- Hypertensive Disorders of Pregnancy
  - Recognition, Management & Nursing Priorities

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GOALS AND OBJECTIVES

1	2	3	4	5	6	7
Differentiate	**Identify**	**Recognize**	**Implement**	**Safely administer**	**Demonstrate**	**Educate**
between the major hypertensive disorders of pregnancy	maternal risk factors and warning signs	abnormal assessment findings that require immediate intervention.	evidence-based nursing interventions	antihypertensive medications and Magnesium sulfate.	appropriate nursing responses to hypertensive emergencies	patients and families on warning signs

WHY THIS MATTERS

- **Hypertensive disorders affect approximately 5–10% of pregnancies.**
- They remain one of the leading causes of:
- Maternal mortality
- Maternal stroke
- Placental abruption
- ICU admission
- Preterm birth
- Fetal growth restriction

Early Recognition Saves Lives

WHY THIS MATTERS IN OKLAHOMA

🩺 Maternal Mortality

- Oklahoma's maternal mortality rate remains **higher than the national average**

👶 Preterm Birth

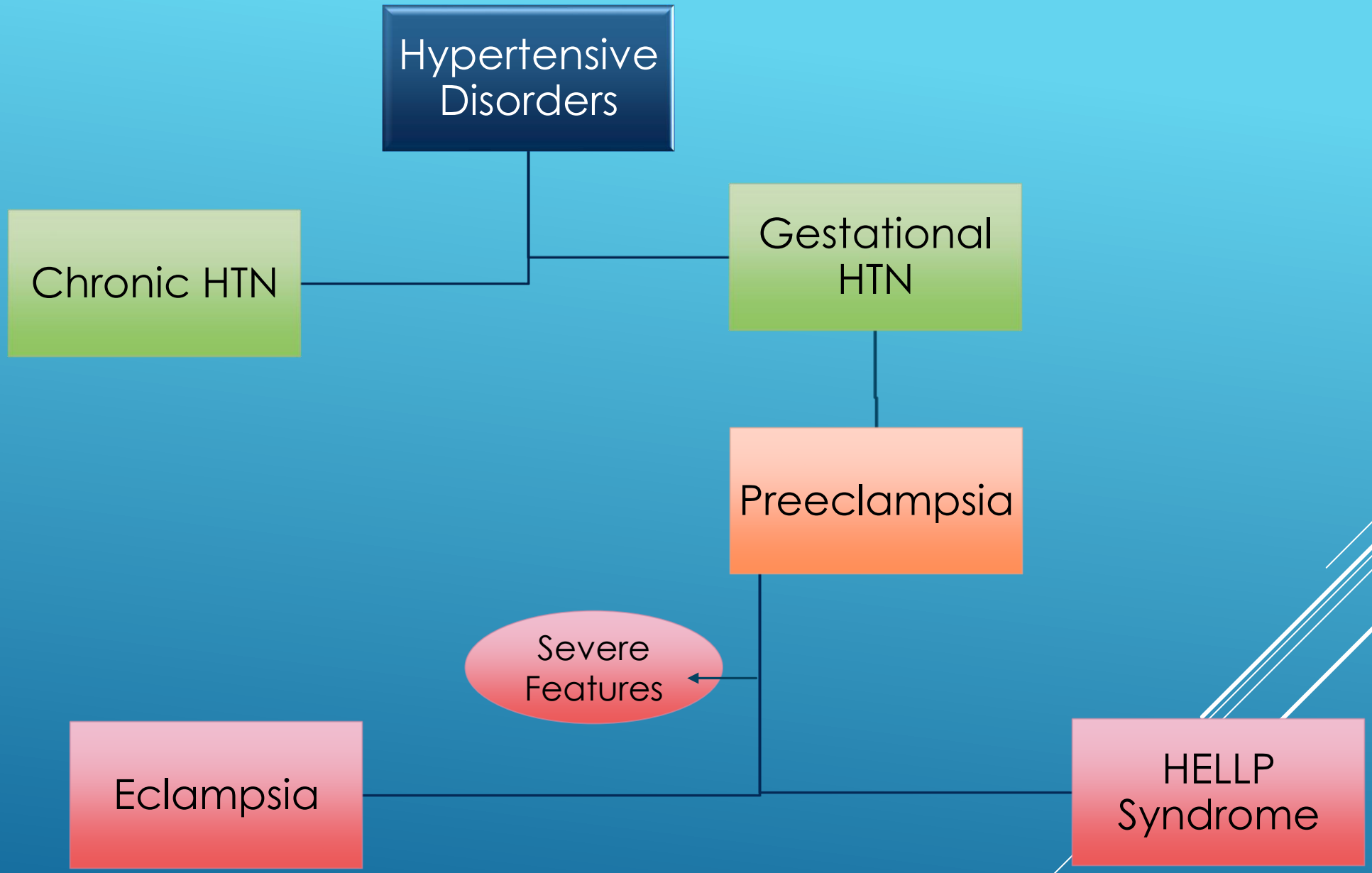
- **11.0% of Oklahoma births were preterm in 2024**, earning the state a **D** on the March of Dimes Report Card. Hypertensive disorders are a leading indication for medically indicated preterm delivery.

⚠️ Most Pregnancy-Related Deaths Are Preventable

- Approximately **67% of pregnancy-related deaths in Oklahoma were determined to be preventable**

👩‍⚕️ Your Role Matters

- Timely recognition of severe hypertension, prompt treatment, and escalation of care are among the most effective nursing interventions to improve maternal outcomes.


