Reducing inequities in preeclampsia: From awareness to action

Guidelines, disparities, and strategies for improvement

Prepared for Blue Shield of California
by Kelly O. Elmore, MD, MBA
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Learning objectives

At the completion of the webinar, you will be able to

1. Recall the primary hypertensive disorders of pregnancy and their definitions.
2. Define preeclampsia and list common symptoms.
3. Compare the diagnostic criteria for chronic preeclampsia, gestational hypertension, and preeclampsia.
4. Discuss risk factors of patients who should be considered for low-dose aspirin prophylaxis.
5. Describe adequate preeclampsia education for birthing patients and their families.
6. Develop a list of actions to address racial and ethnic inequities and improve maternal safety.

Kelly O. Elmore, MD

@drkellyomd

Native Chicago/Southern California
Lived: Puerto Rico, Guam, Japan, Jamaica, DC

US Navy Veteran, 26 years
Board Certified OBGYN since 2010

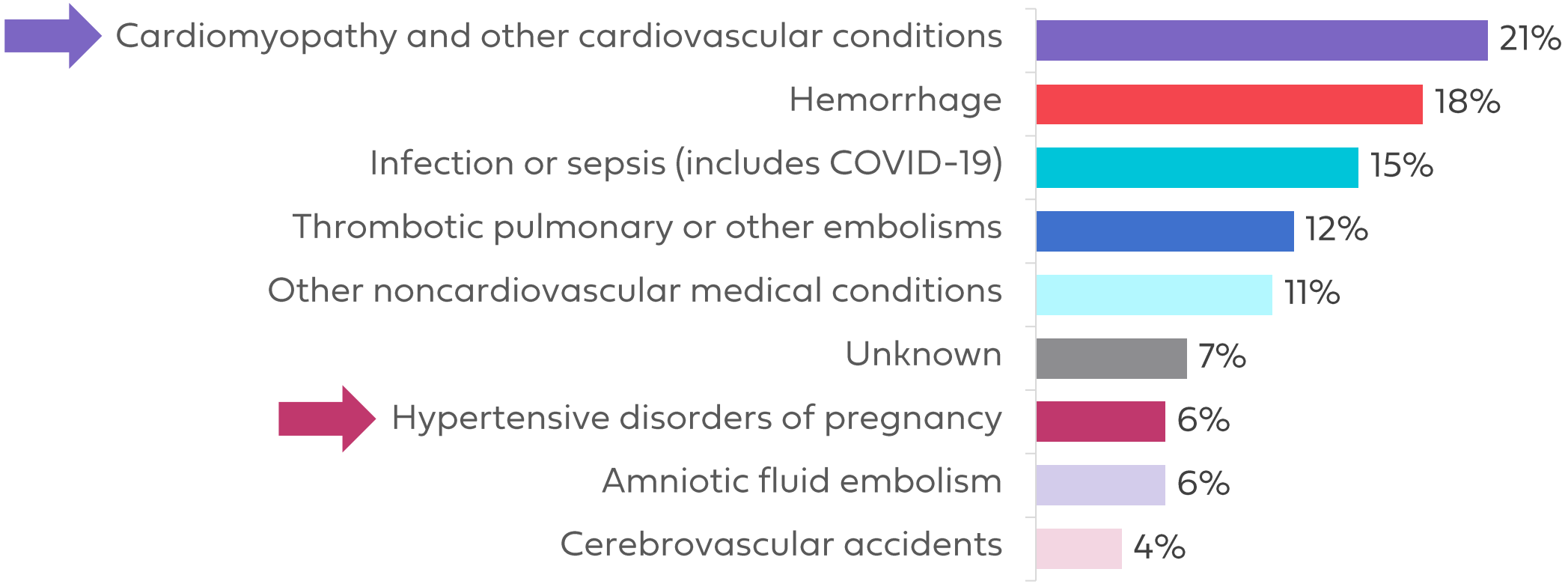
Graduate of:
Xavier University of Louisiana
U of Chicago, Pritzker School of Medicine
Naval Postgraduate School

