MANAGEMENT OF PREECLAMPSIA & HELLP

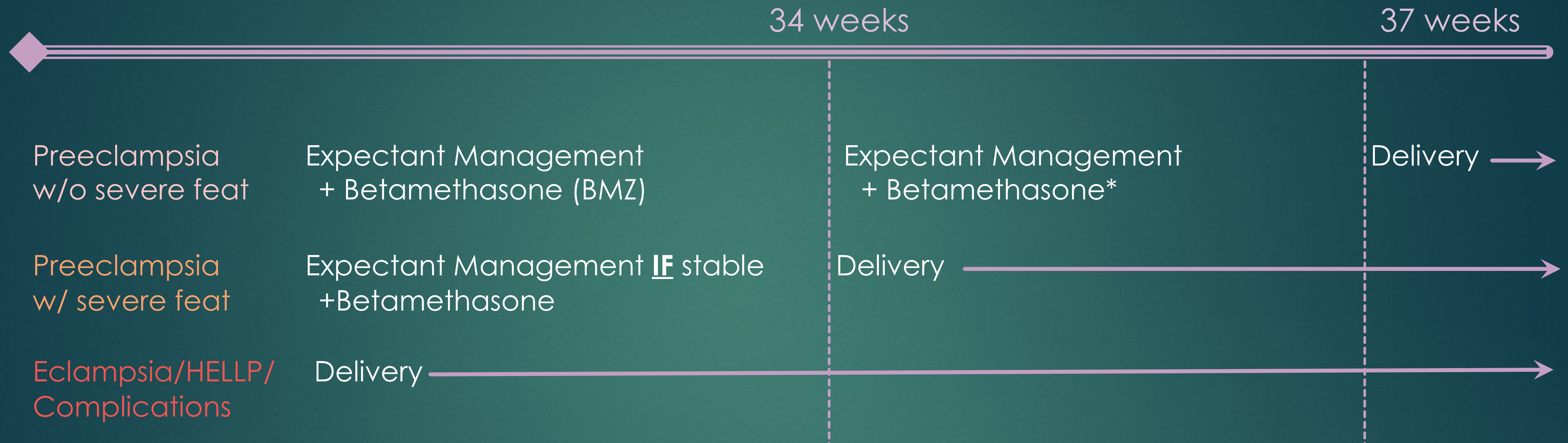
FLAME LECTURE: 105

BURNS/SISTO 10.10.23

LEARNING OBJECTIVES

- Explain the management of a patient with preeclampsia
- List the maternal and fetal complications associated with preeclampsia
- See also:
  - FLAME 27 – Chronic HTN in Pregnancy
  - FLAME 104 – Diagnosing Preeclampsia
  - FLAME 106 – Eclampsia

QUICK OVERVIEW OF TREATMENT



- Preeclampsia management involves balancing the benefits of continuing the pregnancy for fetal development versus taking on risks of continued HTN and endothelial dysfunction to maternal/fetal health

*Should be offered if no contraindications to BMZ (Gyamfi-Bannerman 2016)

PRE-E W/O SEVERE FEATURES (SF)

(Previously known as Mild Preeclampsia)

- Pre-E is only "cured" via delivery of placenta, but timing of delivery is balanced with risk of fetal prematurity with expedited delivery vs. risk to mother/fetus with waiting while pre-E may worsen
  - ≥37 weeks irrespective of severe features = Delivery!
    - Not a contraindication to labor induction and/or vaginal delivery
  - <37 weeks pre-E w/o SF = Expectant management
    - Evidence to support both inpatient or close outpatient mgmt; decision should be individualized based on risk factors for escalation to severe features
      - sFlt-1 / PIGF ratio is a novel approach to determining risk of of development of preE w/ SF within one week
    - *Blood pressures*: consider oral meds to keep BPs <140/90; if BPs >160/105, consider pre-E w/ SF
    - *Seizure prophylaxis*: no universal recommendation if BPs <160/105
    - *Labs*: CBC & CMP weekly, OR PRN sooner worsening pressures/symptoms
      - Note, no need to recheck urine protein, because we do not make delivery decisions or escalate to a diagnosis of severe features based off this parameter any longer
    - *Antepartum measures*: Daily NSTs, BMZ given to promote fetal lung maturity

PRE-E W/ SEVERE FEATURES

(Previously known as Severe Preeclampsia)