Hypertensive Disorders
Chronic HTN
Gestational HTN
Preeclampsia
Severe Features
Eclampsia
HELLP Syndrome

BLOOD PRESSURE PARAMETERS

Normal	Hypertensive	Severe Hypertension
• < 140/90	• ≥ 140 systolic OR ≥ 90 diastolic	• ≥160 systolic OR ≥ 110 diastolic

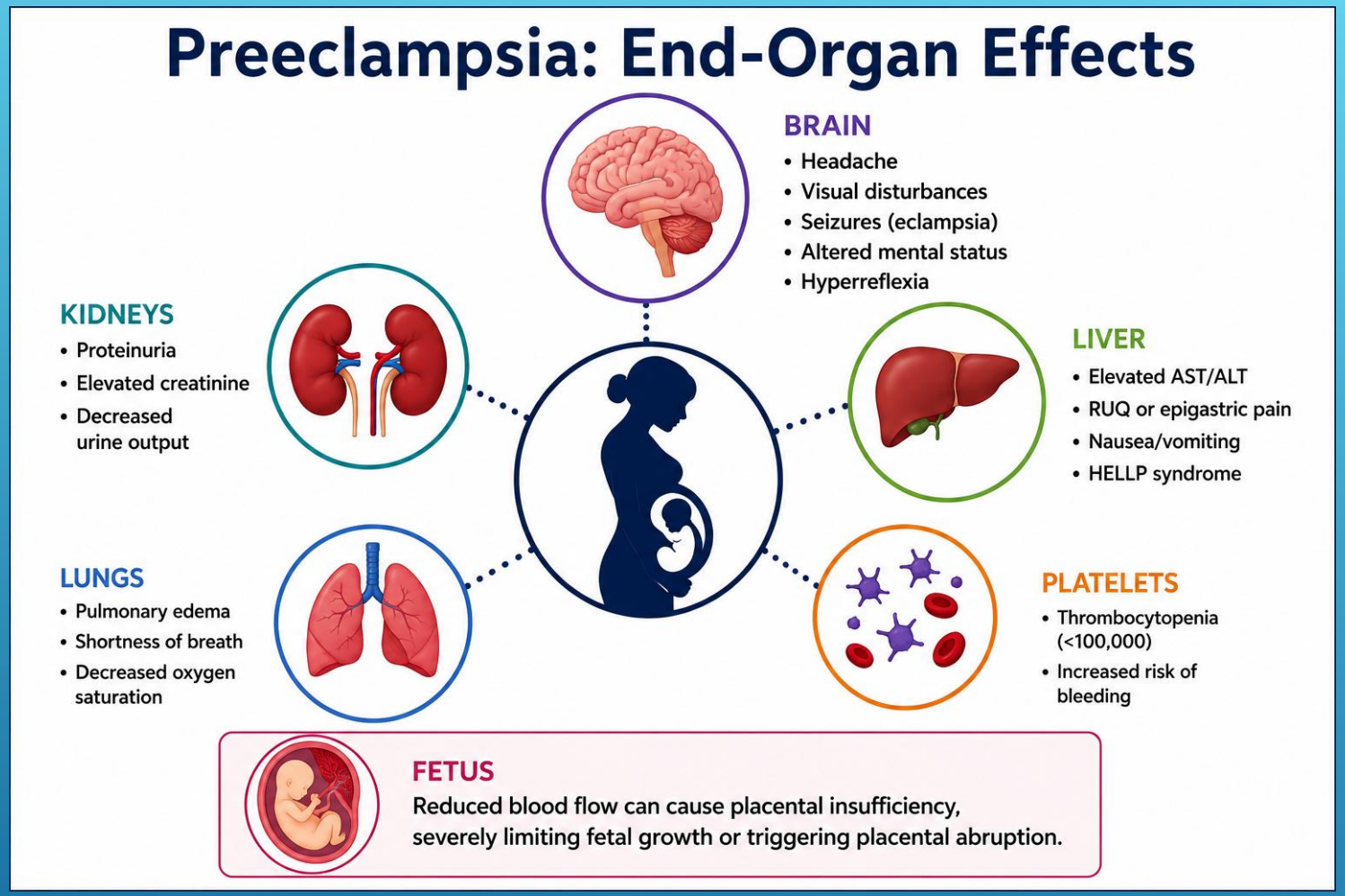
Remember:
2 readings at least 4 hours apart
UNLESS severe range

- HTN Present before pregnancy or before 20 weeks.
- Risk Factors
  - Diabetes
  - Kidney disease
  - Obesity
  - Potential complications
  - Superimposed preeclampsia
  - Growth restriction
  - Placental abruption

CHRONIC HYPERTENSION

- HTN that occurs after 20 wks gestation
- No proteinuria
- No severe features
- Can progress to preeclampsia

GESTATIONAL HYPERTENSION



PREECLAMPSIA

- Hypertension PLUS one or more:
  - Proteinuria
  - OR
  - Evidence of end-organ dysfunction

- Proteinuria is defined as:
  - Protein/creatinine ratio ≥ 0.3
  - 24-hour urine ≥ 300mg
  - Dipstick 2+ (ONLY use if no other testing available)

RISK FACTORS FOR PREECLAMPSIA

- Nulliparity
- Multifetal gestations
- Preeclampsia in a previous pregnancy
- Chronic hypertension
- Pregestational diabetes
- Gestational diabetes
- Thrombophilia
- Systemic lupus erythematosus
- Prepregnancy body mass index greater than 30
- Maternal age 35 years or older
- Antiphospholipid antibody syndrome
- Kidney disease
- Assisted reproductive technology
- Obstructive sleep apnea