Department Chair, OBGYN
Director, Healthcare Operations
Chief of Staff NMCSD & WRNMMC (Emeritus)

Board Advisor, San Diego Perinatal Health

Pregnancy-related deaths in California

Percentage by cause, 2020-2022



CA-PMSS Surveillance Report: Pregnancy-Related Deaths in California, 2008-2016. Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Div.. 2024

Cardiovascular disease (CVD): A leading reproductive health issue

CVD is a group of conditions that affect the heart and blood vessels:

- Coronary artery disease
- Stroke
- Heart failure
- Aortic aneurysm
- Peripheral artery disease

Risk factors for CVD

- High BP, high cholesterol
- Obesity
- Diabetes
- Smoking
- Sedentary lifestyle
- High stress levels
- Poor access to preventative care

Statistics

- 60% of Black women over 20 years old have CVD.
- 60% have high BP, but only 2 in 10 control it.
- Only 40% know chest pain can signal a heart attack.
- 33% recognize pain in shoulder, neck, or arms as heart attack sign.

Symptoms

- Chest pain or discomfort (heart attack symptom)
- Shortness of breath, nausea, lightheadedness, or cold sweats
- Extreme fatigue
- Pain in the neck, jaw, back, or arms
- Palpitations or irregular heartbeat
- Edema in legs or feet (early sign of heart failure)

CVD can result from several risk factors including hypertension (high blood pressure).

Diagnostic guidelines: Hypertension

Hypertension (high blood pressure)

Hypertension is:

- A condition where the force of blood against artery walls is consistently too high.
- A **major risk factor** for serious health problems like heart disease and stroke.

Blood pressure is measured in millimeters of mercury (mm Hg).

