

# New study probes the effects of opioid use during pregnancy

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A new University of Oregon study is examining the effects of opioids on an understudied population: developing infants.

Human physiology associate professor Adrienne Huxtable is focusing her newest research project on the effects of opioids during pregnancy on essential [breathing](#) circuits. It is a research question that hasn't been well-examined, despite the significant rise of opioid use during pregnancy, with as many as 42% of [pregnant women](#) in some states using opioids.

The figure has contributed to an increase of around 400% in gestational opioid exposure.

"An infant exposed to maternal opioids is born approximately every 15 minutes, which highlights the increasing prevalence of this population of infants and supports our scientific premise for studying the neonatal consequences of maternal opioids," Huxtable said.

Huxtable specializes in the brain's role in controlling breathing, which is much less discussed or understood than that of the lungs, diaphragm or airways. Her research looks at how [neural circuits](#) are affected by things like inflammation, early life stressors, and now substance abuse.

"I was especially interested in studying opioids because we know it causes such profound depressive effects on breathing," Huxtable said. "But less is known about what happens to infants who are exposed to opioids during pregnancy, especially when they are exposed to opioids alone and not in conjunction with other substances or stresses."

To probe that research question, Huxtable's lab is using two different litters of rats, one for control and one for testing the effects of opioid use during pregnancy. By using an animal model, she is able to examine the effects of substance use without any other contributing factors, like other substances or stressors.

An [animal model](#) also allows her to directly measure breathing after

opioid exposure, which is difficult to do with both pregnant women and developing infants, as they are more vulnerable populations.

Huxtable's study is also different in the way it looks at what happens when developing infants are exposed to opioids during late gestation, instead of looking at the start of pregnancy. She chose that timing because it is after cells have already arisen in the nervous system and are beginning to mature and become active in the respiratory circuitry.

She specifically focused on the use of methadone, as it's the most commonly prescribed opioid.

The study is still in its early stages, but Huxtable's preliminary research shows that when newborns are exposed to opioids there are more periods of disruption to their breathing and for longer amounts of time, clinically described as apneas. Her data also shows that the development of the breathing circuits is threatened and that the respiratory system responds to lower oxygen in a different way than the control group.

"Our results demonstrate deficits in breathing, impaired maturation of breathing circuits and suggest a unique window of breathing vulnerability," Huxtable explained. "Breathing is less stable after maternal [opioid](#) exposure."

When infants experience these disruptions to breathing, they could lead to other [nervous system](#) and developmental delays, which can have profound consequences, Huxtable explains.

Huxtable hopes the research can be used to inform treatments and guide clinical care for [infants](#) exposed to opioids during [pregnancy](#).

Provided by University of Oregon

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