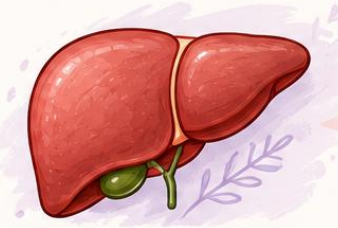
SEVERE FEATURES

- 🩸 **Blood Pressure**
  - Severe Hypertension
- 🧠 **Neurological & Visual**
  - Severe Headaches
  - Visual Disturbances
  - Hyperreflexia
- 🫀 **Respiratory**
  - Pulmonary Edema
- 🤢 **Hepatic & Gastrointestinal**
  - EpigastricPain
  - Elevated Liver Enzymes
- 🩸 **Hematologic**
  - Thrombocytopenia
- 📉 **Renal**
  - **Progressive Kidney Dysfunction:** A serum creatinine concentration greater than 1.1 mg/dL or a doubling of the serum creatinine concentration
  - **Oliguria**

HELLP SYNDROME

A severe complication of preeclampsia

H – Hemolysis **EL** – Elevated Liver Enzymes **LP** – Low Platelets

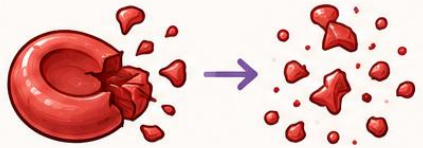


Early recognition saves lives— monitor labs and act quickly!

H

HEMOLYSIS

Breakdown of red blood cells



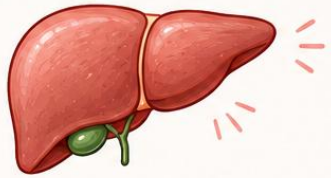
KEY POINTS

- Elevated LDH
- Elevated indirect bilirubin
- Decreased haptoglobin
- Schistocytes on peripheral smear

EL

ELEVATED LIVER ENZYMES

Liver cell injury



KEY POINTS

- Elevated AST and ALT
- RUQ or epigastric pain
- Nausea / vomiting
- Risk for hepatic hematoma, rupture

LP

LOW PLATELETS

Increased risk of bleeding

KEY POINTS

- Platelet count < 100,000
- Increased risk of bleeding
- Monitor closely

HELLP SYNDROME = MATERNAL EMERGENCY

Definitive treatment is delivery.

Stabilize mom, protect baby, and prepare for delivery.

HELLP SYNDROME

ECLAMPSIA

- New onset seizure secondary to preeclampsia
- OBSTETRICAL EMERGENCY
- Management:
  - Magnesium sulfate
  - Delivery of infant

- During seizure:
  - Support airway
  - Suction at bedside
  - Call Rapid Response
  - Stay with patient
  - Pad bed or protect from injury
  - Note time of onset and duration

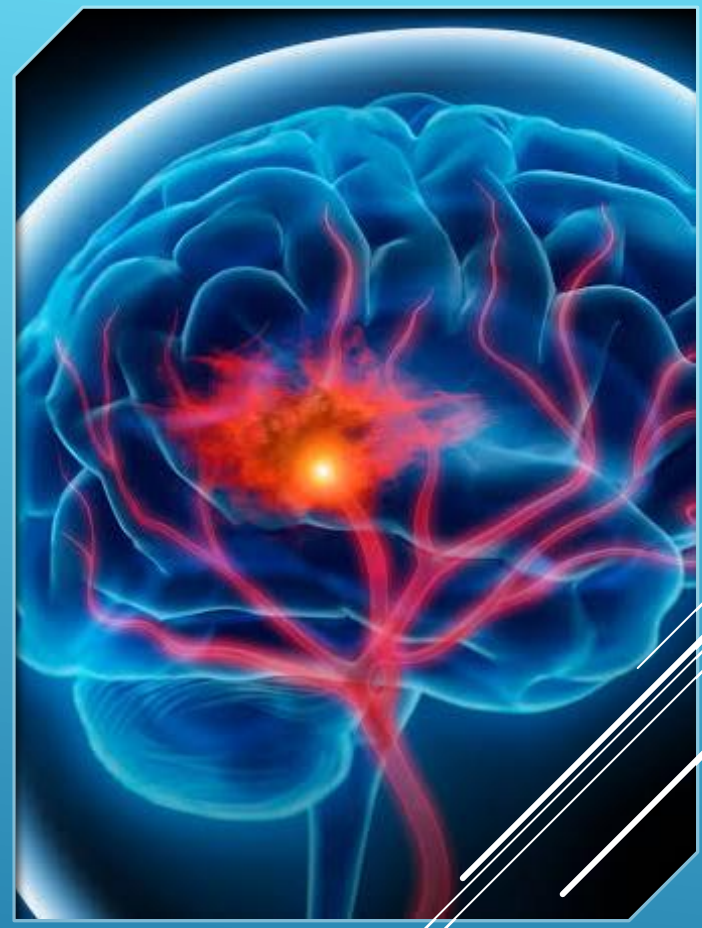
STROKE

- **Risk Factors**
- 🩸 Severe hypertension (≥160/110)
- ⚠️ Preeclampsia/Eclampsia
- 🧠 HELLP syndrome
- ❤️‍🩹 Chronic hypertension
- 💉 Coagulopathy or thrombocytopenia
- 👱‍♀️ Age >35 years

- **Warning Signs**
- 🚩 Sudden, severe headache
- 🚩 Vision loss or double vision
- 🚩 Facial droop
- 🚩 One-sided weakness or numbness
- 🚩 Difficulty speaking
- 🚩 Confusion
- 🚩 Loss of consciousness
- 🚩 Seizure