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

heart.org/bplevels

Accurate blood pressure measurement

Steps

1. Prepare equipment
2. Prepare the patient
3. Take measurement
4. Record measurement

Accurate blood pressure (BP) measurement

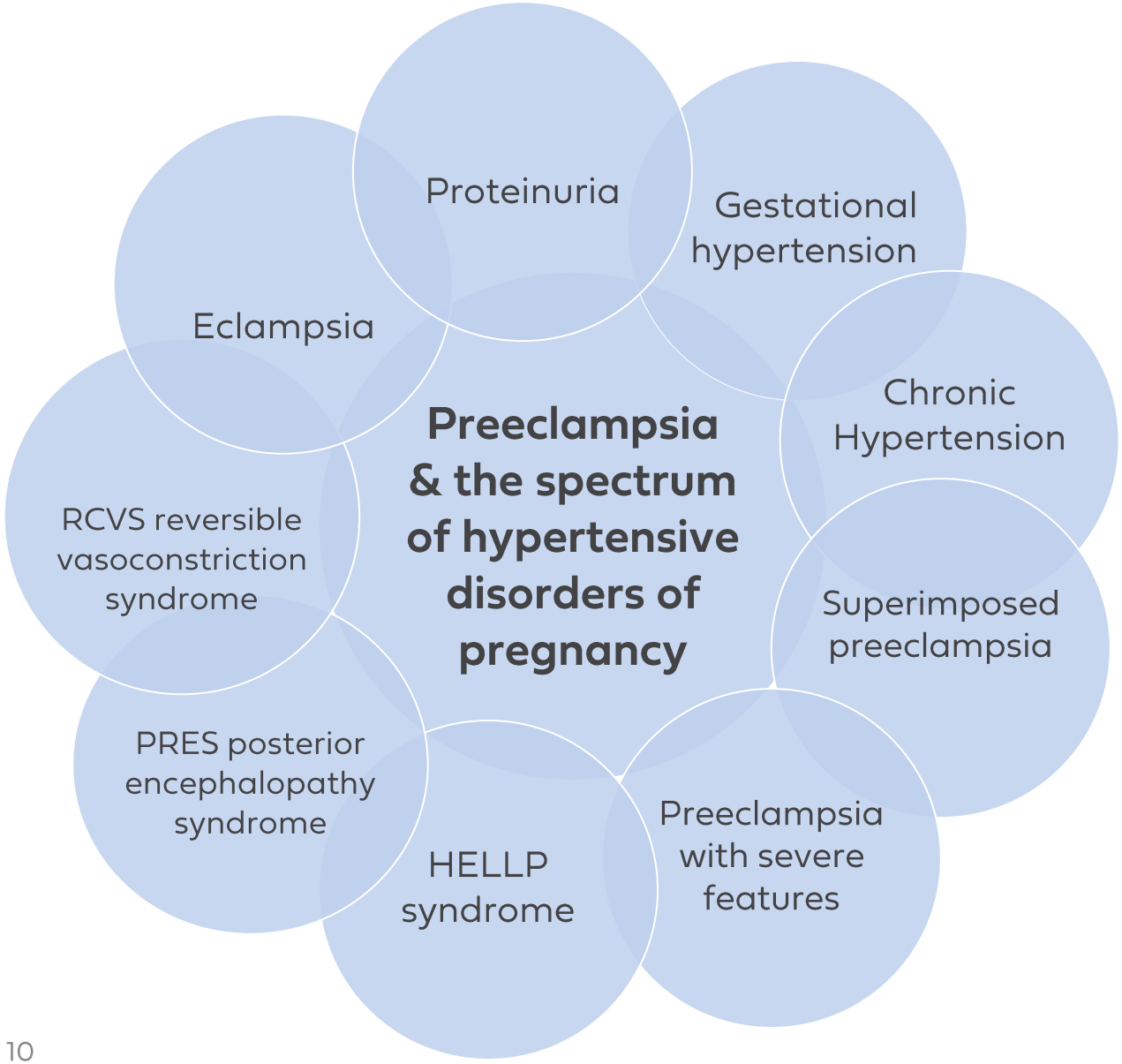
- Guides management decisions to avoid over- or under-treatment that can lead to adverse outcomes
- Is ensured by consistency: same arm, same position, and correct cuff size

➔ A severe-range BP obtained with an automated BP device should be validated with a **repeat blood pressure in 5–15 minutes.**

➔ Evaluate BP **trends vs. isolated values**.

Hypertensive Disorders of Pregnancy (HDPs)

Spectrum of HDPs



Outdated terminology

- Severe or mild preeclampsia
- Toxemia
- Pregnancy-induced hypertension (PIH)
- Atypical preeclampsia

All HDPs increase the birthing person's risk of future vascular disease or cardiomyopathies.

- Martin J, et al. Am J Obstet Gynecol 1999;180:1373–84
- This figure was adapted from the Improving Health Care Response to Preeclampsia: A California Quality Improvement Toolkit, funded by the California Department of Public Health, 2014; supported by Title V funds

Hypertensive Disorders in Pregnancy (HDPs)

Chronic hypertension

- High blood pressure (BP) onset before pregnancy or before 20 weeks of gestation
- OR the use of antihypertensives before pregnancy
- OR the persistence of hypertension more than 12 weeks after delivery.

Gestational hypertension

- High BP that develops after 20 weeks of gestation
- No other signs of preeclampsia such as proteinuria (protein in the urine)

Preeclampsia

- New-onset high BP
- AND signs of organ damage, such as proteinuria or other complications like impaired liver function or low platelet count

Superimposed preeclampsia
Pre-existing chronic hypertension worsens hypertension and other signs of preeclampsia

Eclampsia

- A severe form of preeclampsia causing seizures or coma

BP ≧ 140/90 mm Hg

Hypertensive disorders affect 5 – 10% of birthing people, a 25% increase during the past 2 decades.

