OBSTETRICAL GUIDELINE
Chronic Hypertension
Drafted: 06/30/03
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I. Definition, Assessment, and Diagnosis:

A. Definition:
1. Chronic hypertension is defined as hypertension (blood pressure > 140/90) present before the pregnancy.
2. Diagnosed before the 20th week of gestation of pregnancy.
3. Persists more than 12 weeks postpartum.

B. Assessment: Documented history of high blood pressure pre- pregnancy. Persistent elevation of blood pressure (at least 140/90mm Hg) on two separate occasions more than 24 hours apart before the 20th week of gestation.
1. Other changes suggestive in the presence of chronic hypertension:
   a. Retinal changes on funduscopic examination
   b. Cardiac enlargement on chest x-ray and ECG
   c. Presence of medical disorders known to lead to hypertension
   d. Multiparity with previous history of hypertensive pregnancies
   e. Evidence of persistent hypertension beyond 42 days past delivery
2. In mid-pregnancy the blood pressure can be in the normal range in women who have severe hypertension pre-pregnancy.
   a. Blood pressure falls early in pregnancy due to the marked reduction in systemic vascular resistance.
   b. Chronic hypertension may be masked during this time due to:
      1) Increased blood volume
      2) Increase in glomerular filtration rate
      3) Slight rise in uric acid (4.5mg/dl) upper limits of normal
      4) Increased renal excretion of protein (>300mg/24hour).

C. Diagnosis: Under stricter national guidelines that were issued in May 2003, a resting blood pressure reading below 120/80 mm Hg is normal. If the resting blood pressure is consistently 140/90 mm Hg, a diagnosis of hypertension is warranted. Under these new guidelines, a blood pressure reading is the level above which the risk of cardiovascular complications increases. Chronic hypertension may be masked during this time in pregnancy due to the normal changes associated with pregnancy.

II. Management of Chronic Hypertension during Pregnancy

A. Women of childbearing age should begin management of chronic hypertension prior to becoming pregnant in order to quantify the severity of the disease, evaluate the severity of the hypertension, the presence of other medical illnesses, and to rule-out the presence of any organ damage. Medications should be reevaluated and changed to others that are well documented for use during pregnancy. Pregnancies in women at high risk are associated with increased maternal and perinatal complications and should be managed by Maternal-Fetal Medicine and other specialists related to their medical conditions.
1. Early prenatal care will ensure accurate determination of gestational age.
2. Early prenatal care will allow for the assessment of the severity of the hypertension in the first trimester.
   a. CBC and platelet count
   b. TSH, systemic lupus erythematous, diabetes mellitus, and renal disease.

c. 24-hour urine collection for creatinine clearance, total protein repeat as needed if there is progress of the routine dip or increase in blood pressure.
d. Routine urinalysis
e. Chest x-ray, ECG, and electrolytes with long term disease process, or as indicated.