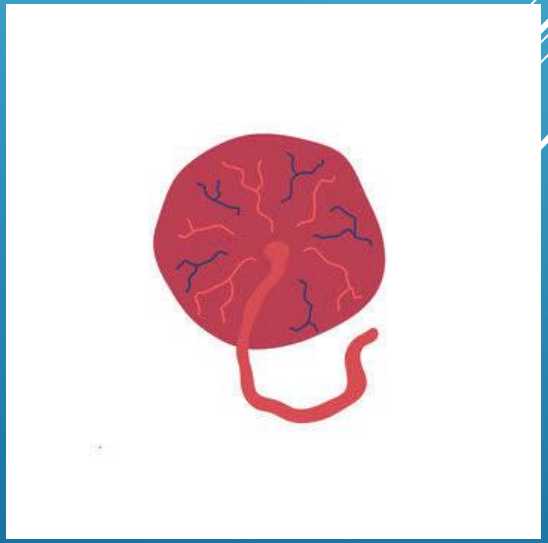
STROKE- NURSING PRIORITIES

- **Recognize stroke symptoms immediately**
- **Call a Rapid Response/Stroke Alert per hospital policy**
- **Notify the obstetric provider**
- **Treat severe blood pressure promptly**
- **Maintain airway and oxygenation**
- **Prepare for emergent neuroimaging**
- Continue fetal assessment if clinically appropriate and maternal condition allows.



Abnormal placental development → Poor spiral artery remodeling → Placental ischemia → Release of antiangiogenic and inflammatory factors → Maternal Endothelial Dysfunction → Vasospasm + capillary leak + Organ Hypoperfusion

PATHOPHYSIOLOGY OF PREECLAMPSIA: IT ALL STARTS WITH THE PLACENTA



Headache
Vision changes
Hyperreflexia
Seizures

Vasoconstriction
Severe hypertension

Pulmonary edema

Platelet activation
HELLP syndrome

Proteinuria
Elevated creatinine

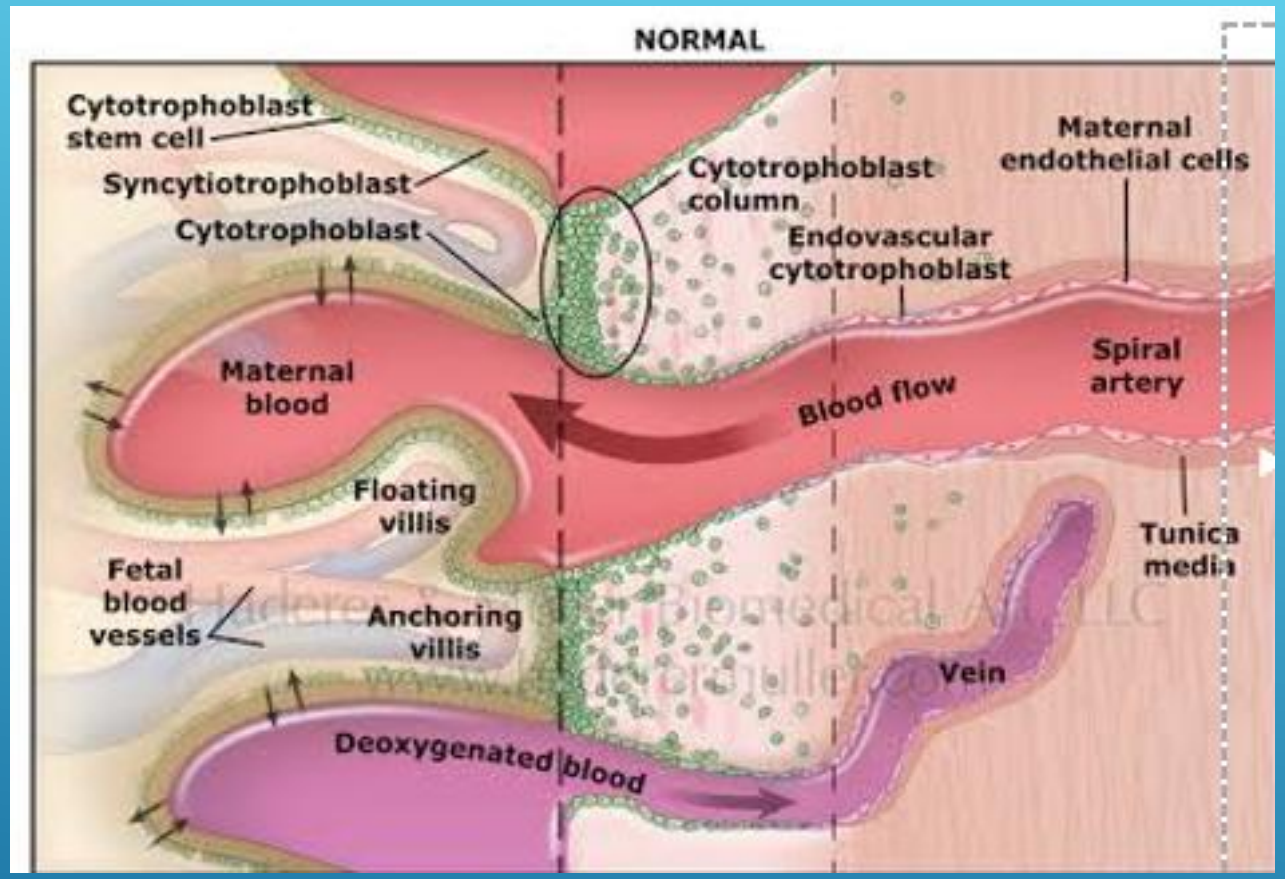
Growth restriction
Placental abruption
Fetal hypoxia