What is preeclampsia?
Why focus on preeclampsia?

What is preeclampsia?

Preeclampsia

- Is a Hypertensive Disorder of Pregnancy (HDP).
- Is new-onset **high blood pressure** (140/90 mmHg or higher) AND proteinuria (protein in the urine).
- Usually occurs **after 20 weeks of pregnancy** but it can also occur **within 6 weeks postpartum**.
- Is often related to how the placenta develops, immunological clotting, and blood vessel factors. The exact cause is unknown.
- Can affect both the birthing parent, the baby, and indirectly family/friends.

Common symptoms

- Severe headaches
- Vision changes
- Difficulty breathing
- Upper belly pain
- Nausea or vomiting
- Edema in hands, face, or feet

Preeclampsia's impact by region

Globally

Affects **2–8% of pregnancies** and is a leading cause of maternal and perinatal mortality.

Accounts for 26% of **maternal deaths** in Latin America/Caribbean, 9% in Africa/Asia, and 16% in high-income countries.

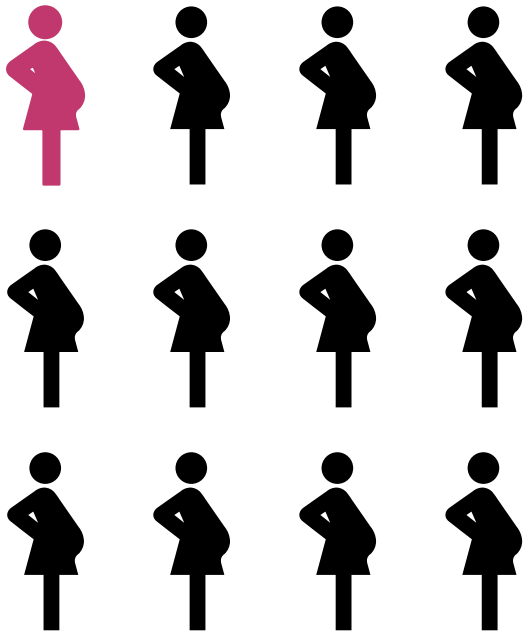
United States

Affects about **1 in 25 pregnancies**.

Increased by 25% from 1987 to 2004. Severe cases rose 6.7 times since 1980.

California

Impacts **1 in 12** pregnant people.



Preeclampsia's disparate impact on Black birthing people

Black birthing people in the U.S

- Have risk 60% higher than for white birthing people
- Three to four times more likely to die from pregnancy-related causes, including preeclampsia, than white women
- 4.6 times more likely to die of pregnancy-related causes than all other races, in California
- 80% of deaths and maternal complications are preventable

In California, the wealthiest Black birthing person is at a higher risk of maternal mortality than the least wealthy white birthing person.

- October 25, 2022, Erica L. Dawson, Population Health Surveillance Branch, Division of Population Health, National Center on Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention; Muin J. Khoury, Office of Genomics and Precision Public Health, Office of Science, Centers for Disease Control and Prevention
- Kennedy-Moulton et.al., (2022, November 1). *Maternal and Infant Health Inequality: New Evidence from Linked Administrative Data.* National Bureau of Economic Research. https://www.nber.org/papers/w30693. Revised September 2023.

Preeclampsia’s fetal and maternal impact

Risks to fetus

- Placental abruption
- Stillbirth
- Poor fetal growth
- Low birth weight
- Preterm birth
- Long-term health issues related to preterm birth (learning disorders, cerebral palsy, epilepsy, deafness, blindness)

Risks to birthing patient

- Stroke
- Eclampsia, characterized by seizures and coma
- Damage to kidneys, liver, brain, and other organ and blood systems
- Heart disease

