

Epidural use at birth not linked to autism risk, study finds

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Having an epidural during childbirth is not associated with a greater risk of autism in the child, according to a study led by researchers at the Stanford University School of Medicine and the University of Manitoba.

The study, which will publish online April 19 in *JAMA Pediatrics*, helps resolve questions raised by an earlier, widely criticized report on the topic.

"We did not find evidence for any genuine link between having an epidural and putting your baby at increased risk of [autism](#) spectrum disorder," said the study's senior author, Alexander Butwick, MD, associate professor of anesthesiology, perioperative and [pain medicine](#) at Stanford. The study should help reassure both physicians and [pregnant women](#) about the favorable safety profile of epidurals, he added.

Epidurals are the most common form of pain relief for childbirth, used by about three-quarters of women in [labor](#) in the United States. Autism is a developmental disorder that affects one in every 54 children nationwide.

"The epidural is the gold standard in labor pain management," said the study's lead author, Elizabeth Wall-Wieler, Ph.D., assistant professor at the University of Manitoba. "The vast majority of evidence around epidurals, including that from our new study, shows that they are the most effective means of providing pain relief to women during labor and that serious complications are rare."

Questions raised by prior study

During an epidural, anesthetic is given by catheter into the space around the woman's spinal cord. Epidurals relieve pain from labor contractions while allowing women to stay alert and push during birth. They also have other important, yet underappreciated, advantages. For example, epidurals can provide anesthesia to laboring women who require unplanned, and often urgent, cesarean sections. They also pose a [lower risk](#) to the mother and baby than general anesthesia, which may be necessary if a woman who has not already had an epidural needs an emergency C-section.

In October 2020, a study of California births said epidural use was associated with a 37% greater risk of later autism diagnosis for children. But the study was widely criticized for failing to account for many socioeconomic, genetic and medical risk factors for autism—separate from the epidural—that could be more common among women who choose epidurals. Experts also noted that it was biologically implausible for epidurals to raise autism risk. Shortly after that study's release, several professional societies issued a statement saying that the study did not provide credible scientific evidence that epidurals cause autism.

Controlling for social, medical and family factors

The new research examined epidural use during childbirth and later diagnoses of autism in

Manitoba, Canada. It included 123,175 children who were born between 2005 and 2016 and were followed until 2019.

"Manitoba has these wonderful, linked data sets that are population-wide," Butwick said, noting that the research team was able to access information that linked together individuals' [medical records](#), prescriptions, other health-related data, socioeconomic information, and information about children's academic achievements. "It's extraordinary information that is super rich," he said.

All of the children in the study were born via vaginal delivery and were single births—not twins or other multiples. Of those studied, 38.2% of the children were exposed to epidural anesthesia during labor; the rest were not. Of children exposed to epidurals during labor, 2.1% were later diagnosed with autism spectrum disorder, compared with 1.7% of children not exposed to epidurals.

But then the researchers controlled for factors thought to potentially influence autism risk—many more such factors than in the prior study. Those included socioeconomic factors (mothers' education, marital status, neighborhood socioeconomic level and receipt of welfare during pregnancy); mothers' pre-pregnancy [medical history](#) (including diabetes, hypertension, anxiety and depression); medical conditions during pregnancy; mothers' smoking, alcohol and recreational drug use; mothers' hospitalization for mental illness during pregnancy; mothers' use of several types of prescription medications (benzodiazepines, antidepressants and antiepileptics); medical complications of delivery; and factors related to the mothers' pregnancy and labor, including the length of the pregnancy, whether labor was induced or augmented and whether the fetus was large or in distress during labor.

The researchers also analyzed pairs of siblings in which the mother received an epidural during one child's birth but not the other. This comparison gave a way to account for genetic and familial factors, which influence autism risk.

Once the researchers had adjusted for all the confounding factors, there was no statistically significant difference in autism risk between children whose mothers received epidurals during their birth and those who did not. Accounting for genetic and family-related factors reduced the difference between the groups even more.

The team conducted many different analyses, said Wall-Wieler, and repeatedly found a lack of association between epidurals and autism. "That makes us really confident in how robust our results were," she said.

"Our study has a stronger finding because we accounted for limitations the first study had," Butwick said. "An epidural remains a well-established and effective means of providing pain relief during labor, with several benefits associated with it."

More information: *JAMA Pediatrics* (2021). [DOI: 10.1001/jamapediatrics.2021.0376](https://doi.org/10.1001/jamapediatrics.2021.0376)

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