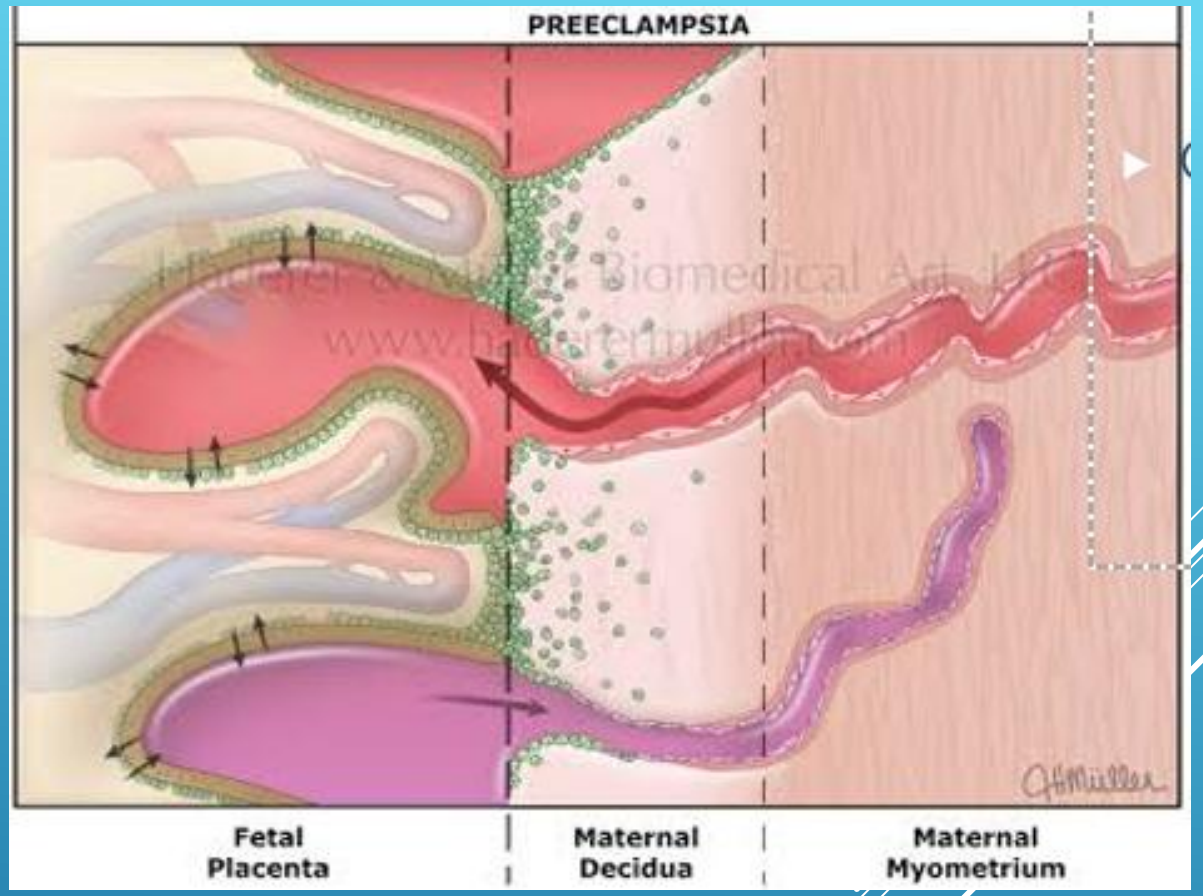
ENDOTHELIAL DYSFUNCTION LEADS TO….

ABNORMAL PLACENTATION AND FAILED SPIRAL ARTERY REMODELING

- Normally…
- Trophoblasts invade the maternal spiral arteries.
- The arteries become:
  - Large
  - Low resistance
  - High flow
- Perfect for supporting the growing fetus.

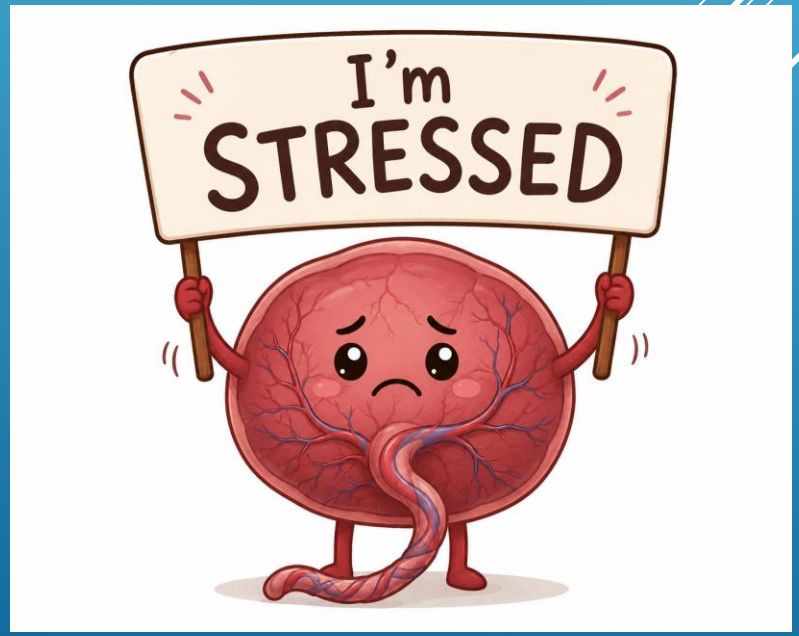
- In preeclampsia…
- The arteries remain:
  - ❌ Small
  - ❌ Muscular
  - ❌ High resistance
- Blood flow to the placenta decreases.


