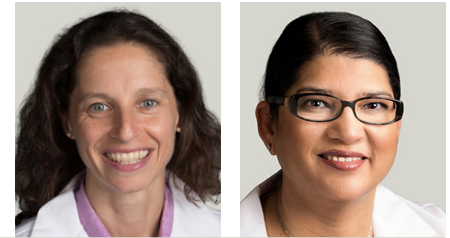


BRIEFINGS FROM MATERNAL-FETAL MEDICINE SPECIALISTS

Long-Term Cardiovascular Risks in Patients with Preeclampsia

by **Tamar Polonsky, MD**, Associate Professor of Medicine, Director, Preventive Cardiology and **Sarosh Rana, MD, MPH**, Professor of Obstetrics and Gynecology, Chief, Section of Maternal-Fetal Medicine



Preeclampsia was long regarded as a temporary obstetrical condition with implications limited to pregnancy. Today, it is well recognized that women with a prior diagnosis of preeclampsia have an increased risk of developing cardiovascular disease compared to women with normotensive pregnancies. This risk is even higher among African American women who are at increased risk for complications from preeclampsia and hypertension during pregnancy and postpartum. Thus, the occurrence of preeclampsia is an early opportunity to intervene with steps aimed to prevent or delay cardiovascular events and disease.

Understanding Preeclampsia

Preeclampsia is universally defined as new onset hypertension and end-organ damage after 20 weeks of gestation. It usually resolves around three months postpartum. It is critical to know that preeclampsia can develop for the first time intrapartum *or* postpartum.

RISK FACTORS

At the first prenatal visit, all women should be assessed for the risk factors for developing preeclampsia. Patients with a history of the risk factors listed below should receive education and hypertension screening during pregnancy and postpartum:

- » Chronic hypertension
- » Kidney disease
- » Diabetes mellitus
- » Obesity (BMI over 30)
- » Sociodemographic characteristics (African American/Black race, low socioeconomic status)
- » Multifetal gestation
- » Nulliparity
- » Obstructive sleep apnea
- » Autoimmune disease
- » Maternal age over 35
- » Assisted reproductive technologies

DIAGNOSTIC CRITERIA

Must be present:

- » Hypertension
 - SBP \geq 140 mm Hg or DBP \geq 90 mm Hg on 2 occasions at least 4 hours apart after 20 weeks' gestation in a woman with previously normal BP, OR
 - SBP \geq 160 mm Hg or DBP \geq 110 mm Hg on 1 occasion

Plus, one or more of the following:

- » Proteinuria
 - \geq 300 mg per 24-h urine collection (or extrapolated from timed collection), OR
 - Protein/creatinine ratio of \geq 0.3 mg/dl, OR
 - Dipstick reading of 2+ (used only when other methods not available)
- » Thrombocytopenia
 - Platelet count $<$ 100,000/mm³
- » Renal insufficiency
 - Serum creatinine concentration

$>$ 1.1 mg/dl or a doubling of serum creatinine concentration in the absence of other renal disease

- » Impaired liver function
 - Elevated concentration of liver transaminases to two times normal
- » Severe, persistent, right-upper quadrant or epigastric pain unresponsive to medication
- » Pulmonary edema
 - Diagnosed by physical examination or chest x-ray
- » Neurological signs
 - New-onset headache unresponsive to medication and not accounted for by alternative diagnoses or visual symptoms
- » Fetal growth restriction
 - Estimated fetal weight $<$ 10th percentile

Treatment

The only definitive treatment for preeclampsia is delivery. Daily aspirin is recommended for high-risk women (see risk factors above) after 12 weeks gestation to reduce their risk of preeclampsia. Preeclampsia management also includes treating severe hypertension, preventing seizures with parenteral magnesium sulfate, steroids for fetal lung maturity and fetal optimization with timely and safe delivery and close clinical monitoring. Transthoracic echocardiography may be indicated for patients with a hypertensive disorder of pregnancy.

Preeclampsia & Future Cardiovascular Risk

Women who had a pregnancy with preeclampsia have an increased risk of developing chronic hypertension, renal disease, diabetes, high cholesterol, cerebrovascular, and cardiovascular diseases. Patients with history of severe preeclampsia and preterm delivery are even at greater risk of cardiovascular disease later in life.

While it is still unknown whether the cardiovascular risk is caused by preeclampsia or if the individual was already predisposed to developing cardiac issues, these risks often begin to emerge in the years following a complicated pregnancy.

The American Heart Association advises that all women with a history of hypertensive disorders of pregnancy be referred to a cardiologist for an assessment and modification of cardiovascular risk factors.

Who Should be Referred for Consultation & Management?

Patients who meet one or more of the below criteria should be referred to a maternal-fetal medicine specialist and/or cardiologist:

- » Newly pregnant with pre-existing chronic hypertension
- » Gestational hypertension or preeclampsia
- » Abnormal postpartum blood pressure

At the Forefront of Treating & Managing Preeclampsia and Long-Term CVD Risk

For women seen in the cardiology clinic they undergo a comprehensive cardiovascular risk assessment, which includes discussion of factors such as family history. Additional cardiovascular risk factors are assessed, including a lipid panel and hemoglobin A1c. For women who still require antihypertensive medication we continue managing their blood pressure, and try to wean the medications when appropriate. We perform extensive counseling about lifestyle modification, and all women are encouraged to meet with our dietitian. The clinic pays particular focus on helping women maintain a healthy lifestyle while balancing their other responsibilities.

