

Abnormal stress response seen in toddlers exposed to meth in womb

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Some 2-year-olds whose moms used methamphetamine during pregnancy may have an abnormal response to stressful situations, according to a study in the May issue of the *Journal of Studies on Alcohol and Drugs*.

Researchers saw the altered response in toddlers who were exposed to meth in the womb and who currently had signs of strife in their lives—such as a mom who drank heavily or had depression or other mental health symptoms. Specifically, the children's levels of the [stress hormone cortisol](#) did not rise as they should have during a tense situation (a brief separation from mom).

Other research has linked such "blunted" cortisol responses to higher odds of health and behavioral problems in young people—from substance abuse to [delinquency](#) to asthma. That raises concerns about some children exposed to meth in the womb.

"The lack of hormonal [stress response](#) that we observed in these children has serious implications, such as a greater risk for depression, anxiety, and attention-deficit/[hyperactivity](#) disorder," said lead researcher Namik Kirlic, of the University of Tulsa in Oklahoma.

However, not all of the children in the study showed a blunted stress response. Children with a more stable home environment had a normal hormonal response to stress.

"It's not the meth alone," said senior researcher Barry Lester, Ph.D., director of the Brown Center for Children at Risk at Women & Infants Hospital of Rhode Island and The Warren Alpert Medical School of Brown University. "It's the combination of meth exposure and adversity after birth. We see other things coming into play—the mother's psychological health, alcohol use, exposure to violence at home or in the community. The postnatal environment is hugely important."

The findings are based on 123 2-year-olds whose mothers had used [methamphetamine](#) during pregnancy. Lester's team had each child spend time in a room, playing with mom and being observed by a researcher. They then left the child alone for a maximum of two minutes—a stressful experience for a 2-year-old. The researchers took saliva samples before and after the stressor to measure each child's cortisol levels.

They found that most of the children (68 percent) showed a blunted cortisol response. And that dampened response was related not only to higher meth exposure in the womb but also to the child's current environment—including whether the mother abused alcohol or had depression, anxiety or other mental health issues.

Until now, Lester said, such blunted cortisol reactions had only been seen in older kids. These findings suggest the effects of prenatal drug exposure and stress after birth take shape early: Methamphetamine stimulates the nervous system, so it may affect the developing stress-response system in the fetus. If a young child is then repeatedly exposed to serious stress, Lester explained, "the system wears down."

But the good news, he said, is that kids are "not doomed" by prenatal meth exposure. "If you put that child in a good environment, he or she has every chance of developing normally," Lester said. "I think it's important that these children not get labeled."

On the other hand, because many young kids exposed to meth in the womb may live in stressful environments, it is important to help families early, according to Lester. "Unfortunately," he said, "we are not doing a good job of getting to these [children](#) during early infancy."

More information: Kirlic, N., Newman, E., LaGasse, L. L., Derauf, C., Shah, R. Smith, L. M., Arria, A. M., Huestis, M. A., Haning, W., Strauss, A., Dellagrotta, S., Dansereau, L. M., Abar, B., Neal, C. R., & Lester, B. M. (May 2013). Cortisol reactivity in two-year-old children prenatally exposed to methamphetamine. *Journal of Studies on Alcohol and Drugs*, 74(3), 447, 2013.

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