NORMAL
Cytotrophoblast stem cell
Syncytiotrophoblast
Cytotrophoblast
Cytotrophoblast column
Endovascular cytotrophoblast
Maternal endothelial cells
Maternal blood
Blood flow
Spiral artery
Floating villis
Tunica media
Fetal blood vessels
Anchoring villis
Vein
Deoxygenated blood


PREECLAMPSIA
Fetal Placenta
Maternal Decidua
Maternal Myometrium

PLACENTAL ISCHEMIA AND MATERNAL ENDOTHELIAL DYSFUCTION

- Because the placenta isn't getting enough oxygen...
  - It becomes stressed.
  - The placenta begins releasing inflammatory chemicals into maternal circulation.
- The maternal blood vessels become damaged.
  - Instead of relaxing--They constrict.
  - Instead of holding fluid--They leak fluid.
  - Instead of preventing clotting--They activate platelets.

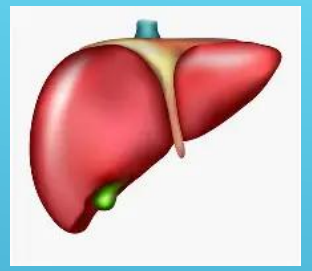


SYMPTOMS MAKE SENSE

- Brain
  - Poor blood flow
  - Headache
  - Visual changes
  - Stroke
  - Seizures

- Kidneys
  - Damaged glomeruli
  - Protein leaks into urine
  - Proteinuria

- Liver
  - Poor perfusion
  - RUQ pain
  - Elevated AST/ALT
  - HELLP



- Lungs
  - Capillaries leak
  - Pulmonary Edema

- Placenta
  - Reduced blood flow
  - Growth restriction
  - Abruption
  - Stillbirth

MATERNAL COMPLICATIONS

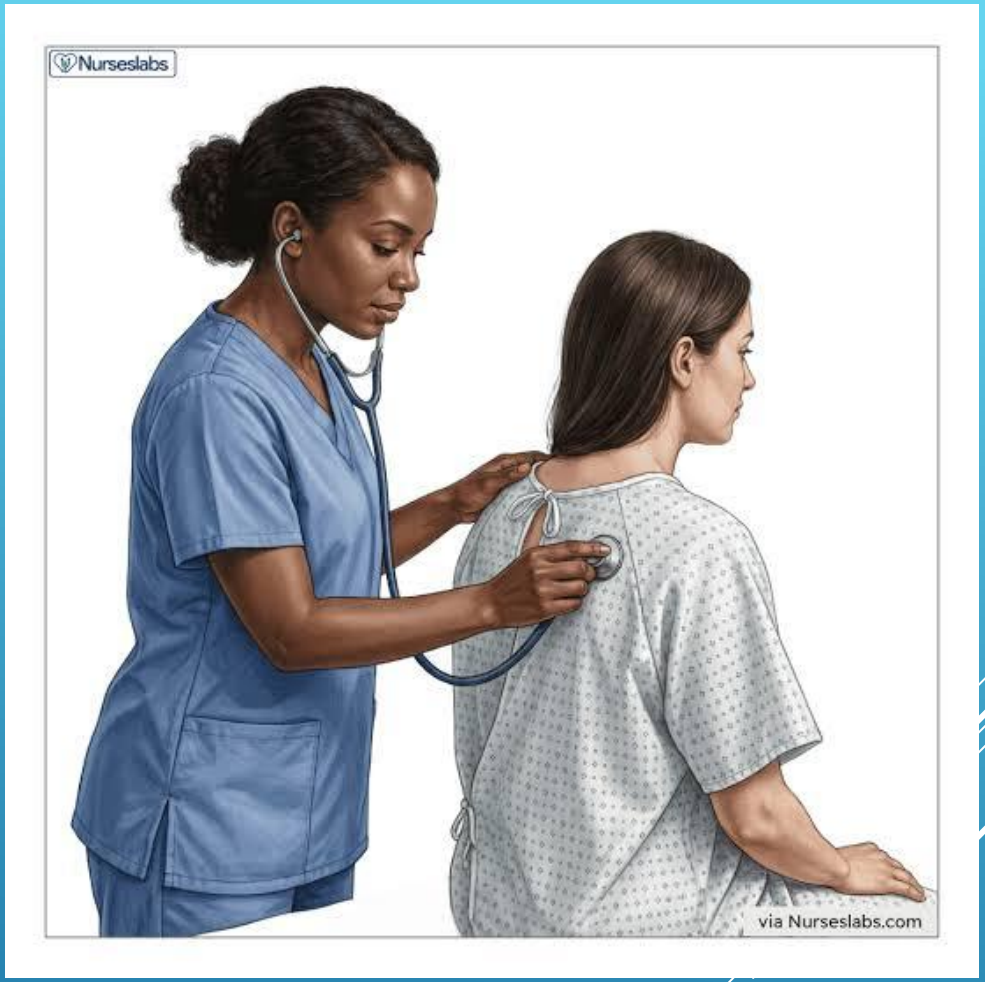
- Stroke from cerebral hemorrhage
- Placental abruption
- Eclamptic seizures
- Cerebral Edema
- Liver hematoma/rupture
- Pulmonary edema
- Acute renal failure
- Hemorrhage/DIC
- Cardiomyopathy

FETAL COMPLICATIONS

- IUGR
- Premature birth
- Fetal intolerance to labor
- Hypoxia
- Death

NURSING ASSESSEMENTS

- Blood Pressure
- Headache
- Visual Changes
- Reflexes
- Clonus
- Edema
- Urine output
- Lung Sounds
- Pain
- Fetal Status



5 MANAGEMENT OBJECTIVES

1. **Recognize the situation (signs & symptoms)**
   2 elevated BP within 15 min. → notify physician
   Initiate anti-hypertensive treatment ASAP

