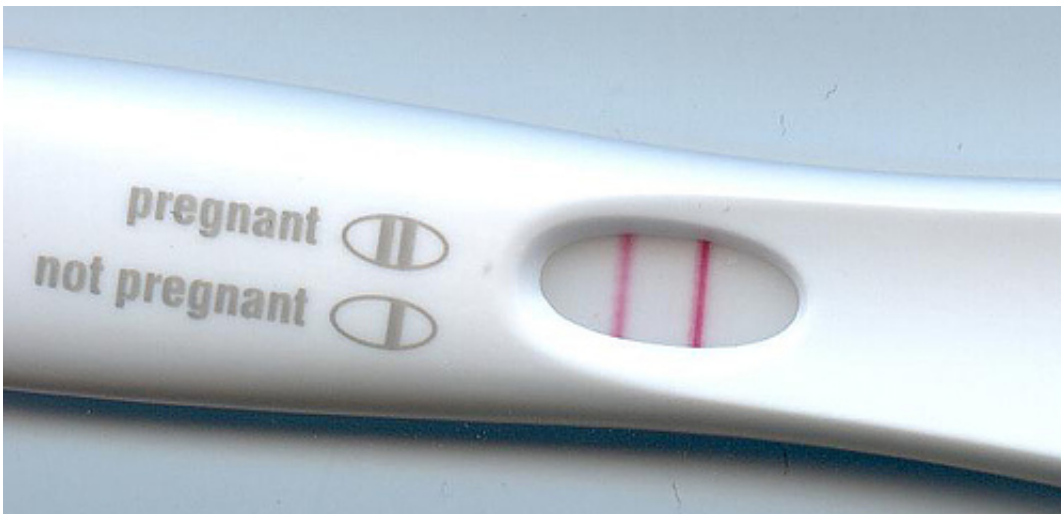# Two common tests aren't effective in predicting premature births, says new national study

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Pregnancy test. Credit: public domain

Two screening tests often used to try to predict which pregnant women are likely to deliver prematurely aren't effective in low-risk women, according to a national collaborative study of more than 10,000 women, led by clinician-researchers at University of Utah Health Sciences and Intermountain Healthcare.

Researchers found that neither transvaginal cervical measurement or fetal fibronectin tests, used separately or together, adequately predicts preterm birth. The findings are published in March 14 issue of the

Journal of the American Medical Association (*JAMA*).

Preterm birth, defined as a birth before 37 weeks of pregnancy, is the leading cause of neonatal death or long-term disability. The Centers for Disease Control and Prevention said more than one in 10 births in 2015 were preterm and about 35 percent of infant deaths were related to prematurity. Health-related costs exceed $26 billion each year. A half-million pregnancies ended in preterm birth in 2013, and the preterm rate in the United States lags behind other developed nations.

It has become common to use these screening tests to try to predict expectant mothers who are at high risk for preterm birth, which is hard to predict until it begins. Efforts to stop it once labor has started are largely ineffective, said the study's lead author Sean Esplin, MD, Maternal-Fetal Medicine specialist at Intermountain Medical Center in Salt Lake City and professor of Obstetrics/Gynecology at the University of Utah School of Medicine.

The cervix is the part of the uterus that's supposed to maintain its thickness and stay hard and closed throughout pregnancy as the fetus develops and puts more pressure on it. Once the pregnancy reaches term and the fetus is ready for life outside the uterus, the cervix softens and dilates. If the cervix thins out and opens too early, a baby is delivered preterm, which may lead to death or long-term complications.

A baby born at 24 weeks, for example, weighs just over a pound and has only a 70 percent chance of survival. The risk of having a long-term complication related to being born premature is about 50 percent at that point.

If cervical thinning is spotted soon enough, however, progesterone therapy can be used to intervene and prevent preterm birth. That's led some experts to measure transvaginal cervical length by doing

ultrasounds. A length of less than 25 mm is considered short and thus risky.

Because of the human and financial toll of preterm births, some experts have advocated screening all pregnant women that way.

