks), new onset proteinuria is defined as urinary excretion of > 3g/24 hours | 1. Elevated blood pressure:\[
\begin{align*}
& \text{Absolute value of } \geq 160 \text{ mm Hg or } \\
& \text{diastolic } \geq 110 \text{ mm Hg – or } \\
& \text{relative value of a rise of } 30 \text{ mm Hg systolic or } 15 \text{ mm Hg diastolic}
\end{align*}
\]
| 2. Proteinuria > 2.0 g/24 hrs (2+ or 3+ on dipstick) | Women with hypertension and proteinuria before twenty weeks gestation | 2. Proteinuria, > 5.0 gm/24 hours (3+ or 4+ on dipstick) |
| 3. Increased serum creatinine (> 1.2 mg/dL unless known to be previously elevated) | Sudden increase in proteinuria | 3. Increasing serum creatinine (> 2 mg/dL) |
| 4. Normal platelet count | Sudden increase in blood pressure in women whose blood pressure had been previously controlled | 4. Rapid decreases in platelet count (<100,000/mm and/or evidence of microangiopathic hemolytic anemia with increased lactic acid dehydrogenase) |
| 5. Normal liver enzymes | Thrombocytopenia | 5. Oliguria < 500 ml/24 hours |
| 6. No maternal symptoms | An increase in ALT or AST to abnormal levels | 6. Cerebral symptoms: persistent headache, visual changes, altered consciousness |
|                           |                                                           | 7. Persistent epigastric or right upper quadrant pain |
|                           |                                                           | 8. Intrauterine growth restriction and/or oligohydramnios |

Chronic Hypertension in Pregnancy

Prepregnancy counseling – chronic hypertension of pregnancy can be classified as mild (BP ≥ 140/90) or severe (≥ 180/110) (ACOG, 2001). Uncomplicated, mild chronic hypertension usually is not associated with increased maternal or fetal risk. It is important prior to pregnancy to determine the teratogen effect of the antihypertensive medication currently prescribed and help to find a new regimen if necessary. Liver and renal function is also important for discovering an underlying disorder or later in pregnancy, preeclampsia.

Antihypertensive Therapy for Chronic Hypertension – The efficacy of antihypertensive therapy for mild, chronic hypertension is uncertain (ACOG, 2001). There is some evidence that antihypertensive medications help prevent progression to severe hypertension during pregnancy (Sibai, 1996). However, superimposed preeclampsia is not reduced with pharmaceutical therapy. There is also no evidence that neonatal outcomes are improved.
It is vital that antihypertensive therapy does not decrease blood pressure too low, decreasing uteroplacental blood flow and affect fetal growth. The need for antihypertensive drugs should also be weighed against the decrease in the first two trimesters of pregnancy and particularly with women who have chronic hypertension experiencing an even lower drop. As a result, it may be possible to taper these women off their medications and prescribe nonpharmacological management with careful monitoring. Antihypertensive therapy should be reinstituted if blood pressure reaches 150-160 mm Hg SBP or 100-110 mm Hg DBP (NHBPEP, 2000).

Very few antihypertensive medications qualify for the FDA category A grouping. Methyldopa is the preferred drug for treating chronic hypertension during pregnancy (ACOG, 2001). Methyldopa controls the maternal blood pressure and has been found to have stable uteroplacental blood flow with good fetal hemodynamics. Methyldopa’s efficacy has been well established in randomized trials, and the drug has a long history of safe, effective use for both mother and fetus. One long-term prospective study has also shown no effects in seven-year olds exposed in utero (Cockburn et al, 1992). Beta-adrenergic blocking agents, especially atenolol, may be associated with fetal growth restriction. Calcium channel blockers have had limited use in pregnancy. Concerns have been raised about their effect on uteroplacental blood flow, but no increase in teratogenicity has been found (Magee et al., 1996). However, their benefit has also yet to be proven.

**EQUIPMENT:**

1. Blood pressure cuff
2. Laboratory supplies
3. Doptones

**PROCEDURE:**

*Blood pressure assessment is an integral part of each prenatal visit.*

1. Blood pressures should be measured with the woman seated and her arm at heart level, using an appropriate-sized cuff. It is no longer recommended to have the blood pressure measured with the woman lying on her left side. In that position, the cuff is higher than the left ventricle, resulting in reduced hydrostatic pressure. This gives an inaccurately low reading, often reduced as much as 10 to 14 mm Hg (Peters & Flack, 2004).
2. Diastolic pressure should be reported as the fifth Korotkoff phase (disappearance of sound), not the fourth phase (“muffling” sound) (NHBPEP, 2000). Recent evidence has shown that K5 more closely reflects true diastolic pressure (Peters & Flack, 2004).
3. Following the initial discovery of an elevated blood pressure during the antepartum period, the midwife may request the client monitor her ambulatory blood-pressure during the next twenty-four hour period in effort to determine the average blood pressure.

