



# ECHO

Environmental influences  
on Child Health Outcomes

A program supported by the NIH

## Study Summary

### ***How oxidative stress may be contributing to a mother's risk of preterm birth***

*Authors: Stephanie Eick, Rachel Morello-Frosch, et al.*

#### Who sponsored this study?

Research reported in this publication was supported by the Environmental influences on Child Health Outcomes (ECHO) Program, Office of The Director, National Institutes of Health (NIH).

#### Why was this study needed?

Oxidative stress is a process that can trigger cell damage and can play a role in the development of some diseases. Previous research has shown that oxidative stress in pregnant people may be linked to preterm birth. However, prior studies on this topic have involved small, primarily White populations, which does not reflect the diversity in the United States.

#### Who was involved?

This study involved 1,916 pregnant people in the United States and Puerto Rico who were enrolled in one of four ECHO cohorts.

#### What happened during the study?

The researchers measured the levels of oxidative stress biomarkers from urine samples collected from participants during the second and third trimesters of pregnancy. They used these measurements to determine whether levels of oxidative stress were higher among participants who delivered their babies before 37 weeks (preterm birth).

#### What were the study results?

Pregnant people who had higher levels of oxidative stress biomarkers during pregnancy were more likely to deliver preterm babies. This association was stronger for participants who experienced preterm birth that was sudden and unexpected or occurred prior to 34 weeks.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health without first consulting your healthcare professional.

#### Impact

This study is the largest to date to look at the relationship between oxidative stress and preterm birth.

The study included a large group of racially, ethnically, and demographically diverse pregnant people from across the mainland United States and Puerto Rico. The results from this study support prior

findings that oxidative stress is higher among pregnant people who deliver preterm. The methods used in this study may help doctors identify pregnant people who may be at risk for preterm birth and plan targeted interventions.

### What happens next?

Next, the researchers will study how exposure to environmental chemicals may lead to an increase in oxidative stress, ultimately leading to preterm birth. Future research will also identify what risk factors lead to higher oxidative stress during pregnancy.

### Where can I learn more?

Access the full journal article, titled “A pooled analysis of four birth cohorts examining urinary oxidative stress biomarkers and preterm birth” in the [American Journal of Obstetrics and Gynecology](#).

*The content is the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.*