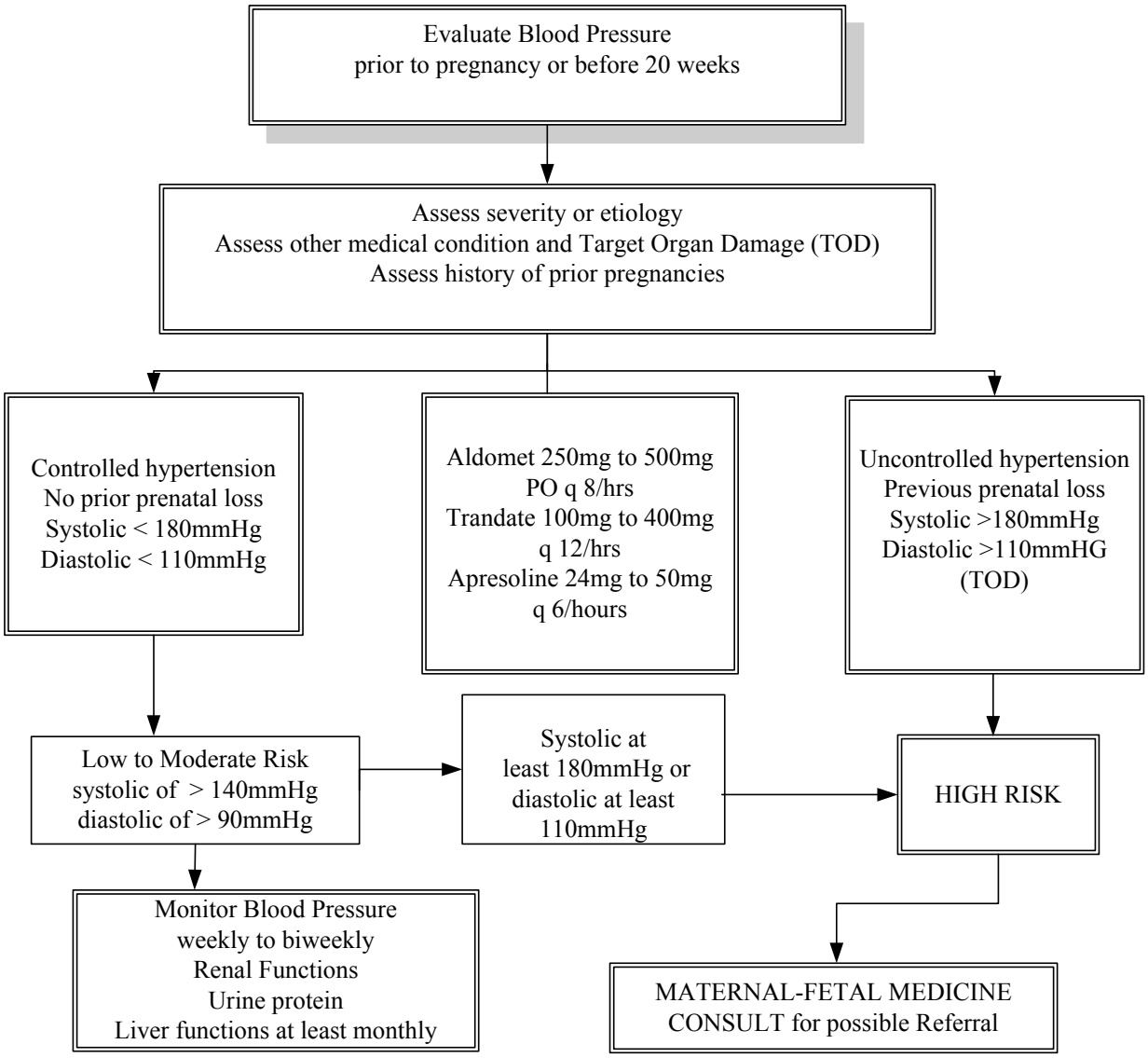
3. Nutritionist should be consulted regarding weight gain and sodium intake. A low sodium diet is recommended.
4. Utilize positive reinforcement for a positive neonatal outcome by encouraging cessation of smoking, modifying caffeine intake, and stressing the negative impact of illegal drug use.
5. Educate the patient of possible less than optimal outcomes and complications (signs and symptoms of preeclampsia or worsening hypertension.)
6. Educate the patient about the importance of frequent prenatal visits during the pregnancy.
   a. Increased daily rest periods in the left lateral position.
   b. If patient's employed workload should be reduced or arrangements need to be made for discontinuation of work for the remainder of pregnancy.
   c. Depending on the severity of the disease the patient should be seen every two weeks up to 32 weeks and then weekly thereafter.
   d. Repeat 24-hour urine collection for protein and creatinine clearance every 4 to 6 weeks.
   e. Perform an ultrasound examination to confirm the gestational age of the fetus.
   f. Repeat ultrasound at 34 weeks to assess interval growth and amniotic fluid volume, repeat as indicated for IUGR or oligohydramnios.