- Pre-E w/ SF is preeclampsia with signs of end organ damage OR if blood pressures escalate to >160/105 (twice greater than 4 hours apart)
  - ≥34 weeks + preE w/ SF = Mag + Delivery
    - Not a contraindication to labor induction and/or vaginal delivery, UNLESS rapidly worsening status for which the risks of waiting for induction are deemed to outweigh the risks of outright cesarean section
  - <34 weeks + SF and NO COMPLICATIONS (next slide) = Expectant management
    - Inpatient until delivery
    - *Blood pressures*: Target 130-140 / 80-90; oral and/or IV meds to achieve this goal
    - *Seizure prophylaxis*: magnesium sulfate x 24 hours upon admission AND/OR during delivery and postpartum
    - *Labs*: CBC & CMP daily OR PRN sooner for worsening pressures/symptoms
    - *Antepartum measures*: Daily NSTs, BMZ given to promote fetal lung maturity

PRE-E W/ SF + COMPLICATIONS

- <34 weeks + pre-E w/ SF + THE BELOW = GET BMZ ON BOARD (x48H) → THEN PROCEED WITH DELIVERY
  - PPROM
  - Fetal Growth Restriction (FGR) <5th %ile
  - Abnormal Umbilical Artery Dopplers (specifically, REDF)
  - Oligohydramnios (AFI < 5cm)
  - Platelets <100K
  - LFTs >2X normal
  - New-onset Cr >1.1 or worsening renal dysfunction
- <34 weeks + pre-E w/ SF + SCARY STUFF BELOW = GIVE BMZ BUT DELIVER NOW!!
  - Uncontrollable severe HTN
  - Eclampsia
  - Pulmonary Edema
  - Placental Abruption
  - DIC
  - NRFHRT
  - IUFD
- Pre-E with SF before viability (extremely rare) = Delivery

ANTEPARTUM MANAGEMENT

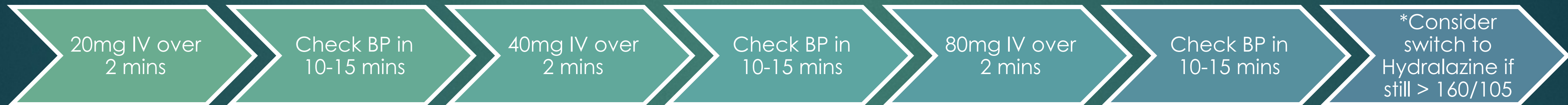
- In patients being expectantly managed:
  - Expectant management usually occurs in the hospital, even for patients without severe features, because severity can change rapidly
  - Regular monitoring includes:

Daily	Twice a week	Weekly	Every 3-4 weeks
Blood Pressure NST	Labs Q 3-4 d: ▪ CBC ▪ CMP Uterine Artery Doppler if FGR	AFI	Fetal ultrasound to assess fetal growth

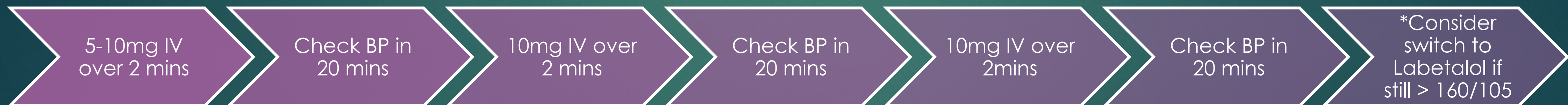
  - BMZ given if patient is <37 weeks to accelerate fetal lung maturity unless they have contraindications like DM (would still give if <34w)
  - Consider NICU Consultation to discuss risks of prematurity with parents

BLOOD PRESSURE MANAGEMENT

- **No severe features:** No IV medications needed if BPs <160/105
  - Tight blood pressure control does not affect the progression of preeclampsia, but does affect risk of hemorrhagic stroke
- **Severe features:**
  - If > 160/105, initiate acute hypertensive control algorithm until < 160/105:
- Initial first line management with **Labetalol**:



- Initial first line management with **Hydralazine**:



- *Max dose of IV Labetalol is 300mg (20 + 40 + 80 + 80 + 80mg) in one setting; Max dose of hydralazine is 30mg in one setting
- Until IV is available, 10mg oral Nifedipine up to five doses can lower blood pressure as quickly as IV labetalol in hypertensive emergencies (Shekhar 2013)

