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Study Summary

How Environmental Exposures Affect Child Health Across Multiple Generations

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Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health.

Why was this study needed?

Studies show that the environment may affect the health of many generations in one family. Some of this effect comes from epigenetics, changes in how your genes are read and understood. Your environment and actions can change your epigenetics, and those changes can be passed on to your children and grandchildren. For example, if a pregnant woman is around certain chemicals, her genes may carry a "molecular memory" of those chemicals that can be passed on through her children. The purpose of this study was to put together what is known about epigenetics to understand how environments, chemicals, and behaviors may affect the health of children for generations to come.

Who was involved?

This research looked at previous studies on humans and animals and summarized the information.

What happened during the study?

The team of experts read a lot of studies on this topic and worked together to write a summary of current knowledge.

What were the study results?

The review found many studies in animals and humans that showed a connection between certain environments, chemicals, and behaviors and health risks across multiple generations. While epigenetics most likely plays a role in these changes, it is often difficult to separate epigenetic effects from other causes. The team also pointed out the need for more studies to tease out the complexity of these effects.

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

Impact

This review article brings together results from many studies into one paper, which is usually more powerful than results from a single study. By looking at many results together, scientists can find

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important patterns and gaps in epigenetics research. This paper will help scientists better understand how the environment can affect the health of a mother, child, and grandchild.

What happens next?

The ECHO Program will keep collecting data on the health effects of environmental exposures on children. The scale of the ECHO Program makes it ideal for the study of the ongoing, generational effects of these exposures.

Where can I learn more?

Access the full journal article, titled "Exploring the evidence for epigenetic regulation of environmental influences on child health across generations" published in *Communications Biology*.

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Published: June 22, 2021

Access the associated article.