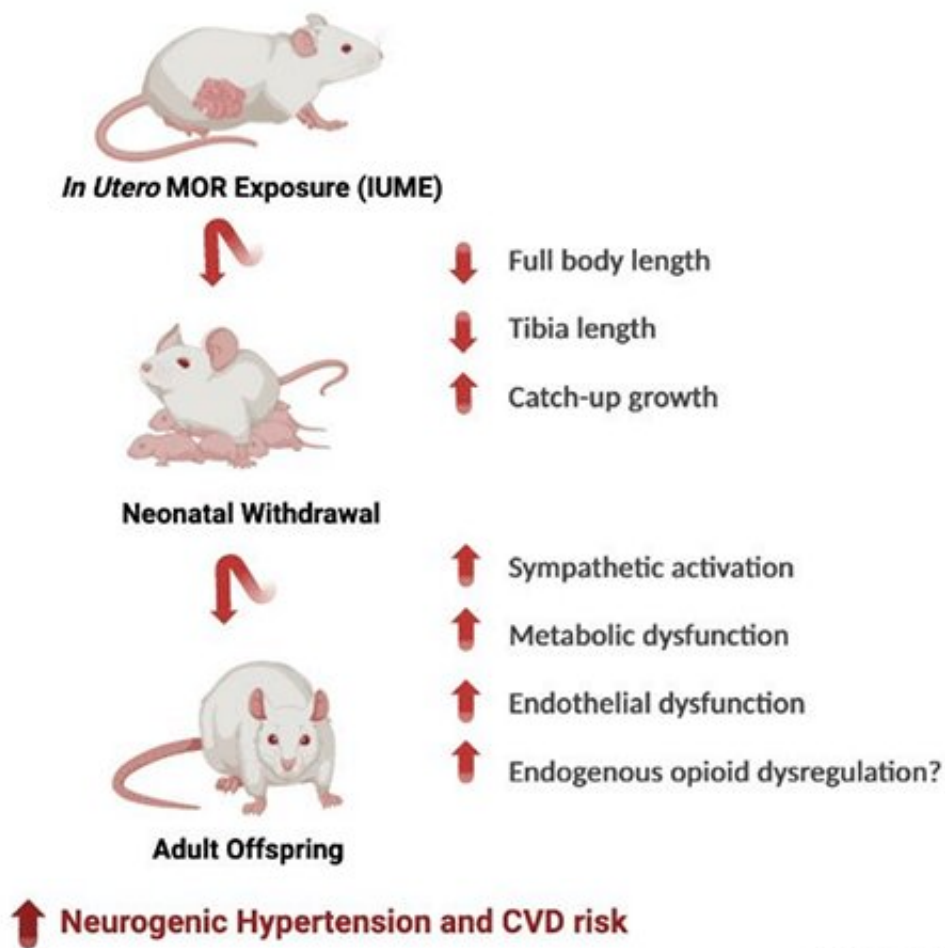


# Opioid exposure in the womb could raise the risk of heart disease later in life

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Graphical illustration of the study's key findings regarding the effects of prenatal opioid exposure in early life and adulthood. Credit: Analia Loria, University of Kentucky

A new study sheds light on an understudied aspect of today's opioid crisis: What happens to the cardiovascular health of babies exposed to opioids in the womb. The outcomes of the study suggest that children born to mothers who use opioids during pregnancy may be more likely to develop chronic diseases as adults, including cardiovascular and metabolic diseases. Researchers will present their work this week at the [American Physiology Summit](#), the flagship annual meeting of the American Physiological Society (APS), in Long Beach, California.

Opioid abuse is a key public health challenge in the U.S., which saw over a half-million opioid-related overdose deaths in 2022 alone. The use and misuse of opioids during pregnancy has grown rapidly over the past decade. On average, about one baby born every 15 minutes in the U.S. is diagnosed with neonatal opioid withdrawal syndrome (NOWS), an array of symptoms stemming from [opioid use](#) during pregnancy.

Although the symptoms of NOWS are usually treatable in babies, scientists have known little about the potential long-term health impacts of in-utero opioid exposure once these children grow up.

"It is challenging to predict the long-term impact on the cardiovascular health of children from women with opioid misuse and [opioid overdoses](#) due to the lack of follow-ups after discharge," said senior study author Analia Loria, Ph.D., an associate professor at the University of Kentucky. "However, our studies provide insights regarding how opioids could affect the programming of the mechanisms regulating cardiovascular function and increase the cardiovascular risk."

The researchers developed a rat model that mimics the use of drugs during pregnancy and studied what happens to the offspring from birth until adulthood. They found that babies of mothers who used drugs while pregnant were shorter at birth and weighed less during the breastfeeding stage compared to nondrug-exposed babies. However, when they started

eating independently, the drug-exposed babies gained weight quickly and caught up to their nonexposed peers, a pattern that has previously been found to increase the risk of cardiovascular and metabolic disease.

"Overall, we found that the systems that control [blood pressure](#) and how sugar and lipids are processed in our bodies are altered in drug-exposed babies," said Nermin Ahmed, RD, a doctoral candidate in the Department of Pharmacology and Nutritional Sciences at the University of Kentucky College of Medicine. "This could mean that adults who were exposed to drugs in the womb are more likely to develop [chronic diseases](#) like [high blood pressure](#), diabetes, [chronic kidney disease](#) and [high cholesterol](#), and also be more susceptible to other drugs and environmental stressors. This prenatal exposure can permanently change how the body handles a second exposure to opioids."

As adults, rats exposed to drugs in the womb had higher blood pressure, poorer blood sugar control and increased levels of bad cholesterol despite eating the same type of diet as the nondrug-exposed rats. The researchers also observed differences in the expression of certain proteins and receptors involved in regulating how the brain responds to drugs, raising the possibility that people exposed to opioids in the womb may also face a higher risk of drug dependence later in life.

The study draws attention to the effects of the opioid epidemic on childbearing women and the importance of screening for prenatal opioid exposure. Researchers say that knowing more about such exposures could help to inform disease prevention and treatment approaches throughout the lifespan.

Provided by American Physiological Society

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