2. **Control BP with antihypertensive agents**
   ↓ Arterial spasm to prevent vascular injury to brain, kidneys, and heart
   Diastolic not below 90: placenta needs adequate profusion

3. **Prevent or control seizure activity**
   Magnesium Sulfate infusion

4. **Delivery of fetus**
   Consider GA and delivery route

5. **Postpartum surveillance**
   3-10 day follow-up in provider office (72 hours)

DELIVERY TIMING CONSIDERATIONS

37 weeks – deliver

34 weeks – deliver after maternal stabilization AND

- Antenatal steroids –Betamethasone
- Deliver in 48 hours

Deliver as soon as maternal stabilization with following complications:

- Concerning FHR pattern, poor Doppler studies…
- Abruption
- Pulmonary edema
- Eclampsia –stabilized
- DIC
- Persistent/worsening symptoms

MEDICATIONS FOR SEVERE HYPERTENSION

Treatment of critically elevated BP with either

- IV labetalol
- IV hydralazine
- Oral nifedipine

⃠Oral labetalol onset is slow and peaks at 1-4 hours. Expected to be less effective.

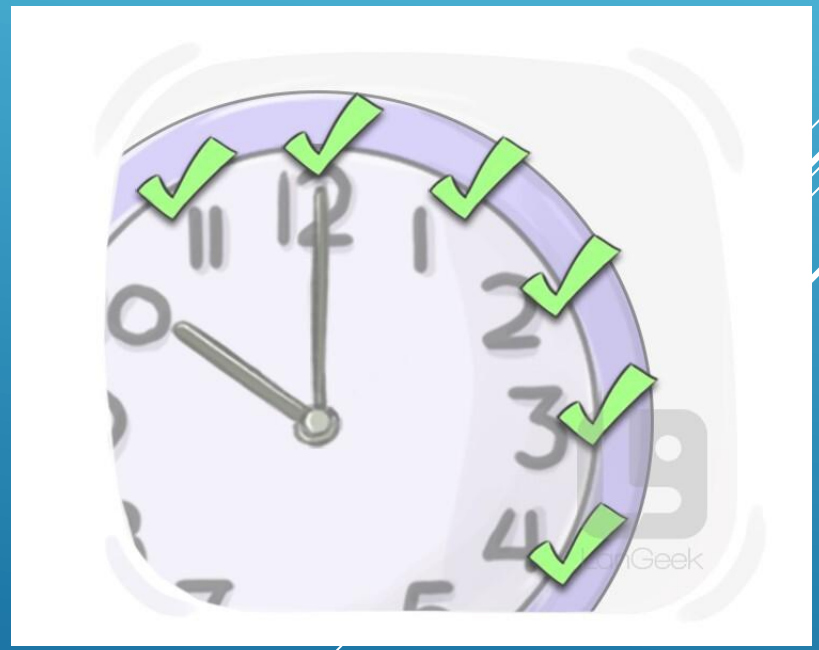
MEDICATIONS FOR TREATMENT OF HTN

	Initial Dose	2nd dose	3rd dose
Labetolol IV Beta Blocker SE: Lower HR, bronchoconstriction Contraindicated in asthma patients	20mg IVP over 2 min Recheck BP in 10 min	40mg IVP over 2 min Recheck BP in 10 min	80mg IVP over 2 min Recheck BP in 10 min
Hydralazine IV Vasodilator SE: Tachycardia, hypotension, flushing, headache	5-10mg IVP over 2 min Recheck BP in 20 min	10mg IVP over 2 min Recheck BP in 20 min	20mg IVP over 2 min Recheck BP in 20 min
Nifedipine PO Calcium Channel Blocker SE: Hypotension, low HR, dizziness	10mg Immediate release capsule PO Recheck BP in 20min	20mg Immediate release capsule PO Recheck BP in 20min	20mg Immediate release capsule PO Recheck BP in 20min

MAGNESIUM SULFATE

- Used for seizure prevention, not HTN!
- Loading dose 4-6 grams over 15-30 min
- Maintenance dose of 1-2 grams per hour
- Typically continued for 24 hours post delivery or post seizure event

- Hourly assessments (at least)
- Urine output
- Respiratory status including RR, lung sounds, and pulse ox
- LOC
- DTRs
- VS



MAGNESIUM TOXICITY

- Therapeutic: 4-8mg/dl
- Loss of DTR's: 9-12mg/dl
- Respiratory arrest/muscle paralysis: 12-18mg/dl
- Cardiac arrest: 25-30mg/dl

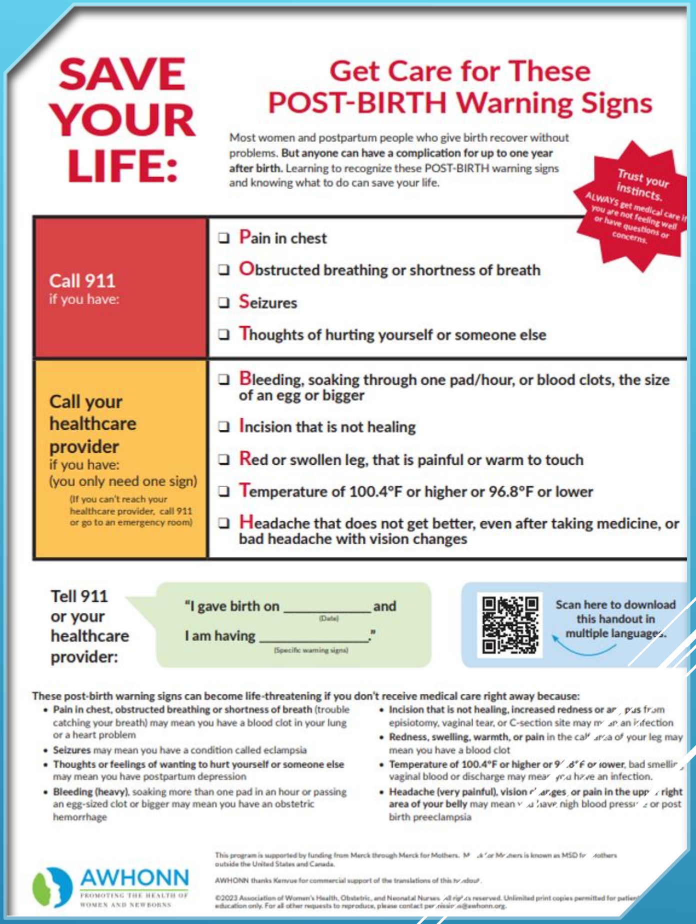
Renal excretion – beware of DM and other renal function.