The other test measures fetal fibronectin, an extra-cellular matrix protein that acts like glue between the membrane and uterus lining. As labor and delivery approach, the quantity of fibronectin that leaks from the cervix rises, so swabbing to test vaginal secretions for the protein is sometimes done in hopes of predicting and preventing preterm birth.
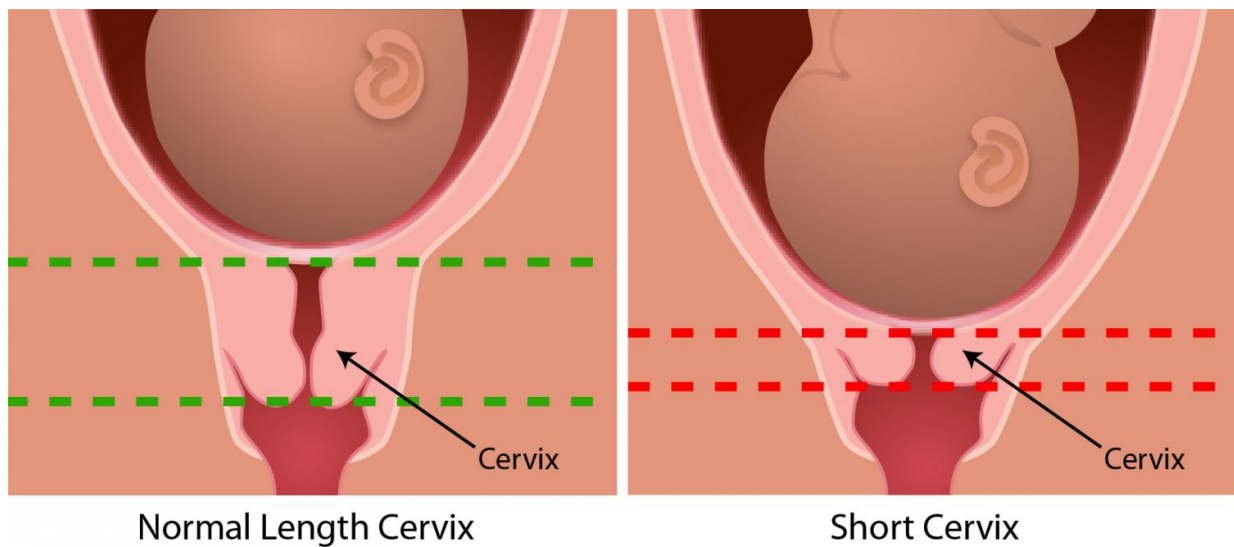
A normal size and short cervix compared. Credit: National Institutes of Health

To see the effectiveness of those tests—or combining both of them—in predicting preterm birth, researchers at eight clinical centers including, the University of Utah/Intermountain Healthcare, Columbia University,

the University of Indiana, Northwestern University, the University of Pennsylvania, Ohio State University, the University of Pittsburgh and the University of California Irvine tested the women at three points during their pregnancies to see whether the results predicted which of them would turn out to deliver prematurely.

The tests were conducted, on average, at around 12 weeks, 19 weeks, and 28 weeks of gestation. All of the women were "nulliparous," meaning they hadn't previously given birth, so there was no history of a preterm birth or identifiable risk factors other than being pregnant. The study didn't include women who'd miscarried before 20 weeks gestation or who terminated a previous pregnancy.

"What we found is that neither of these tests is very accurate," said Esplin. They identify a very small portion of women who are going to have a preterm birth. Of those who have a short cervix, only a portion of them go on to have a [preterm delivery](#)."

Because the cervical measurement only identified eight percent of women who later had a preterm birth, the researchers said the findings call into question whether the screening should be used routinely. The American College of Obstetricians and Gynecologists doesn't currently recommend that test for low-risk pregnancies.

"This answers a couple of questions," said Esplin. "Transvaginal cervical length and fetal fibronectin measured at different times during pregnancy are poor screening tests for predicting preterm births, alone or in combination. In a low-risk population, if we rely only on these tests to identify women who are highest risk, we're going to miss the vast majority."

"This is a huge trial. This study was our best hope to say how effectively these tests predict the likelihood of preterm birth, and they weren't as

effective as we'd hoped," he added.

Now, researchers are looking at other marker combinations to see if they can identify risk factors of adverse pregnancy outcomes, including preterm birth, focusing on protein markers in the blood and social risk factors like age, nutrition and socio-economic factors. They hope to identify early the women at highest risk for preterm birth in order to have time to prevent their preterm births in the future.

Esplin heralded the study as an example of how clinical researchers from Intermountain Healthcare, University of Utah Health Sciences, and others who collaborate to identify interventions that solve problems also increase the cost-effectiveness of healthcare. Preventing preterm birth or prolonging gestation by just weeks would reduce mortality and lifelong complications for babies and save billions of dollars, he said.

"These big multicenter trials are going to give us our best chance to identify women at risk and help them have the best pregnancy outcomes," said Esplin.

More information: *JAMA*, DOI: 10.1001/jama.2017.1373

Provided by University of Utah Health Sciences