

BRIEFINGS FROM WOMEN'S HEALTH EXPERTS

Postpartum Telehealth and Remote Patient Monitoring for Preeclampsia

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Maternal mortality is rising in the United States

The most common cause of pregnancy-related death is cardiovascular conditions followed by preexisting illnesses, infection, bleeding and cardiomyopathy.⁽¹⁾ Hypertensive disorders of pregnancy (HDP) affect about 10% to 20% of pregnant individuals in the United States, with preeclampsia being the leading and most common cause of maternal and fetal morbidity and mortality.⁽²⁾ More importantly, these women are at an increased risk for long-term adverse health outcomes, such as cardiovascular disease, hypertension, myocardial infarction, congestive heart failure, cerebrovascular events (stroke), peripheral arterial disease and cardiovascular mortality.^(3, 4)

Signs and symptoms of preeclampsia

Preeclampsia is a condition that usually occurs after 20 weeks of pregnancy up until six weeks postpartum. It is characterized by an elevated blood pressure greater than 140/90 with proteinuria and/or signs of end-organ damage.⁽²⁾ Preeclampsia can be associated with lab abnormalities, including thrombocytopenia, elevated creatinine, and elevated liver enzymes.

Additional signs and symptoms:

- » Intractable headache
- » Vision changes
- » Shortness of breath (a symptom of pulmonary edema)
- » Right upper quadrant pain (concern for liver capsule swelling/hematoma)
- » Swelling of the face and hands

Who is at risk for preeclampsia?

Any pregnant woman can develop preeclampsia, but there are certain risk factors that increase an individual's likelihood of developing this disease.⁽²⁾

- » Being younger than 18 or older than 40
- » Black race (including African American or of African descent)
- » Obesity
- » Preexisting hypertension, diabetes, or kidney disease
- » Organ transplant
- » First pregnancy
- » Previous history of preeclampsia
- » Multiple gestation (such as twins)

What is postpartum preeclampsia?

Postpartum preeclampsia is when preeclampsia develops in the postpartum period. It can occur up to six weeks after delivery, even in individuals without hypertension before delivery. Up to 50% of patients with antepartum hypertension can have postpartum hypertension. Hypertension is a leading cause of postpartum readmissions, especially within the first seven days postpartum.

While blood pressure control in the postpartum period is associated with reduced cardiovascular disease among patients, follow-up compliance is poor. A 2008 American College of Obstetricians and Gynecologists (ACOG) Practice Bulletin suggested that up to 70% of women will not attend a postpartum visit.⁽⁵⁾ This gap in healthcare delivery exacerbates racial disparities, as Black women have an even lower likelihood of attending a postpartum follow-up visit than white women.⁽⁶⁾ Given the high morbidity associated with postpartum hypertension, ACOG recommends treating the postpartum period as the "fourth trimester" of pregnancy.⁽⁷⁾

Management of postpartum hypertension at UChicago Medicine

Although facility-level interventions are being developed for managing hypertension during pregnancy, no standardized interventions exist to address hypertension during the postpartum period.⁽⁸⁾ Controlling blood pressure after the individual gives birth and encouraging regular postpartum follow-up visits with physicians can mitigate morbidity and mortality risks.

At the University of Chicago Medicine, we established a systematic, hospital-wide, bundled quality initiative for women with HDP called STAMPP-HTN (Systematic Treatment And Management of Postpartum Hypertension). This quality improvement initiative consists of several clinical interventions such as healthcare professional and patient education, a dedicated nurse educator, and protocols for postpartum hypertension care in the inpatient, outpatient and readmission settings. This bundled initiative is proven to increase women's adherence to postpartum hypertension visits, improve postpartum blood pressure control,⁽⁹⁾ and eliminate racial disparities in postpartum hypertension follow-up adherence.⁽¹⁰⁾

Remote Patient Monitoring and Postpartum Telehealth Program

In July 2021, RPM was added to extend the existing STAMPP-HTN program. [The Remote Patient Monitoring \(RPM\) and Postpartum Telehealth Program](#) combines at-home blood pressure monitoring with telematics data transmission of readings to the care provider, with real-time feedback on patient status. Home blood pressure telemonitoring interventions are widely accepted by patients and help improve their quality of life. A recent study at a single hospital revealed that telehealth with remote blood pressure monitoring during the postpartum period reduced the number of readmissions and showed early identification and treatment of uncontrolled hypertension.⁽¹¹⁾

How are patients enrolled in the RPM program?

Patients with HDP are enrolled in the RPM program during their delivery admission. Patients download a [mobile application](#) to their phone that pairs with a blood pressure monitor that automatically transmits readings to their electronic health record. A dedicated clinical team reviews the blood pressure readings and has preestablished escalation protocols for severely elevated blood pressures and signs or symptoms of preeclampsia that require further management.

Who can be enrolled?

Any patient with a hypertensive disorder of pregnancy who delivers at UChicago Medicine can be enrolled in this program. This includes patients with:

- » Chronic hypertension
- » Gestational hypertension
- » Preeclampsia with or without severe features
- » Superimposed preeclampsia with or without severe features
- » HELLP syndrome
- » Eclampsia

What can you and your patient expect?