Broader impacts of preeclampsia

Affects on patient, family, and friends

- Increased prenatal monitoring
- Medications and interventions
- Extended hospital stays
- Intensive care needs
- Surgical birth and complications
- Emergency and crisis response
- Postpartum/NICU/peds follow-up
- Long-term health management
- Increased lifetime risk for heart disease, stroke, and chronic hypertension in the mother
- Mental health, depression, PTSD
- AND their financial impacts: Fees for parking, cafeteria, childcare for children/dependents at home, hospital, co-pays, and loss of pay

Cost of care

A 2012 study estimated the total healthcare cost of preeclampsia in the first year postpartum as:

- $1.03 billion for maternal care
- $1.15 billion for infant care

= $2.18 billion

Stevens et al., AJOG, 2017

Risk factors for preeclampsia

Risk factors for preeclampsia

☑ Pregnancy

- Reproductive technologies, IVF conception
- Nulliparity (first-time pregnancy)
- Multiple gestation (twins, triplets)
- Preeclampsia during a previous pregnancy

☑ Demographics

- Age > 35
- BMI > 30
- Black/African American or Indigenous background
- Family history of preeclampsia

☑ Conditions

- Anti-phospholipid syndrome
- Thrombophilia
- Severe anemia
- Obstructive sleep apnea
- Systemic lupus erythematosus
- **Chronic hypertension**
- **Diabetes or kidney disease**

Black birthing people's higher risk of preeclampsia is influenced by a combination of social and biological factors that include underlying health conditions, access to healthcare, and systemic factors.

Diagnostic guidelines: HDP and preeclampsia

HDP and preeclampsia symptoms

Improve awareness and recognition of the symptoms.

Missed symptoms (not seen)

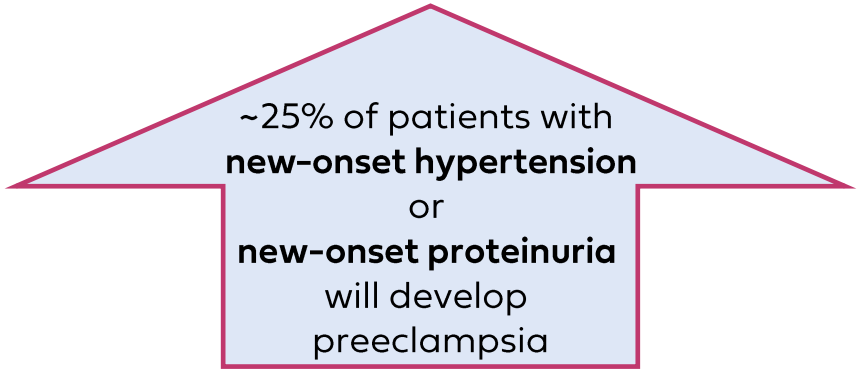
- Headache
- Elevated BP
- Abnormal fetal heart rate tracings
- Blurred vision
- Low oxygen saturation
- Severe, epigastric, or chest pain
- Altered behavior (confusion, combative)
- Tea-colored urine, oliguria
- Bleeding, anemia, coagulopathy
- Cough, wheezing, shortness of breath
- Proteinuria
- Abnormal lab values

Misdiagnosed (as something else)

- Seizure disorder
- Gallstones
- Chronic hypertension
- New onset asthma
- Postpartum psychosis

HDP diagnosis criteria

- **BP** ≥ 140/90 mm Hg on two occasions
- **Proteinuria** ≥ 300 mg in 24-hour urine OR protein/creatinine ratio ≥ 0.3
- **OR signs of organ dysfunction** (liver, kidneys, low platelets)



- Morton CH, et al. Journal of Obstetric, Gynecologic and Neonatal Nursing. https://doi.org/10.1016/j.jogn.2019.02.008
- Isolated proteinuria is a risk factor for pre-eclampsia: a retrospective analysis of the maternal and neonatal outcomes in women presenting with isolated gestational proteinuria.
- Shinar S, Asher-Landsberg J, Schwartz A, Ram-Weiner M, Kupferminc MJ, Many A. J Perinatol. 2016 Jan;36(1):25-9. doi: 10.1038/jp.2015.138. Epub 2015 Oct 29.PMID: 26513453

