

Study reveals risk factors for blood clots in pregnant and postnatal women

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Women who have suffered a still birth or have medical conditions including varicose veins, inflammatory bowel disease (IBD) or heart disease are at greater risk of developing dangerous blood clots after giving birth, a study has revealed.

The research, led by academics at The University of Nottingham, found that being obese, suffering bleeding during pregnancy or labour and having a premature birth or delivery via [caesarean section](#) also increased the risk of a [venous thromboembolism](#) (VTE).

Their findings, published in the American Society of Hematology journal *Blood*, could have important implications for the way in which at-risk women are identified and preventative measures administered.

Epidemiologist Dr Matthew Grainge, in the University's School of Community Health Sciences, who led the study, said: "VTE is a rare but serious [complication of pregnancy](#) and childbirth. It affects around one or two pregnancies per 1,000 but, despite this, remains a leading cause of mortality in expectant and new mothers in developed countries.

"Preventative measures for VTE, such as a daily dose of heparin, may not be cost effective or safe and are therefore only recommended for women who are considered high risk. However, there is currently inconsistency and disagreement over the factors which put women in that high-risk category and we hope that this research will provide clinicians with valuable new information."

VTE—such as deep vein thrombosis (DVT)—are blood clots that form in a blood vessel and can be potentially life-threatening if the clot breaks off (embolises) and travels to the lung causing a blockage of the arteries of the lung known as [pulmonary embolism](#) (PE).

The study used data from GP patient records, [hospital discharge](#) forms and medications prescribed by [primary healthcare](#) professionals to study pregnancies of women aged between 15 and 44 between January 1995 and July 2009—totalling almost 400,000 pregnancies.

Researchers identified all women who developed VTE for the first time during their pregnancy, including [deep vein thrombosis](#) (DVT), then extracted important key information about the mother from their medical records including their age, body mass index (BMI) and whether they smoked.

In addition, they considered other pregnancy-related factors such as how the baby was delivered, whether it was a stillbirth or premature birth and any associated complications including pre-eclampsia, diabetes and high blood pressure.

Co-existing medical factors including [varicose veins](#), [inflammatory bowel disease](#) (IBD) and heart conditions such as heart disease were also taken into account.

They then used sophisticated data analysis methods to calculate the incident rate ratios to compare the risks of VTE to people without the specified risk factor.

They discovered that the risk of VTE during pregnancy was only marginally higher for women who were aged over 35 years old, had a BMI greater than 25 or who smoked. Medical complications such as pre-existing diabetes, varicose veins and IBD were all associated with greater

risk, but not pre-existing high blood pressure.

The risks were much higher for new mothers. Postnatal women with a BMI greater than 30 were four times more likely to develop a VTE, while delivery by caesarean section, multiple previous births (three or more), bleeding in pregnancy and premature birth all doubled the chances of a women developing a VTE.

Perhaps most significantly, [women](#) who suffered a still birth were six times more likely to have a VTE.

Dr Grainge added: "Our results may have important implications for the way that [preventative measures](#) for VTE are delivered in healthcare settings in developed countries. We believe the strong association between stillbirths and premature births and VTE in particular is a finding of real importance which has received only limited attention to date. They are not currently incorporated in the guidelines for risk assessment for VTE and, if they were, then many cases associated with those risk factors could potentially be prevented."

More information: Risk Factors for First Venous Thromboembolism Around Pregnancy: A Population Based Cohort Study from the United Kingdom, *Blood*, 2013.

Provided by University of Nottingham

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