PREECLAMPSIA AND ECLAMPSIA

Definition:
A hypertensive disorder that usually occurs after 20 weeks of pregnancy. "Proteinuric hypertension that develops late in pregnancy". Eclampsia refers to seizures resulting from worsening preeclampsia.

Diagnosis of Preeclampsia: (no screening test)
BP ≥ 140/90 + Proteinuria (> 300 mg/24 hrs; < 2+ Proteinuria on cathed UA)
BOTH REQUIRED FOR DX
(BP measured 6 hours apart, sitting position)

Considered **SEVERE** preeclampsia if one or more of the following are met:
BP ≥ 160/110 on 2 or more occasions 6 hrs apart
Proteinuria of 5g/24 hrs or ≥3+ protein on 2 cathed UA's 4 hrs apart

Oliguria ≤ 500-ml/24 hrs	Epigastric or RUQ pain
Cerebral/visual disturbances	Impaired liver function
Pulmonary edema or cyanosis	IUGR
Thrombocytopenia	

Abnormal Labs:

Bili > 1.2 mg/ml	LDH > 600 IU/l
Elevated AST or ALT	Creatinine >1.2 mg/dl
Platelets <100 K	uric acid > 6 mg/ml
Oliguria < 400 ml urine/24 hours	Hgb-hemoconcentration/hemolysis
Abnormal peripheral smear (hemolysis)	

Risk Factors:

Primip	Multiple gestation	Preeclampsia
Diabetes	Nephropathy	Antiphospholipid antibody syndrome
Obesity	Advanced maternal age	Vascular/connective tissue disease
African American		Chronic HTN

Prenatal Care:
Hospitalization for new-onset preeclampsia, patient care based on results of work up (can consult OB); mild preeclampsia can be managed outpatient with close monitoring until term gestation, if status worsens pt should be admitted.

- OBTU ultrasound to assess fetal growth/AFI; repeat in 3 weeks
- NST/biophysical profile at time of diagnosis
- Fetal kick counts
- If EFW <10th percentile, AFI < 5 cm, abnormal lab results as above, twice weekly NST
- Consult OBTU (perinatalogist) as needed regarding timing of delivery

Management: (Epic order set available)

Vitals:	Q 15 mins x 1 hour, then Q 1 hour, including DTR's
Activity:	Bed rest, quiet (i.e. one visitor at a time, limited TV)
Nursing:	Strict I's & O's, daily weights, seizure precautions, dip urine q shift for protein, Foley catheter PM
Diet:	NPO
IV:	D5 NS @ 50 - 125/ Hr - WATCH THIS CAREFULLY**
Meds:	10% Magnesium Sulfate 4-6 grams over 10-20 minutes IV load, then 2 gms Q hour, dependent upon clinical picture
Labs:	Magnesium level six hours after load, then Q6 hours until therapeutic, CBC with plts, LFT's, BMP (Basic Metabolic Panel), Peripheral smear, +/- Uric Acid, +/- LDH. Repeat CBC with plts, LFT's, PT, PTT q 4-12 hours, as clinical suspicion dictates. If low platelets, consider fibrinogen, d-dimer, PT, PTT (but remember, HELLP and DIC are not always the same thing. These labs may be normal, in spite of aspects of HELLP.)
Extra:	$MgSO_4$ caddy with 10% calcium gluconate (antidote), airway at bedside

Magnesium Monitoring:

Follow patient carefully with clinical observation:

8-12	reflexes disappear
15-17	respirations decrease or cease
30 -35	cardiac arrest

HOLD Magnesium if reflexes absent or respirations < 10-12/min.

For overdose, STOP Magnesium, start airway protection, oxygen, Calcium gluconate 1gm IV over 3 minutes, obtain EKG.

Treatment Goals:

1. Prevent seizures: magnesium sulfate IV
   Rebolus of 2 gm IV if seizure occurs: If seizures continue, despite adequate Magnesium level, if absolutely necessary, the following may be considered:

   AVOID BENZODIZEPINES (Valium, Ativan) causes altered mental status
   Dilantin 10 mg/kg load, then 5 mg/kg two hours later, followed by 200 mg PO/IV q 8 hours, starting 12 hours after second bolus
2. Control blood pressure: if BP > 160/105-110; gradually lowered with:
   Hydralazine 5-10 mg IV Q15-20 minutes
   OR
   Labetalol (contraindicated for patients with asthma or CHF) 20 mg IV then Q 10 minutes (40mg then 80 mg) until goal reached (max 220 mg total)

   DO NOY USE DIURETICS AS PATIENT HAS DECREASED INTRAVASCULAR VOLUME!

Indications for Delivery:

Maternal	Fetal
1. 38 weeks gestation w/favorable cervix	severe IUGR
2. Platelet count < 100 K	non-reassuring fetal tests
3. Worsening liver function	oligohydramnios
4. Worsening renal function	
5. Suspected placental abruption	
6. Persistent headaches or visual changes (scotomata)	
7. Persistent midepigastric pain/vomiting	

Progress Notes:
Assess for stability of condition and signs of toxicity. Vitals signs, urine output, total intake, toco, EFM, lungs sounds, heart sounds, reflexes, edema, magnesium rate and most recent level, labs (HELLP labs).

Note should be written at least q 4 hours, with q 1-2 hour checks on patient. Watch fluid management extremely carefully. Patients are usually total fluid up, but severely intravascularly depleted. Fluid management is very tricky and tenuous.

Post Delivery Management:
Delivery is the treatment for eclampsia and preeclampsia. Postpartum preeclampsia usually resolves within 24 hours, but may persist for weeks (very unusual). Continue Magnesium for 24 hours post delivery (longer if needed until increased urine output). If severe preeclampsia, continue to monitor labs q 6 - 8, otherwise q 24 is sufficient.

Neonatal Management:
Observe infant for hypomagnesemia, hypocalcaemia, respiratory depression, decreased reflexes, drowsiness or ileus.

References:
NIH Working Group Report on High BP in Pregnancy July 2000.

NHBPEP Report on High Blood Pressure in Pregnancy: A Summary for Family Physicians AFP 7/15/01.

ACOG Practice Bulletin, number 33, January 2002.

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** See HCMC Labor and Delivery protocol for Administration of Magnesium Sulfate for Treatment of Preeclampsia/Eclampsia