

# New clues in puzzle over pre-eclampsia and cholesterol regulation

June 21 2017

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Credit: University of Nottingham

Scientists studying a mystery link between the dangerous pregnancy complication pre-eclampsia and an increased risk of heart disease in later life for both mother and child have uncovered important new clues.

A study, led by researchers at the University of Nottingham, appears to suggest that the body's normal defence mechanism of flushing out damaging [cholesterol](#) from the blood may be disrupted by the illness.

The results of the study, published in the June edition of the *Journal of Lipid Research*, show that although the mother's body attempts to compensate and offset the effect of higher cholesterol levels, this damage limitation fails because the placenta has already been compromised by the disease.

It has prompted the researchers to undertake a further study monitoring

[mothers](#) with pre-eclampsia after delivery to investigate whether their ability to effectively remove excess cholesterol from their cells in the weeks following birth continues to be disrupted.

If so, it could pave the way for tests which could identify those women most at risk of developing heart disease and who may benefit from receiving preventative advice and medication.

Dr Hiten Mistry, British Heart Foundation Intermediate Basic Science Research Fellow in the University's School of Medicine, led the study. He said: "This is a very interesting finding and illustrates the importance of having the correct balance of cholesterol during pregnancy. The ability of mothers to effectively remove excess cholesterol is essential and monitoring this after delivery in women who suffered from pre-eclampsia could prove to be a useful indicator to identify those individuals at high risk of early heart disease."

Pre-eclampsia is one of the leading causes of serious illness and death in pregnant women worldwide, affecting between two and eight per cent of pregnancies.

It usually affects women in the second half of pregnancy or soon after their baby is delivered. Early signs of pre-eclampsia include [high blood pressure](#) and protein in the urine. While many cases are mild, in more serious cases it can lead to complications for the mother including blood clotting disorders, organ failure and seizures, while babies can be smaller and born prematurely.

Both [women](#) who develop pre-eclampsia and their babies are at increased risk of high blood pressure and [heart](#) disease in later life. Mothers affected are also eight times more likely to develop [heart disease](#), while their [babies](#) are five times more likely to be affected.

During pregnancy, it is important for the fetus to receive some cholesterol from its mother to aid its growth and development and build basic fat reserves.

However, excessive amounts can be damaging and the body works to strip away surplus cholesterol by carrying it away in the [blood](#) to the liver where it is processed and recycled.

The placenta too plays a role – as well as providing the baby with oxygen and essential nutrients, it also helps to regulate the amount of cholesterol which is passed to the unborn child.

However, the study found that in pre-eclampsia, both the mother's system for removing the cholesterol from the body and the placental fail safe system were both compromised by the [disease](#).

**More information:** Hiten D. Mistry et al. Increased maternal and fetal cholesterol efflux capacity and placental CYP27A1 expression in preeclampsia, *Journal of Lipid Research* (2017). [DOI: 10.1194/jlr.M071985](#)

Provided by University of Nottingham

Citation: New clues in puzzle over pre-eclampsia and cholesterol regulation (2017, June 21) retrieved 24 April 2024 from <https://medicalxpress.com/news/2017-06-clues-puzzle-pre-eclampsia-cholesterol.html>

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