ECHO
Environmental influences on Child Health Outcomes
A program supported by the NIH

Study Summary

How does phthalate exposure during pregnancy affect newborn brain development?

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Who sponsored this study?

The Environmental influences on Child Health Outcomes (ECHO) Program, Office of the Director, National Institutes of Health supported this research.

What were the study results?

In this study, researchers found that certain phthalates measured in the infant's meconium, or first stool, were associated with lower scores on a common test that measures motor, visual, and language skills in girls under age 5.

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.

What was the study's impact?

This study suggests that prenatal exposure to certain types of phthalates may worsen early childhood learning outcomes for girls but have a neutral or slightly positive effect on boys. By studying meconium, instead of maternal urine, the researchers may be able to capture a longer timeframe of potential pre-natal exposure.

Why was this study needed?

Phthalates are widely used in personal care products, cosmetics, plastics, and other household items. These chemicals can cause the body to make substances that are thought to reduce a mother's level of thyroid hormones, which are critical for fetal brain development. Phthalates are also associated with a reduction in the hormones necessary for sex-specific fetal brain development. Therefore, it is important to test the levels of prenatal phthalate exposure and the potential effects on developing fetuses.

Who was involved?

The study involved 956 mother and child pairs from two ECHO research sites—the Safe Passage study (SPS) and the Early Autism Risk Longitudinal Investigation (EARLI). Researchers focused on children who were higher risk for brain and nervous system disorders based on a family history of Autism or exposure to alcohol during pregnancy.

What happened during the study?

ECHO researchers measured phthalate levels in meconium from children who had a higher risk for developing brain and nervous system disorders. When the children were 12 months old, researchers tested their motor, visual, and language skills. Researchers used meconium samples rather than the mother's urine to capture longer-term fetal exposure to phthalates.

What happens next?

Future prenatal phthalate exposure studies using meconium samples from newborn infants could investigate the differing effects of phthalate exposure on male versus female infants in order to better understand the reasons why these differences may occur.

Where can I learn more?

Access the full journal article, titled "The associations between prenatal phthalate exposure measured in child meconium and cognitive functioning of 12-month-old children in two cohorts at elevated risk for adverse neurodevelopment," in *Environmental Research*.