

How common is stroke during and after pregnancy?

Pregnancy-related stroke is a rare but serious event. Estimates of how often it occurs range widely, from as many as 1 in 3000 to as few as 1 in 30,000 pregnancies.¹⁻³ Overall, stroke risk appears to increase 2.5-fold during and after pregnancy.

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While the risk of stroke is higher than normal throughout pregnancy, approximately 90% of pregnancy-related strokes happen during birth or in the 6 weeks after the baby is born. For blocked-vessel (ischemic) stroke, one study found that stroke risk was not increased during pregnancy, but was 8.7 times higher than normal in the 6 weeks after the baby was born. For a type of bleeding stroke called an *intracerebral hemorrhage*, the risk was 2 to 3 times higher than normal during pregnancy, but 28 times higher in the 6 weeks following delivery.

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Why is stroke risk greater during and after pregnancy?

Pregnancy and the period after giving birth is a time of extreme changes in a woman's body. During pregnancy, the volume of blood in the body increases to supply nutrients to the growing fetus. The chemical makeup of the blood and the blood vessels also change, including increased levels of female hormones. The 6 weeks after giving birth also place a lot of stress on the body as these dramatic changes are reversed and a woman's body returns to its normal state.

While the details of exactly how these changes cause stroke and other pregnancy-related problems is unknown in many cases, it is clear that the overall effect is to make women more likely to develop blood clots during pregnancy, which can become lodged in a vessel in the brain and cause a blocked-vessel stroke. Some of the danger may be due to the high levels of estrogen and other female hormones—from studies of the effects of the hormones in [birth control pills](#), we know that high estrogen levels increase the chances of stroke.

Changes in blood volume and makeup during pregnancy put women at risk for several disorders of high blood pressure, occurring in up to 10% of pregnancies. [High blood pressure](#) is a risk factor for stroke, and high blood pressure during pregnancy increases the risk of blocked blood vessels and bleeding, both of which can cause a stroke. High blood pressure during pregnancy can lead to preeclampsia, a strong risk factor for pregnancy-related stroke.

A significant number of strokes during pregnancy (as many as one-third in one study) may be caused by blood vessel defects called *arteriovenous malformations* (AVM) that have been present since birth. AVMs are essentially small areas of tangled arteries and veins that are not connected normally and are very fragile. These might not have caused any problems before, but the heavy burden placed on the body during pregnancy can cause them to rupture, resulting in a bleeding stroke. ⁵

What is preeclampsia?

Preeclampsia (“toxemia of pregnancy”) is a very serious high blood pressure condition that occurs in about 5% of pregnancies. It can develop any time after the 20th week of pregnancy, usually closer to term, and can cause seizures (called *eclampsia*) if left untreated. Preeclampsia can cause strokes late in pregnancy and after birth.

It is not known exactly what causes preeclampsia, but it is thought to have a genetic component: a family history of preeclampsia triples a woman's risk of having it.⁶ It is also thought that heart disease and preeclampsia share common genetic factors—having a family history of heart disease or stroke also triples the risk of developing preeclampsia.

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Preeclampsia is more common in women who had [high blood pressure](#) before pregnancy, but can also occur in pregnant women who have never had high blood pressure before.

Between 25% and 45% of pregnancy-related strokes occur in women with preeclampsia or eclampsia,^{1, 2, 8} making it the most common cause of pregnancy-related stroke. While doctors aren't sure exactly how preeclampsia causes strokes, they know that it causes changes in the blood vessel walls that can result in clots, and a tendency for the arteries to rapidly contract, making it harder for the blood to flow. Researchers suspect that genetic components that predispose women to heart disease and abnormal blood clotting are brought out by the blood

and blood vessel changes during pregnancy, resulting in stroke.

There is no way to prevent preeclampsia and it can only be cured by delivering the baby. During pregnancy, it may be carefully managed with medications to lower blood pressure and prevent convulsions. The problems associated with preeclampsia, including high blood pressure, usually go away within 6 weeks of delivery.

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