Calcium
Gluconate 1gram
IVP over 3 minutes

Airway and ventilatory support as needed

O2 and suction set up and ready

- DELIVERY DOES NOT MEAN THE RISK IS GONE!
- Can have complications up to 6 wks postpartum
- Patient education is vital
- Any patient treated for hypertension or preeclampsia **f/u in 3-7 days**
- Teach warning signs to ALL PATIENTS



SAVE YOUR LIFE:

Get Care for These POST-BIRTH Warning Signs

Most women and postpartum people who give birth recover without problems. **But anyone can have a complication for up to one year after birth.** Learning to recognize these POST-BIRTH warning signs and knowing what to do can save your life.

Trust your instincts. ALWAYS get medical care if you are not feeling well or have questions or concerns.

Call 911 if you have:	❑ Pain in chest ❑ Obstructed breathing or shortness of breath ❑ Seizures ❑ Thoughts of hurting yourself or someone else
Call your healthcare provider if you have: (you only need one sign) (If you can't reach your healthcare provider, call 911 or go to an emergency room)	❑ Bleeding, soaking through one pad/hour, or blood clots, the size of an egg or bigger ❑ Incision that is not healing ❑ Red or swollen leg, that is painful or warm to touch ❑ Temperature of 100.4°F or higher or 96.8°F or lower ❑ Headache that does not get better, even after taking medicine, or bad headache with vision changes

Tell 911 or your healthcare provider: "I gave birth on ________ (Date) and I am having ________ (Specific warning signs)."

Scan here to download this handout in multiple languages.

These post-birth warning signs can become life-threatening if you don't receive medical care right away because:

- **Pain in chest, obstructed breathing or shortness of breath** (trouble catching your breath) may mean you have a blood clot in your lung or a heart problem
- **Seizures** may mean you have a condition called eclampsia
- **Thoughts or feelings of wanting to hurt yourself or someone else** may mean you have postpartum depression
- **Bleeding (heavy)**, soaking more than one pad in an hour or passing an egg-sized clot or bigger may mean you have an obstetric hemorrhage
- **Incision that is not healing, increased redness or [illegible] pus from** episiotomy, vaginal tear, or C-section site may [illegible] an infection
- **Redness, swelling, warmth, or pain** in the [illegible] of your leg may mean you have a blood clot
- **Temperature of 100.4°F or higher or [illegible] or lower**, bad smelling vaginal blood or discharge may mean you have an infection.
- **Headache (very painful), vision [illegible], or pain in the [illegible] right area of your belly** may mean [illegible] high blood pressure or post birth preeclampsia

AWHONN PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

This program is supported by funding from Merck through Merck for Mothers. [illegible] is known as MSD for Mothers outside the United States and Canada.

AWHONN thanks Kenvue for commercial support of the translations of this handout.

POSTPARTUM

PROGNOSIS AND LONG TERM EFFECTS OF ECLAMPSIA

Women with severe preeclampsia ↑ risk of developing cardiovascular disease later in life

Hypertension, Ischemic heart disease, stroke, dementia

Many women are not aware of the long-term complications associated with preeclampsia

Preeclampsia with preterm delivery is a strong risk factor for CV disease (AHA)

Conclusion of all is that pregnancy may be a screening test for chronic hypertension and CV disease

LONG TERM MATERNAL OUTCOMES

- Chronic hypertension (4 fold)
- Ischemic heart disease (2 fold)
- Stroke (2 fold)
- Venous thromboembolism (2 fold)
- All-cause mortality (1.5 fold)
- Recurrent preeclampsia

PREVENTION

💊 **Low-Dose Aspirin**

- **Recommended for patients at high risk**
- **81 mg daily**
- Start between **12–28 weeks gestation**
- **Ideally before 16 weeks**
- Continue until delivery (follow your provider's practice and institutional policy)
- **How it works:**
- Improves placental blood flow
- Reduces platelet activation
- Helps support healthy placental development

🚫 **What Doesn't Prevent Preeclampsia?**

- Evidence does **not** support routine use of:
- Bed rest
- Salt restriction
- Routine vitamin C or E supplementation
- Routine calcium supplementation in women with adequate dietary calcium intake (although calcium supplementation may be beneficial in populations with low calcium intake)

CASE STUDY

- 29-year-old G1P0
- 37 weeks
- BP 168/112
- Headache
- Vision changes
- Protein/Creatinine 0.6

- What are your priorities?
- What medications?
- What labs?
- When do you call the provider?

TAKE HOME POINTS

- Severe hypertension is an obstetric emergency.
- Treat severe BP promptly.
- Magnesium prevents seizures—not high blood pressure.
- Delivery is the definitive treatment for preeclampsia.
- Postpartum patients are still at risk.

Thank you

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