HDP diagnosis

Chronic hypertension

- BP ≥ 130/80 mm Hg before pregnancy or 20 weeks gestation
- OR use of antihypertensive medication before pregnancy
- OR persistence of hypertension >12 weeks after delivery

Superimposed preeclampsia

- BP ≥ 130/80 mm Hg before pregnancy or 20 weeks gestation
- OR use of antihypertensives before pregnancy
- OR persistence of hypertension >12 weeks after delivery
- And target organ involvement (proteinuria, thrombocytopenia, increased transaminase, renal insufficiency, pulmonary edema, or new-onset headache)

Preeclampsia with severe features

- **BP ≥ 160/110 mm Hg** 2 times, at least 4 hours apart
- Severe headaches or vision disturbances
- Impaired liver or kidney function
- Pulmonary edema
- Low platelet count

➔ **Initiate antihypertensive treatment within the hour if severe BP is confirmed in 15 minutes.**

Preexisting **proteinuria prior to 20 weeks gestation** may suggest chronic renal disease, often associated with longstanding hypertension and/or diabetes, or autoimmune disease.

https://pmc.ncbi.nlm.nih.gov/articles/PMC7720658/#S1

Laboratory evaluation of preeclampsia

- Complete blood count (CBC) with platelet count
- Aspartate aminotransferase (AST)
- Alanine aminotransferase (ALT)
- Lactate Dehydrogenase (LDH)
- Creatinine
- Bilirubin
- Glucose
- Comprehensive metabolic panel (CMP)
- Uric acid (optional)

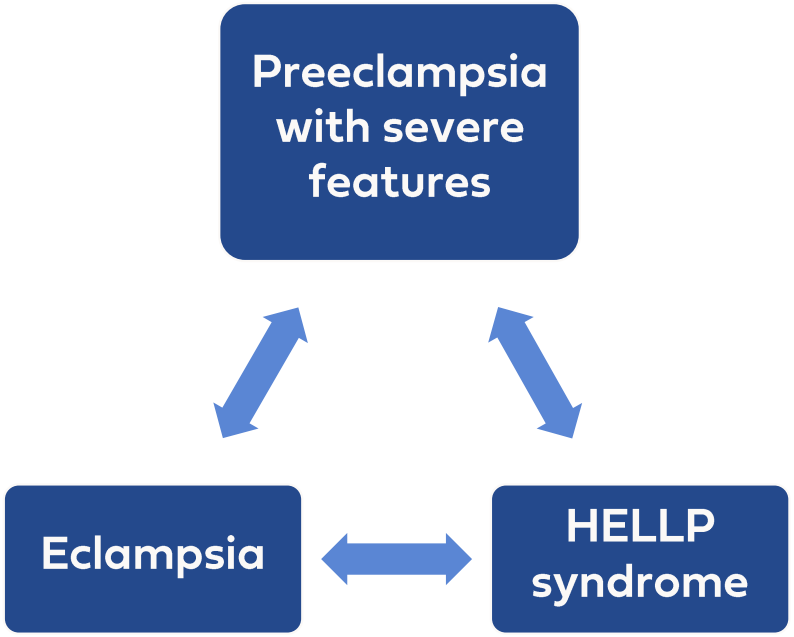
➔ **For patients with acute abdominal pain add: Serum amylase, lipase, and ammonia**

Complications of preeclampsia

Complications of preeclampsia

- Eclampsia (seizures)
- HELLP syndrome
- Organ damage
- Fetal growth restriction
- Preterm birth
- 2-3x rates of cesarean section and readmission to the hospital, which can lead to multiple other complications

