

Researchers can predict accurately the outcome of pregnancies threatening to miscarry

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Dr Kaltum Adam, an honorary clinical research fellow at St Mary's Hospital in Manchester (UK), told the annual meeting of the European Society for Human Reproduction and Embryology that around 20 percent of all pregnancies were complicated by threatened miscarriage, and up to 20 percent of these would miscarry.

"However, at present we have no way of predicting which threatened [miscarriages](#) will result in the end of the pregnancy and so we are unable to target attempts to rescue the pregnancy at the right women or to offer them counselling," she said. "This has led to wasteful and potentially harmful interventions, including unnecessary blood tests, ultrasound scans, [hospital admissions](#) for [bed rest](#), sexual abstinence, low dose aspirin and [progesterone](#) supplementation."

Between 2009-2010, Dr Adam and her colleagues followed 112 women with threatened miscarriages, who were between six and ten weeks pregnant. During the five weeks the women were in the study they had ultrasound scans, weekly charting of pain and bleeding and weekly tests to check the levels of progesterone and the pregnancy hormone, human chorionic gonadotrophin (hCG). After analysing data on the outcomes of these pregnancies, Dr Adam found there were six factors that had the most impact on the risk of miscarriage: a history of subfertility, levels of progesterone, levels of hCG, the length of the [foetus](#), how much bleeding had occurred, and the [gestational age](#) of the baby.

Individually, these factors were unable to predict accurately the risk of miscarriage, but when the researchers combined two of these factors – the amount of bleeding and levels of hCG – to create a "Pregnancy Viability Index" (PVI), they found that this provided a consistently reliable means of predicting which pregnancies would miscarry.

"By the end of the study period, the PVI was able to accurately predict the pregnancy outcome in 94% of women who had ongoing pregnancies (its positive predictive value), and also predicted the outcome in 77% of women whose pregnancy ended in miscarriage (its negative predictive value)," said Dr Adam**.

"This research has, for the first time, offered us a robust tool to begin to attempt to rescue pregnancies threatening to miscarry, when, currently, all we can do is fold our hands and hope for the best."

In addition, the PVI will enable doctors to avoid unnecessary interventions. "Every woman attending a unit with a threatened miscarriage has initial blood tests and a scan as part of her care. Additionally, some women are subjected to repeated blood tests and [ultrasound scans](#) to monitor the pregnancy. The use of the PVI will negate these in the vast majority (80%) of these women, as we will be able to reassure them of a high likelihood of pregnancy continuation and that there is little additional value in doing further testing. Furthermore, psychological counselling and support could be targeted at the women most likely to miscarry, in order to reduce anxiety levels and improve their overall experience," she said.

"The PVI will facilitate further investigations of the remaining 20% of these pregnancies that do go on to miscarry, and we are hopeful that by identifying factors that impact significantly on [pregnancy](#) outcome we will be able to gain a better understanding of the process of threatened miscarriage. This, in turn, may enable us to design more effective interventions to rescue these pregnancies.

"We were limited by the size of our study and feel that further enhancements can be made to the PVI in a larger definitive study in which we could include more of the six factors that we have found to be important in miscarriage."

Dr Adam and her colleagues are seeking funding to validate the PVI model in a larger research trial of 1000 women with threatened miscarriage."

No additional equipment is required in the clinic in order to use the PVI. "This is the huge attraction of the PVI. It lends itself to widespread adoption because it is simple, inexpensive and reproducible, without the need for sophisticated equipment or gadgets," said Dr Adam.

Provided by European Society of Human Reproduction and Embryology

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