Pregnancy Medical Home Program Care Pathway:

Management of women with hypertensive disorders of pregnancy

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A. Background

Preeclampsia is a leading cause of iatrogenic preterm birth. In the past, severe preeclampsia was treated by timely delivery. Current data suggest improved perinatal outcomes with expectant management of severe preeclampsia (1). The average gestational age gained with expectant management of severe preeclampsia ranges from 7-14 days (2). Women who have preeclampsia without severe features should be managed expectantly until 37 0/7 weeks of gestation (3).

B. Definitions

Definitions apply to women typically with a gestational age > 20 weeks (4).

I. Gestational hypertension: A systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg taken on 2 occasions >4 hours apart in the absence of proteinuria or severe features that occur after 20 weeks of gestation in a woman with previously normal blood pressure.

II. Preeclampsia: A systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg taken on 2 occasions > 4 hours apart with new onset proteinuria or with severe features.

III. Severe Features
   a. Severe Hypertension: systolic BP ≥ 160mmHg or diastolic BP ≥ 110 mmHg taken on 2 occasions.
   b. Thrombocytopenia: platelet count <100,000/mm3
   c. Impaired liver function: abnormally elevated liver enzymes (to twice normal concentration).
   d. New onset renal insufficiency: serum creatinine > 1.1 mg/dL or doubling of the serum creatinine from baseline
   e. Pulmonary edema
   f. New onset visual or cerebral disturbances

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IV. Proteinuria: >300mg of protein in a 24-hour timed urine collection or protein/creatinine ratio ≥0.3mg/dL or dipstick reading of 1+ if quantitative methods not available.

V. Chronic hypertension with superimposed preeclampsia: Onset of proteinuria in a woman with preexisting hypertension, sudden increase in proteinuria if already present in early gestation, sudden increase in hypertension or development of severe features.

C. Management of preeclampsia without severe features or chronic hypertension with superimposed preeclampsia without severe features

I. Setting for management: Outpatient with close follow-up or inpatient in a facility with obstetrical services available. Women with preeclampsia with severe features, chronic hypertension with superimposed preeclampsia, or non-compliance should be hospitalized.

II. Antepartum surveillance
   a. Evaluation at least twice weekly for evidence of severe features of preeclampsia by measurement of blood pressure and review of symptoms.
   b. Fetal testing with daily fetal kick counts and at least twice-weekly biophysical profile or non-stress test.
   c. Weekly determination of amniotic fluid volume.
   d. Ultrasound at 2-3 week intervals to evaluate fetal growth.
   e. Laboratory testing for evidence of thrombocytopenia, renal insufficiency, elevated liver enzymes or hemolysis completed at diagnosis and repeated with changes in clinical characteristics or at least weekly.
   f. Once a diagnosis of preeclampsia is established, timed urine collections are not warranted as expectant management may continue despite the severity of proteinuria.
   g. Oral anti-hypertensive medications should only be used in those with severe hypertension.

III. Indications for delivery
   a. ≥ 37 0/7 weeks
   b. Non-reassuring fetal testing
   c. Consider consultation for any patient <37 0/7 weeks of gestation with additional clinical complications, such as PPROM, fetal growth restriction, suspected abruption

IV. Mode of delivery
   a. Vaginal is preferred. Cesarean deliveries are reserved for the usual obstetrical indications.

V. Seizure prophylaxis
   a. Data strongly support the use of intrapartum magnesium sulfate for preeclampsia with severe features. The literature for preeclampsia without severe features remains unclear.

b. If magnesium sulfate is used for seizure prophylaxis, therapy should continue for 12-24 hours postpartum or when urine output is ≥ 150ml per hour for 3 hours.

D. Management of gestational hypertension

I. Close monitoring for the development of preeclampsia, particularly proteinuria
II. Weekly nonstress test or biophysical profile
III. Oral anti-hypertensive medications should only be used in those with severe hypertension.
IV. Indication for delivery: Gestational age ≥ 37 0/7 weeks gestation

E. Management of preeclampsia <u>with</u> severe features or chronic hypertension with superimposed preeclampsia <u>with</u> severe features

I. Initial evaluation and management
   a. Maternal assessment of blood pressure and signs/symptoms of severe features
      i. Laboratory evaluation: CBC with platelets, LFTs, creatinine
      ii. Assess urine output, initiate 24 hour collection of urine for protein
      iii. Antihypertensive therapy is indicated for sustained systolic BP ≥160mm Hg or diastolic BP ≥110 mm Hg
      iv. Magnesium sulfate for seizure prophylaxis
   b. Fetal assessment
      i. Continuous fetal monitoring as appropriate for gestational ages 24 0/7 – 33 6/7 weeks
      ii. Ultrasound for estimated fetal weight and presentation
      iii. Antenatal corticosteroids initiated prior to 34 0/7 weeks gestation
II. Gestational dating criteria ≥ 34 0/7: delivery at hospital with appropriate level of maternal and neonatal support
III. Gestational age < 34 0/7 weeks
   a. Women with suspected early onset preeclampsia with severe features should be admitted for evaluation and consideration should be given to transfer to a center with appropriate level of maternal and neonatal support, including Maternal-Fetal Medicine consultation.
   b. Patient Counseling
      i. Patient should be counselled about management options, expectant management versus delivery
         1. Maternal risks and approximate incidence:
            - HELLP syndrome: 20%
            - Eclampsia: 2%

- Pulmonary edema: 5%
- Acute renal failure: 2%

2. Fetal risks:
   - Worsening fetal condition: 40%
   - Abruption placenta: rare
   - Fetal death: rare

ii. Expectant management benefits the fetus by increasing gestational age at delivery, and carries some risk to the mother.

c. Fetal death is an absolute contraindication to expectant management for severe disease in singleton pregnancies.
d. Severe hypertension, controlled with antihypertensive medication, is not an indication for delivery prior to 34 0/7 weeks.
e. If severe hypertension cannot be controlled with antihypertensive medication, then delivery is indicated
f. The amount of proteinuria by itself is not an indication for delivery in women with early onset of preeclampsia with severe features.

References

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Note: Pregnancy Medical Home Care Pathways are intended to assist providers of obstetrical care in the clinical management of problems that can occur during pregnancy. They are intended to support the safest maternal and fetal outcomes for patients receiving care at North Carolina Pregnancy Medical Home practices. This pathway was developed after reviewing ACOG resources such as practice bulletins, committee opinions, and Guidelines for Perinatal Care as well as current obstetrical literature. PMH Care Pathways offer a framework for the provision of obstetrical care, rather than an inflexible set of mandates. Clinicians should use their professional knowledge and judgment when applying pathway recommendations to their management of individual patients.