# Biomarker can predict risk of preterm birth from first half of pregnancy

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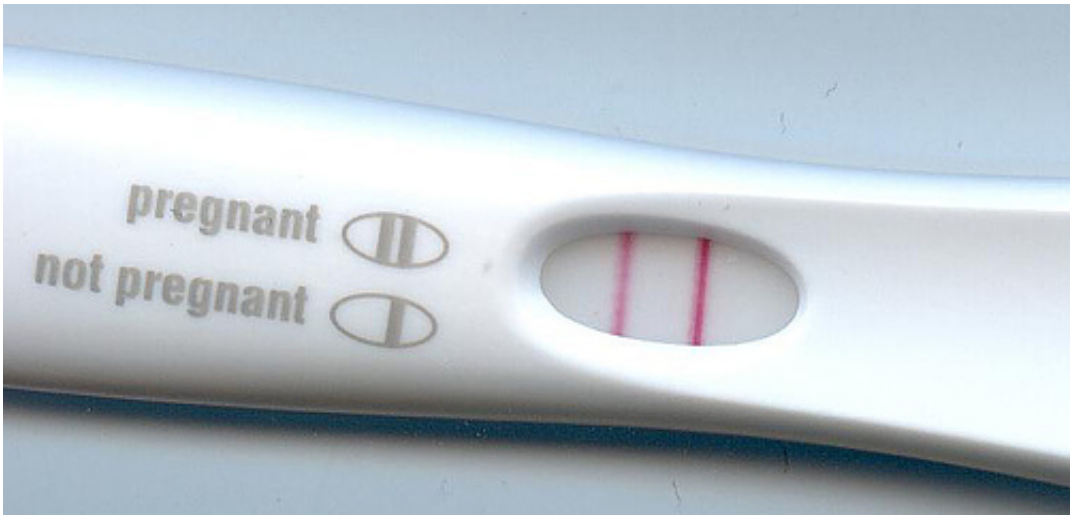


Pregnancy test. Credit: public domain

Offering a standard biomarker test earlier in pregnancy could potentially help doctors to better identify women at risk of giving birth prematurely, thus enabling health services to focus treatments on women at highest risk, according to a new study led by King's College London.

A number of factors are used to determine if a woman is at risk of giving birth prematurely, including a history of preterm births or late miscarriages. Two further factors which clinicians normally consider are the length of cervix and levels of a biomarker found in vaginal fluid known as fetal fibronectin. The fibronectin threshold traditionally used

to categorize women's risk is 50 ng/mL, above which women are considered "positive" and to be at higher risk of giving birth prematurely. The researchers at King's have further developed this test into a quantitative test that provides levels across the range (1 to 500 ng/ml).

In the study, published in *Obstetrics and Gynecology*, researchers compared measurements of this new fetal fibronectin test in the vaginal fluid of women at 18 to 21 weeks of gestation with measurements made at 22-27 weeks of gestation, to see which time period offered the best prediction of spontaneous preterm birth. Researchers also explored whether using a low (10 ng/mL) and high (200 ng/mL) threshold would more accurately classify a women's risk of giving birth prematurely.

Of the 898 high risk women followed in the study, only 3.8% of women with concentrations less than 10 ng/mL (tested at 18-21 weeks) delivered before 34 weeks of gestation, a similar rate to that expected in a normal pregnancy. This compared to 2.9% in those tested later (22-27 weeks). In those woman over 200 ng/ml, similar proportions delivered after 34 weeks whether tested early or late (39% versus 43%).

The authors conclude that measuring fetal fibronectin at 18 -21 weeks pregnancy appears to offer a similar predictive value to measurements at 22-27 weeks. For both the early and standard tests, there was a noticeable increase in relative risk between the lowest and highest thresholds used in the study. Combining cervical length with the biomarker test was found to improve the diagnostic accuracy further.

However, the authors caution that these findings should not be used as the basis of deciding whether to use an early test as well as, or instead of, a later test. Further studies are required to establish and validate the feasibility of using one and/or both tests to determine risk in pregnant women.

Limitations of the study included the fact that interventions were routinely offered to women with a history of pregnancy loss or early preterm birth if a short cervix was detected, which may have influenced the pregnancy outcome and slightly reduced the predictive ability in this study, but ethically the study could not be conducted without providing some intervention.

Professor Andrew Shennan, lead author who is Professor of Obstetrics at King's College London and consultant obstetrician at Guy's and St Thomas' NHS Foundation Trust, said: "The aim of our study was to find better ways of establishing the risk of women giving birth prematurely in early pregnancy, to enable us to focus on the women most likely to benefit from earlier intervention and close monitoring during pregnancy. Instead of relying on the traditional single threshold later in pregnancy we now can more accurately identify those likely to be normal and those most in need of early interventions, from the first half of pregnancy.

We hope to carry out further trials to establish whether biomarker testing at an earlier stage of pregnancy could help us to intervene where necessary before cervical shortening is normally detected, and thus improve the prospects of giving birth safely for more women."

**More information:** Natasha L. Hezelgrave et al. Quantitative Fetal Fibronectin at 18 Weeks of Gestation to Predict Preterm Birth in Asymptomatic High-Risk Women, *Obstetrics & Gynecology* (2016). DOI: 10.1097/AOG.0000000000001240

Provided by King's College London

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