*Differentiating between Chronic Hypertension and Preeclampsia*

4. Laboratory tests (serum creatinine, hepatic enzymes, CBC with platelet counts, and uric acid levels) are designed primarily to distinguish between preeclampsia and chronic or transient hypertension, as well as to serve as a marker for the severity of preeclampsia when it is present. Increasing attention is being paid to the uric acid as an important early predictor of preeclampsia because increased urate concentrations have been found to coincide with increasing blood pressure, while preceding proteinuria.
5. The concentration of urinary protein in random urine samples is highly variable. Recent studies have found that urinary dipstick determinations correlate poorly with the amount of proteinuria found in a 24-hour determinations in women with gestational hypertension. Therefore, the definitive test to diagnose proteinuria should be quantitative protein excretion in a 24-hour period. Severe proteinuria is defined as protein excretion of at least 5 g per 24-hour period. Urine dipstick values should not be used to diagnose severe preeclampsia (Sibai, 2003).
6. Edema no longer is included as a cardinal symptom of preeclampsia, as it occurs too often in normal pregnancies to have a predictive value.
7. In the absence of proteinuria, preeclampsia should be considered when gestational hypertension is associated with persistent cerebral symptoms, epigastric or right upper quadrant pain with nausea or vomiting, or thrombocytopenia and abnormal liver enzymes.

*Antihypertensive Therapy*
8. There is some evidence that antihypertensive medications help prevent progression to severe hypertension during pregnancy (Sibai, 1996; Sibai et al., 1990).
9. Superimposed preeclampsia is not reduced with antihypertensive therapy related to chronic hypertension.
10. There is also no evidence that antihypertensive therapy improves neonatal outcomes.
11. It should be noted that blood pressure decreases in the first two trimesters of pregnancy and women with chronic hypertension may experience an even greater drop. As a result it may be possible to taper these women off their medication and prescribe nonpharmacological management with careful monitoring. Antihypertensive therapy should be re-instituted if blood pressure reaches 150-160 mm Hg SBP or 100-110 mm Hg DBP (NHBPEP, 2000).
12. Methyldopa is the preferred drug for treating chronic hypertension during pregnancy (Class B) (ACOG, 2001). Methyldopa controls maternal blood pressure and has been found to have stable uteroplacental blood flow with good fetal hemodynamics. Methyldopa’s efficacy has been well established in randomized trials, and the drug has a long history of safe, effective use for both mother and baby (Peter & Flack, 2004).
13. Labetalol, pregnancy category C, is also commonly used.
14. Low-dose acetylsalicylic acid (aspirin, 75 mg) is recommended for the prevention of pre-eclampsia in women at high risk of developing the condition (WHO, 2011).

Prevention Methods for Women at High-Risk for Preeclampsia
15. In areas where dietary calcium is low, calcium supplementation during pregnancy (at doses of 1.5-2.0 g elemental calcium/day) is recommended for the prevention of pre-eclampsia in all women, but especially those at risk of developing pre-eclampsia (WHO, 2011).
16. Consider vitamin C & E supplements (anecdotal)
17. Encourage an antioxidant-rich diet – deep colors, strong flavors
18. Encourage synergy – apple flesh and peel are more active than both of them separately

Frequent Prenatal Care for ongoing maternal and fetal assessment
20. Daily fetal kick counts by the mother starting between 28 weeks to 32 weeks
21. Weekly non-stress testing beginning at 32 weeks gestation is the typical recommendation during hypertensive pregnancies. However, Sibai (2003) states, “In women with mild gestational hypertension, fetal evaluation should include an NST and an ultrasound examination of estimated fetal weight and amniotic fluid index. If the results are normal, then there is no need for repeat testing unless there is a change in maternal condition (progression to preeclampsia or severe hypertension) or there is decreased fetal movement or abnormal fundal height growth.
22. Ultrasound screenings every four to six weeks, beginning at 28 weeks is suggested for fetal growth, placenta integrity and assessment of the amniotic fluid index. Doppler flow velocimetry is usually recommended in the presence of suspected fetal growth restriction.

Management of Preeclampsia
23. Careful assessment of each woman’s complaints, a physical examination, and laboratory tests are an important aspect of diagnosis. Assessment of the fetus should include non-stress testing, potentially a biophysical profile and assessment of fetal activity.
24. Close monitoring of mother and fetus can detect early signs of advancing preeclampsia and expedite intervention. Restricted activity, often bed rest, is considered a “usual and reasonable” recommendation, even though its efficacy has been proven not to exist. In fact, prolonged bed rest increases the risk of thromboembolism.
25. Experts recommend weekly laboratory testing and twice weekly BP and proteinuria assessment for diagnosed mild preeclampsia. The onset of increasing severity would indicate need for prompt hospitalization.
26. Antihypertensive medications have not been shown to improve perinatal outcomes in mild to moderate preeclampsia and should not be routinely prescribed (NHBPEP, 2000).
27. There are inadequate data to support the use of magnesium sulfate in women with mild gestational hypertension or mild preeclampsia (Sibai, 2003; Livingston, Livingston, Ramsey, Mabie & Sibai, 2003).
28. Preeclampsia diagnosis is optimized by ongoing physician collaboration and transfer of care with progression towards severe preeclampsia.
29. Certainly, magnesium sulfate is recommended for the prevention of eclampsia in women with severe preeclampsia in preference to other anticonvulsants (WHO, 2011).
Postnatal Care

30. During the postnatal period antihypertensive therapy will be continued as indicated by the woman’s blood pressure, and in some cases it may be necessary to continue it for several weeks or months. It is also important during the postnatal period to ensure that any medication used is the most optimal choice for breastfeeding mothers.

31. A six-week postnatal assessment should include a blood pressure and urinalysis assessment for proteinuria. If hypertension and proteinuria persist, further investigation will be required. If the woman experienced severe preeclampsia/eclampsia, she should be invited to return for a formal review to discuss the pregnancy and preconception counseling that would be offered (Fallon & Engel, 2008).

References