B. There is risk associated with the rapid reduction of an elevated blood pressure.
   1. The goal of therapy is to lower the mean blood pressure by no more than 5% to 25%. A small reduction in blood pressure in the first 60 minutes, working toward a diastolic level of 100 to 110mmHg, is recommended.
      a. Antihypertensive should be used to maintain readings lower than a systolic blood pressure of 140mmgHg and diastolic lower than 90 mmHg.
         1) Methyldopa (Aldomet®) 250 to 500mg PO Q 8 hours up to maximum of 2gms a day. Dosages should not be changed at less than a 48-hour interval.
         2) Labetalol (Trandate®) 100 to 400mg PO Q 12 hours.
         3) Nifedipine (Procardia®) 10 to 30 mg PO TID or QID
         4) Hydralazine (Apresoline®) 25 to 50mg PO Q 6 hours (routinely used postpartum)
         5) Hydralazine 5mg given IVP, repeat q 20 minutes, during hypertensive episodes during labor for maximum dose of 30mg.
      b. Close monitoring throughout the pregnancy. Patient may require multiple hospitalizations.
      c. Fetal evaluation should be started as soon as the fetus is considered viable.
   2. Indications for ending the pregnancy are proven when the hypertension is increasingly difficult to control.
      a. The patient should be hospitalized to control hypertension.
      b. Gestational age of the fetus should be considered as well as the severity of the disease as an indication for delivery.
      c. Indications for delivery may include:
         1) Intrauterine growth restriction
         2) Oligohydramnios
         3) Fetal assessment test results abnormal:
            a) Abnormal Biophysical Profile

b) Non-reassuring Non-stress Test
c) Positive Contraction Stress Test

4) The stable patient completes 38 weeks gestation.
5) Decision to deliver at tertiary care facility should be determined by severity of the maternal disease and gestational age of the fetus.
6) Platelet count > 100,000 cells/mm3, abnormal liver and renal functions
7) Persistent severe headaches and visual changes
8) Persistent severe epigastric pain or right upper quadrant pain

3. Maternal and Fetal intrapartum monitoring to include:
   a. Vital signs at least hourly
   b. Continuous fetal monitoring
   c. Evaluation of the patient for signs or symptoms of preeclampsia
   d. Intake and output, dip urine for protein
   e. Closely monitoring of hypertension and the initiation of medication to maintain diastolic blood pressure at less than 110 but above 90mmHg, as a significant reduction of maternal blood pressure may significantly compromise placental perfusion and result in fetal distress.
   f. Signs and symptoms of abruption
   g. Consider possibility of cesarean delivery for fetal indications or maternal consideration.



Chronic Hypertension

Coding Tips

ICD-9

642.0? **Benign essential hypertension complicating pregnancy, childbirth and the puerperium**
Hypertension (specified as complicating, or as a reason for obstetric care during pregnancy, childbirth or the puerperium):
benign essential
chronic NOS (not otherwise specified)
essential
pre-existing NOS

642.2? **Other pre-existing hypertension complicating pregnancy, childbirth and the puerperium**

Requires 5th digit to be added. The following fifth-digit subclassification is to denote the current episode of care:

0 Unspecified as to episode of care or not applicable

1 Delivered, with or without mention of antepartum condition

2 Delivered, with mention of postpartum complication

3 Antepartum condition or complication

4 Postpartum condition or complication

Selected Resources:

Hart, A.C., & Hopkins, C.A. (Eds.). (2003). Complications of pregnancy, childbirth and the puerperium.
In *2004 ICD-9-CM professional for physicians volumes 1 and 2: International classification of diseases, 9th revision clinical modification* (6th ed.) (Vol.1, p.178). Salt Lake City, UT: Ingenix, Inc.

Khurana, R.R., & Graham, D.F. (1999). Managing hypertensive disorders in pregnancy. *Women's Health in Primary Care, 7*(2), 559-567.

National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy.
(2001). National high blood pressure education programs: Working group report on high blood pressure in pregnancy. Retrieved August 12, 2003, from the National Guideline Clearinghouse at
http://www.guidelines.gov/summary/summary.aspx?doc_id+147&nb+nbr+704&string=gestational

Report of national high blood pressure education program working group on high blood pressure in pregnancy. (2000). *American Journal of Obstetrics and Gynecology, 183*, S1-S22.

Sibai, B.M. (2002). High-risk pregnancy series: An expert's view. Chronic hypertension in pregnancy. *Obstetrics & Gynecology*, *100*(2), 369-377.

Sibai, B.M. (2002). Hypertension in pregnancy. In S.G. Gabbe, J.R. Niebyl, J.L. Simpson, (Eds.). *Pocket companion to accompany obstetrics: Normal and problem pregnancies* (4th ed.) (pp. 588-590). New York: Churchill Livingston.