Better monitoring of blood pressure in pregnancy could reduce health risks for mother and baby

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Pre-eclampsia, which can lead to stillbirths, premature births, low-birth-weight babies and, in extreme cases, the death of the mother, is generally considered to be a unique condition in pregnancy.

According to new research, by defining pre-eclampsia instead as the extreme end of blood pressure (BP) risk in pregnancy, more women who are at risk could be identified.

The findings, which are based on almost 12,000 pregnant women in the [Children of 90s](http://www.bristol.ac.uk/alspac/) study at the University of Bristol, are published online ahead of print publication in the [*Journal of Hypertension*](http://journals.lww.com/jhypertension/pages/default.aspx).

Pre-eclampsia affects 2-8 per cent of all pregnancies and the risk of developing the condition is greater for women who are overweight, older at the time of the pregnancy, pregnant for the first time or pregnant with twins.

The risk is lower for women who smoke during pregnancy.

According to the researchers, by monitoring the rate of change and actual BP during pregnancy, it may be possible to identify early those women at greatest risk of problems during their pregnancy.

It is normal for BP to decrease until about the fifth month of pregnancy and then rise in the second half of pregnancy.

Pre-eclampsia is currently diagnosed in women who experience high BP for the first time after five months, along with protein in their urine (proteinuria).

The study investigated the associations of risk factors with BP very early in pregnancy (at two months) and blood pressure changes over the course of pregnancy in 11,789 women who did not develop pre-eclampsia during their pregnancy.

Women who were obese, aged over 35, or were in their first pregnancies had higher BP at two months and a greater increase in BP in late pregnancy compared with normal-weight women, 25-29 year-olds and women who had had previous pregnancies.

For women with twin pregnancies, BP was similar at the beginning of pregnancy to that of women expecting one child, but BP rose more rapidly in late pregnancy.

Women who smoked during pregnancy had lower BP from early pregnancy onwards than those who did not smoke.

These findings suggest that there may be different degrees of blood pressure risk during pregnancy, and that pre-eclampsia may represent the upper-end of this scale.

They also suggest that risk may be related to changes in blood pressure, as well as blood pressure thresholds and proteinuria.

Patterns of blood pressure change across pregnancy may also be useful in identifying women who are at risk of hypertension and heart disease in later life.

Corrie Macdonald-Wallis from the [School of Social and Community Medicine](http://www.bristol.ac.uk/social-community-medicine/) at the University of Bristol and the report’s main author, said: "It is unclear how the health risks compare between a woman whose blood pressure rises a lot during pregnancy but remains below the threshold used to define pre-eclampsia, and a woman whose blood pressure rises only a little to cross this threshold."

Professor Scott Nelson, the Muirhead Professor of Obstetrics and Gynaecology at the [University of Glasgow](http://www.gla.ac.uk/), added: "Pre-eclampsia is a potentially devastating condition for mothers and their babies.

This study, one of the largest in the world, suggests that rather than it being a unique condition, pre-eclampsia is the extreme end of the maternal response to pregnancy.

By combining the rate of change and actual blood pressure we may be able to identify early those women at greatest risk of problems during their pregnancy."