SEIZURE PROPHYLAXIS

- **Magnesium sulfate** given for seizure prophylaxis as well as seizure control if eclampsia develops
  - Expectant mgmt: Give $MgSO_4$ x 24 hours upon admission + intrapartum through 24 hrs postpartum
  - If admitting and delivering: most pts will likely be on $MgSO_4$ from admission until 24 hrs postpartum
  - Exact mechanism of seizure prevention/treatment is unknown but $MgSO_4$ has been found superior to all other anticonvulsant medications for preeclampsia seizure prophylaxis

$MgSO_4$ effects at varying serum concentration (mg/mL)	
4.8-8.4	Therapeutic dose
7-10	Hyporeflexia
10-13	Respiratory distress/paralysis
15+	AV block
17+	Coma
25+	Cardiac arrest
MgSO4 toxicity treatment: Calcium Gluconate	

- If patients are on magnesium, clinical examinations and/or labs should be checked serially to prevent magnesium toxicity
  - If clinical: check DTRs, auscultate lungs, and measure I&Os q1-2 hours
  - If labs: check serum magnesium level q6 hours

POSTPARTUM MANAGEMENT

- **Delivery of placenta is eventually curative for preE/eclampsia**
- While more rare, pre-E can worsen (or even present for the first time) still for up to 6 weeks postpartum
  - Continue BP monitoring in the hospital (or that of equivalent surveillance as an outpatient) for at least 72 hours postpartum
    - If blood pressure remains elevated >140/90, consider oral antihypertensive therapy
  - Patient should have BP follow up again at 7-10 days after delivery or earlier in women with symptoms
- Be cautious with NSAIDs postpartum until hypertension, oliguria, and renal function improve or resolve

COMPLICATIONS

- Recurrence
  - 20% of women have hypertension in subsequent pregnancy
  - 16% have recurrent preeclampsia
    - Risk increases the earlier pre-E onset occurred or the more severe the symptoms
- **Maternal Complications** – more likely to later develop later in life:
  - Peripartum Cardiomyopathy (PPCM)
    - 4-5% higher risk of developing PPCM in first 6 months postpartum
  - Long-term CVD (Hypertension, Ischemic heart disease, Stroke, VTE)
    - 17.8% absolute risk of developing one of the above events (8.3% without preeclampsia)
    - 8-10x more likely to die of CV disease
  - Diabetes mellitus
  - ESRD – though renal function usually recovers fully initially after preeclampsia resolution
- **Obstetric complications**
  - Placental abruption
  - Labor induction, c-section delivery
- **Fetal Complications**
  - Fetal Growth Restriction
  - Prematurity 2/2 preterm birth
  - Respiratory distress, Brain hemorrhage
  - 30% had below normal/abnormal IQ (Pre-eclampsia Eclampsia Trial Amsterdam)

HELLP Syndrome Management

- Recall: HELLP Syndrome (Hemolysis, Elevated Liver, Low Platelets) is a complication VERY CLOSELY RELATED to preeclampsia that can also occur independent of pre-E and is on the same spectrum
- Managed similarly to pre-E with SF
  - Closely monitor hemolytic status
  - *Before viability or > 34 weeks*: delivery
  - *Viability to 34 weeks*: expectant management for 24-48 hours to give time for betamethasone to take effect unless worsening maternal/fetal status
  - *Mother or fetus in unstable condition*: delivery
  - Give $MgSO_4$ from diagnosis until 24 hrs postpartum

FUTURE CONSIDERATIONS

- With future pregnancies
  - Recommend preconception counseling and assessment for all women with a history of preeclampsia
  - Recommend initiation of ASA 81mg from 12 weeks til 1 week prior to delivery to reduce recurrence risk of pre-E
  - For women with a history of early-onset pre-E <32 weeks, consider work-up for Antiphospholipid Antibody Syndrome (APAS)
- Health Maintenance:
  - In women who have had pre-E <37 weeks or recurrent pre-E, recommend annual BP checks, lipids, fasting blood glucose, and BMI with PCP

REFERENCES & RESOURCES

- Hypertension in Pregnancy: Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol, Nov 2013; 122(5):1122-1131.
- UpToDate:
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  - Eclampsia
  - Expectant management of preeclampsia with severe features
  - Management of hypertension in pregnant and postpartum women
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