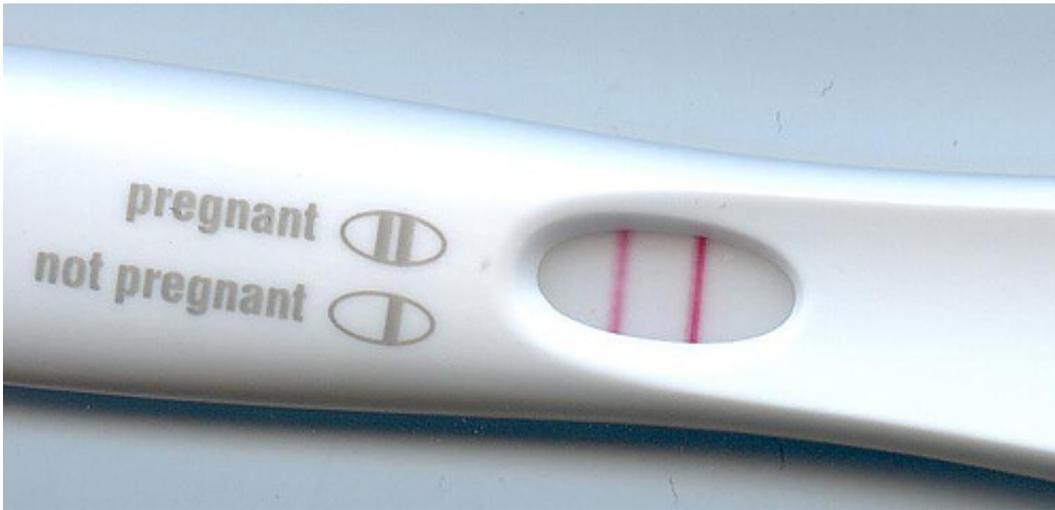


Researchers find more preterm births among women exposed to extremes of hot and cold

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Pregnancy test. Credit: public domain

Extreme hot or cold temperatures during pregnancy may increase the risk of preterm birth, according to study by researchers at the National Institutes of Health.

The study authors found that extremes of hot and cold during the first seven weeks of pregnancy were associated with early delivery. Women exposed to [extreme heat](#) for the majority of their pregnancies also were more likely to deliver early.

The researchers found more consistent associations with early delivery

after exposure to extreme heat than to extreme cold weather. They theorized that, during cold spells, people are more likely to seek shelter and so could more easily escape the cold's effects. But during extreme heatwaves, people are more likely to endure the temperature, particularly when the cost of or access to air conditioning is an impediment.

The study was published in *Environmental Health Perspectives*.

"Our findings indicate that it may well be prudent to minimize the exposure of pregnant women to extremes in temperature," said the study's senior author, Pauline Mendola, Ph.D., an epidemiologist in the Division of Intramural and Population Health Research at the NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).

A pregnancy is considered full term at between 39 and 40 weeks. Preterm birth occurs before 37 weeks of pregnancy and increases the risk for infant death and [long term disability](#). It is unknown why extremes of hot or cold might influence [preterm birth](#) risk. However, the researchers theorize that the stress of temperature extremes could hinder the development of the placenta or alter blood flow to the uterus, both of which could potentially lead to early labor.

To conduct the study, the researchers linked electronic medical records from 223,375 births at 12 clinical centers throughout the United States to hourly temperature records for the region surrounding each center. The researchers noted that what constitutes a hot or cold temperature varies from person to person and place to place. To compensate for local climate variability and personal susceptibility, the researchers evaluated temperatures in the surrounding regions. They defined extreme [cold temperatures](#) as below the 10th percentile of average temperatures, and defined extreme heat as above the 90th percentile.

The researchers found that women who experienced extreme cold for the first seven weeks of their pregnancies had a 20 percent higher risk for delivering before 34 weeks of pregnancy, a nine percent increased risk for delivering from 34-36 weeks, and a three percent increased risk for delivering in weeks 37 and 38. Women whose first seven weeks of pregnancy coincided with extreme heatwaves had an 11 percent increase in risk before 34 weeks, and a four percent [increased risk](#) at 37 to 38 weeks.

Exposure to extreme heat during weeks 15-21 increased the risk for delivery at 34 weeks and at 34-36 weeks by 18 percent and for delivery from 37 to 39 weeks by four percent. Hot exposures during weeks 8-14 increased the risk for birth at 37 to 38 weeks by 4 percent.

Overall, exposure to extreme heat for the duration of pregnancy was associated with increases in risk for delivery at 34 weeks and 36-38 weeks by 6 to 21 percent.

An increase in the number of extreme hot days due to climate change could lead to increases in the preterm birth rate, the authors wrote. The authors added that their findings underscore the need for health professionals and policy makers to devise interventions for minimizing [pregnant women's](#) exposure to extreme temperatures. The authors also called for more research to understand how temperature extremes might increase preterm birth risk.

More information: Sandie Ha et al. Ambient Temperature and Early Delivery of Singleton Pregnancies, *Environmental Health Perspectives* (2016). [DOI: 10.1289/EHP97](https://doi.org/10.1289/EHP97)

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