The variable spectrum of preeclampsia



Preeclampsia with severe features

develops hepatic and hematologic manifestations

HELLP Syndrome

Hemolysis

Elevated

Liver enzymes

Low

Platelets

HELLP syndrome increases risk of adverse outcomes

HELLP syndrome

- Can lead to severe illness or death in up to 25% of cases if untreated. **Early diagnosis is critical**.
- Usually occurs in the **later stages of pregnancy or soon after childbirth**.
- Can be difficult to diagnose because it **can occur without hypertension or proteinuria**.
- Symptoms **can mimic other conditions** such as gastritis, flu, hepatitis, or gallbladder disease.
- Is developed by **15% of pre-eclamptic patients**.

Increases risk of

- Placental abruption
- Renal failure
- subcapsular hepatic hematoma
- Preterm delivery
- Fetal or maternal death
- Recurrent preeclampsia

Management guidelines: HDP and preeclampsia

Guidelines for HDP management-

1. Recognize symptoms and diagnose HDP
2. Blood pressure control (**nifedipine, hydralazine, labetalol**)
3. Seizure prevention (**magnesium sulfate**)
4. Delivery
   - 34 weeks – **preeclampsia with severe features**
   - 37 weeks – **preeclampsia without severe features or gestational hypertension**
5. Postpartum surveillance

Postpartum preeclampsia

- Surveillance for **continued or new-onset HDP** in the postpartum period is important.
- Recent evidence indicates that HDP are associated with **long-term cardiovascular health risks** that should be discussed with the patient.

➔ Provide **patient education** for early detection of HDP **during and after** pregnancy for *all* birthing people.

➔ Provide early **post-discharge follow-up within 2 & 7 days of discharge** for every patient diagnosed with HDP.

Hypertensive emergency in pregnancy/postpartum

Applies to all forms of HDP:
Chronic, gestational, and preeclampsia with or without severe features

Systolic	Diastolic	Action
≥ 160	≥ 110	Repeat BP within 15 minutes. If BP remains within severe-range, treat within 30-60 minutes (ideally ASAP).

ACOG Practice Bulletin #222, June 2020

DO NOT WAIT TO TREAT THE HYPERTENSIVE EMERGENCY

Patient education

Patient education: Preeclampsia risks, signs, tests, and treatment

Use plain language to educate patients and their support system that:

- Preeclampsia is a high BP condition that can strike fast during or after pregnancy. Catching it early can prevent organ damage and even death.
- Every prenatal and postpartum visit includes important tests for preeclampsia. Tests may include: BP, urine, weight, blood, and ultrasounds.
- Preeclampsia warning signs may include: Swelling (especially the face/hands), weight gain of 5+ pounds in a week, severe headache, vision changes, nausea/vomiting (not morning sickness), upper right belly or chest pain, trouble breathing/panting, mental confusion, and tea-colored urine.
- Patients and their families should know the symptoms and seek medical care right away if any appear.
- Black birthing people are at higher risk for preeclampsia. Chronic high BP, diabetes, and other health issues can also increase the risk.
- Low-dose aspirin may be prescribed to reduce risk of preeclampsia.

https://www.preeclampsia.org

Low-dose aspirin (81 mg)

Consider for low-dose aspirin for pregnant patients with:

High risk of preeclampsia and one or more of these factors

- History of preeclampsia, especially with an adverse outcome
- Multifetal gestation
- Chronic hypertension
- Pregestational type 1 or 2 diabetes
- Kidney disease
- Autoimmune disease (systemic lupus erythematous, antiphospholipid syndrome)
- Combinations of multiple moderate-risk factors

More than one of these moderate risk factors

- Nulliparity
- Obesity (body mass index > 30)
- Family history of preeclampsia (mother or sister)
- Black race (proxy for underlying racism)
- Lower income
- Age 35 years or older
- Pregnancy history factors (low birth weight, small for gestational age, previous adverse outcome, >10-year pregnancy interval)
- In vitro fertilization

Low-dose aspirin guidance

➔ Low-dose aspirin prophylaxis should be considered for women with more than one moderate risk factor for preeclampsia.