The University of Chicago Maternal-Fetal Medicine team has extensive experience in treating patients with [hypertensive disorders in pregnancy](#), including preeclampsia and eclampsia. Patients with an elevated risk for developing preeclampsia and other hypertensive disorders should receive comprehensive care with maternal-fetal medicine specialists and cardiologists. We have established several programs for timely and coordinated care for these patients, including the new [UChicago Medicine Postpartum Telehealth and Remote Patient Monitoring Program](#). The telehealth program enables patients to use an [app for monitoring blood pressures at home](#), with continuous surveillance by doctors and nurses during the postpartum period to prevent any possible problems. Every patient who delivers at UChicago Medicine with hypertension in pregnancy is automatically enrolled in the program, which is a standard of care for managing postpartum hypertension at our institution. We have enrolled over 4500 patients since 2019 and the program recently received a [Phase I and Phase II Department of Health and Human Services Hypertension Innovator Award](#). Patients are seen in the postpartum hypertension clinics for up to 6 weeks, after which patients are referred to cardiology or primary care for continued care and risk-reduction.

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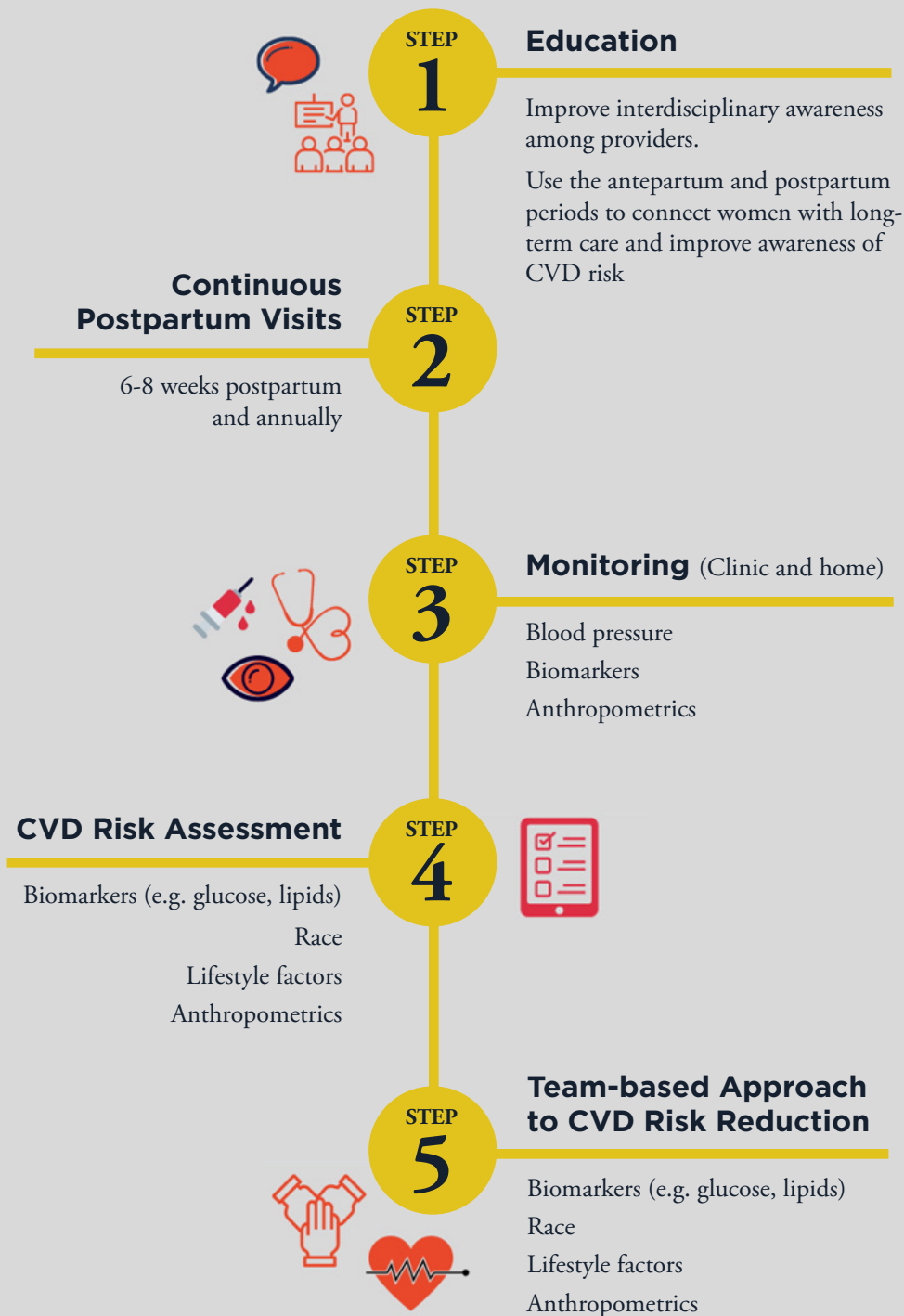
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STRATEGIES FOR CARDIOVASCULAR DISEASE (CVD) RISK REDUCTION FOLLOWING HYPERTENSIVE DISORDERS OF PREGNANCY

Suggested strategies include a multi-disciplinary team-based approach for early identification of CVD risk factors, consistent monitoring, and education. Abbreviations: CVD = cardiovascular disease, HDP = hypertensive disorders of pregnancy, NP = nurse practitioner, Ob-gyn = obstetrician-gynecologist.

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CVD Risk Management After HDP



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Locations

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Comer Children's Hospital
5721 S. Maryland Ave., 3rd Floor

University of Chicago Medicine
Duchossois Center for Advanced Medicine (DCAM)
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Dearborn Station
UChicago Medicine
Dearborn Station
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Orland Park
University of Chicago Medicine
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14290 S. La Grange Road
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River East
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