

# Hypertensive disorders of pregnancy may increase women's risk for blood clots later in life

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South Carolina received a poor report card from the March of Dimes in 2023 because more of its mothers die due to pregnancy-related complications or childbirth than the national average. For every 100,000

births, there are 32.7 maternal deaths in South Carolina, versus 23.5 that occur in the nation.

Rates may be higher in part because of disorders related to [high blood pressure](#) during pregnancy, or hypertensive disorders of pregnancy (HDP), which disproportionately affect the state's older mothers and mothers of racial and ethnic minority groups. HDP is known for raising the risk of preterm birth and poor infant and maternal outcomes and increasing the mother's risk of severe complications or even death in the weeks after birth.

A recent MUSC study has shown that HDP may affect the health of mothers not only during pregnancy and the postnatal period but also for many years after they give birth. The study's findings are [reported](#) in the *International Journal of Environmental Research and Public Health*.

A research team led by MUSC researchers Angela Malek, Ph.D., and Kelly Hunt, Ph.D., both of the Department of Public Health Sciences, examined the risk of fatal and non-fatal cardiovascular complications for these women one, five and up to 14 years after delivery. Specifically, they looked at [venous thromboembolism](#) (VTE), which is a condition that occurs when a blood clot forms in a vein and blocks blood flow. The researchers also examined whether the risk for VTE differed by race and ethnicity.

HDP includes gestational hypertension, preeclampsia and eclampsia. Gestational hypertension is a component of preeclampsia. Preeclampsia is characterized by symptoms such as [water retention](#), elevated blood pressure, swelling of the hands or feet, severe headaches and the presence of protein in the urine. If unmanaged, this condition can lead to eclampsia, which is a severe condition that can result in convulsive seizures or coma.

During pregnancy, more blood is pumped through the body to meet the needs of the developing baby. The increased blood flow results in added pressure on the blood vessels, increasing the likelihood of VTE during and in the weeks after pregnancy. However, the long-term consequences of HDP on mothers' risk of VTE are not well understood. The MUSC study is helping to shed some light on this issue.

VTE includes [deep vein thrombosis](#), which occurs when a blood clot forms deep in a vein, usually in the lower leg, thigh or pelvis, and pulmonary embolism, which occurs when a clot breaks loose and travels through the bloodstream and into the lungs.

The MUSC study, which examined hospital discharge and Emergency Department visit records of nearly a half million South Carolinian women, is one of the first to look at the long-term effects of HDP on the health of the mother instead of focusing just on the weeks after birth in a diverse study population. Compared with women without HDP, women with HDP had more fatal and non-fatal VTE events within one and five years of delivery.

Roughly six in 10 study participants were non-Hispanic white, three in 10 were non-Hispanic Black, and one in 10 were Hispanic, making it possible for the researchers to compare racial and ethnic differences. Non-Hispanic Black women were more likely to have pre-pregnancy hypertension, HDP or both conditions than non-Hispanic white women. They also had higher rates of VTE within one, five and up to 14 years of delivery.

The study's findings suggest that HDP are serious pregnancy complications that can have long-term effects on the mother's cardiovascular health.

Although mothers with HDP are currently monitored for VTE and other

cardiovascular problems in the weeks after birth by their obstetricians, the monitoring typically does not continue as their care is transferred back to their primary care providers. In light of this study's findings, it will be important that primary care providers monitor mothers with HDP long-term.

"The coordination of care in this area and an awareness of the need to monitor for long-term cardiovascular effects after HDP could potentially improve women's outcomes," said Hunt.

**More information:** Angela M. Malek et al, Hypertensive Disorders of Pregnancy and Pre-Pregnancy Hypertension with Subsequent Incident Venous Thromboembolic Events, *International Journal of Environmental Research and Public Health* (2024). [DOI: 10.3390/ijerph21010089](https://doi.org/10.3390/ijerph21010089)

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