Prior to discharge, patients can expect a nurse educator to review postpartum hypertension care and education on how to monitor their blood pressure at home.

Patients will receive a blood pressure monitor, educational materials (*see supplementary materials on pages 3 and 4*), and a medical alert bracelet at the bedside. Patients can expect calls from the care team with any severe elevations in blood pressure or symptoms with the next steps for care.

By participating in this program, patients can play a more active role in their postpartum care. They learn to recognize the early signs of preeclampsia, understand how to monitor their blood pressure at home and have close communication with their clinical team via telehealth visits.

Coordinated care for patients with postpartum hypertension by expert maternal-fetal medicine physicians

The telemonitoring of postpartum blood pressure is now a standard of care at the University of Chicago Medicine. All women who deliver at our Family Birth Center with any hypertensive disorder of pregnancy are enrolled in the STAMPP-HTN/RPM program. They receive comprehensive support and detailed plans for the management of their postpartum hypertension with our team of maternal-fetal medicine specialists. In addition, we equip patients with preeclampsia with education and symptom surveys to improve their health literacy about preeclampsia and self-symptom management. At UChicago Medicine's STAMPP-HTN/RPM Program, our goal is to ensure a healthy and safe fourth trimester for women with hypertensive disorders of pregnancy.

Supplementary Material

You are **STILL AT RISK** **after** your baby is born!

Postpartum Preeclampsia

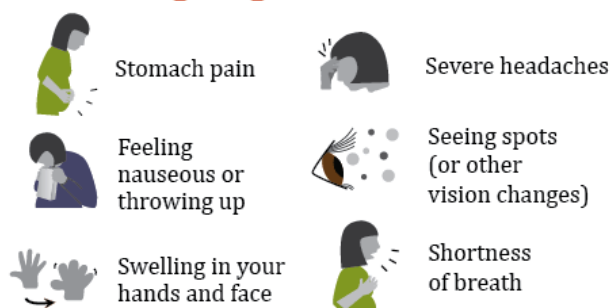
What is it?

Postpartum preeclampsia is a serious disease related to high blood pressure. It can happen to any woman who has just had a baby **up to 6 weeks after the baby is born.**

Risks to You

- Seizures
- Organ damage
- Stroke
- Death

Warning Signs



What can you do?

- Ask if you should follow up with your doctor within one week of discharge.
- Keep all follow-up appointments.
- Watch for warning signs. If you notice any, call your doctor. (If you can't reach your doctor, call 911 or go directly to an emergency room and report you have been pregnant.)
- Trust your instincts.

For more information, go to www.stillatrisk.org



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Postpartum preeclampsia is high blood pressure or hypertension. It can develop after the baby is born, often between 48 hours and 6 weeks after delivery. It can happen whether or not a person had high blood pressure or preeclampsia during pregnancy. Postpartum preeclampsia is serious. If not treated quickly it may result in death.

- A headache that will not go away
- Visual changes (see spots or flashing lights)
- Breathlessness (difficulty breathing)
- Swelling of the face, legs, or hands
- Sudden weight gain
- Epigastric pain: pain right below your ribs in the area of your upper abdomen.
- “Just not feeling right”. Being worried or nervous for no reason.

- Seizures
- Stroke
- Organ Damage
- Death

Your 1 week preeclampsia **Follow-Up Appointment** is on:

1. _____ 3. _____
2. _____ 4. _____

- Take at least 2 readings a day: One in the morning before taking your medication and one in the evening. Record all results.
- Take your blood pressure monitor to your 1 week clinic appointment. The doctor will review your stored blood pressures in your blood pressure monitor.

	Systolic BP (top number)		Diastolic BP (bottom number)
Normal	Less than 140	and	Less than 90
Hypertension	140 to 160	or	90 to 110
Hypertension Crisis	More than 160	or	More than 110

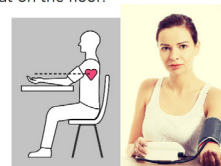
- For a medical emergency call 911.
- If your blood pressure top number is 160 or greater or the bottom number is 110 or greater, call your doctor right away and go to Labor and Delivery.
- **Call the Postpartum Hypertension Clinic (773) 702-6118.** Duchossois Center for Advanced Medicine (DCAM 3H) 5758 South Maryland Ave, Chicago, IL 60637

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Your Name: _____

- Do not smoke, exercise, drink caffeine or alcohol for 30 minutes before taking blood pressure.
- Use the restroom before sitting down to take your blood pressure.
- Sit at a table, in a chair with a back and keep your feet flat on the floor.
- Rest in a chair for at least 5 minutes before taking your blood pressure.
- Do not talk, read or listen to music while you are taking your blood pressure. Relax and stay still.
- Keep legs uncrossed and feet flat on the floor.
- Take your blood pressure and record the values below.

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(page 4 of 5)

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To schedule a patient referral or consultation, e-mail us at **womenshealth@uchospitals.edu** or call **773-702-6118**

Urgent appointments are also available.

UChicagoMedicine.org/Womens-Health



We see patients at multiple locations throughout the Chicagoland and NW Indiana area.
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