➔ Recommended when risk of preeclampsia is moderate to high.

➔ Start between 12 and 28 weeks, daily until delivery.

Patient education: Prenatal education and labor preparation

- Help patients share their stories
- Distribute culturally appropriate **prenatal education materials** on hypertensive disorders of pregnancy progression, pain management, and VBAC options.
- Offer **prenatal classes in Black communities**, focusing on advocacy skills and informed decision-making during labor.
- Implement **group prenatal care models** (e.g., Centering Pregnancy™) to increase patient engagement and birth preparedness.
- Utilize **digital health tools** (e.g., mobile apps, remote patient monitoring, telehealth coaching) to provide on-demand education and support.
- Conduct prenatal **birth preference discussions** between patients and providers, ensuring alignment with evidence-based recommendations.

Recommendations for healthcare stakeholders

The Joint Commission's Maternal Safety Guidelines for hospitals

To reduce the likelihood of harm related to maternal severe hypertension/preeclampsia:

- Develop written, evidence-based procedures for measuring and remeasuring blood pressure.
- Develop written, evidenced-based procedures for managing pregnant and postpartum patients with severe hypertension/preeclampsia. *The ED is often where patients with symptoms or signs of severe hypertension present for care after delivery. For this reason, education should be provided to staff and providers in EDs regardless of the hospital's ability to provide labor and delivery services.*
- Provide role-specific education to all staff and providers who treat pregnant/postpartum patients about the hospital's evidence-based severe hypertension/preeclampsia procedure.
- Conduct drills at least quarterly to determine system issues as part of ongoing quality improvement efforts.
- Review severe hypertension/preeclampsia cases that meet criteria established by the hospital.
- Provide printed education to patients.

Actionable systemic and equity-focused interventions

2025: Bite-sized next steps

- Add morbidity/mortality to data reporting with details on race/ethnicity. (QI Team)
- Use data-driven approaches to identify gaps and monitor progress. (Perinatal team, Community Orgs)
- Identify best of the best and the low performing hospitals/providers/care teams. (Hospital Admin)
- Align efforts with evidence-based guidelines and best practices of CMQCC, ACOG, SMFM, AWOHNN, WHO, CDC. (QI & Perinatal Team)
- Strengthen partnerships across health care systems and provider networks, and non-healthcare organizations (the bump, moms4kira). (All levels)

Top 9 actions by 2026 for reducing racial and ethnic inequities in health care

(Recommended by ACOG's Committee on Advancing Equity in Obstetric and Gynecologic Health Care)

1. Commit to lifelong learning.
2. Standardize race and ethnicity data collection.
3. Engage marginalized communities.
4. Provide culturally-humble, historically-informed care.
5. Foster an anti-racist culture.
6. Acknowledge and address harm.
7. Support the recruitment and advancement of underrepresented racial and ethnic health care professionals.
8. Promote research on structural barriers to care and develop effective, community-informed solutions.
9. Advocate for policy changes addressing systemic racism, social drivers of health, and reproductive justice.

ACOG Committee Statement No. 10: Racial and Ethnic Inequities in Obstetrics and Gynecology. (2024). *Obstetrics and gynecology*, *144*(3), e62–e74. https://doi.org/10.1097/AOG.0000000000005678

Resources

Resources

- American College of Obstetricians and Gynecologists (ACOG)
- Black Mamas Matter Alliance
- Blue Shield of California Maternity Program – for providers
- Blue Shield of California Maternity Program – for members
- California Department of Public Health - Black Infant Health
- California Maternal Quality Care Collaborative (CMQCC)
- CDC – Hear Her Campaign
- Every Mother Counts
- March of Dimes – Black Maternal Health Resources
- Preeclampsia Foundation
- 4Kira4Moms - Getting Dads involved