

## Baby's first stool can alert doctors to future cognitive issues, new study finds

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Credit: Anna Langova/public domain

A newborn's first stool can signal the child may struggle with persistent cognitive problems, according to Case Western Reserve University Project Newborn researchers.

In particular, high levels of fatty acid ethyl esters (FAEE) found in the meconium (a newborn's first stool) from a mother's alcohol use during

pregnancy can alert doctors that a child is at risk for problems with intelligence and reasoning.

Left untreated, such problems persist into the teen years, the research team from the Jack, Joseph and Morton Mandel School of Applied Social Sciences found.

"We wanted to see if there was a connection between FAEE level and their cognitive development during childhood and adolescence—and there was," said Meeyoung O. Min, PhD, research assistant professor at the Mandel School and the study's lead researcher. "FAEE can serve as a marker for fetal [alcohol exposure](#) and developmental issues ahead."

Detecting prenatal exposure to alcohol at birth could lead to early interventions that help reduce the effects later, Min said.

The research is part of the ongoing Project Newborn study, a longitudinal research project funded by the National Institutes of Health's National Institute on Drug Abuse that has followed the physical, social and cognitive developments of babies born to mothers who used cocaine, alcohol and other drugs during their pregnancies.

Project Newborn has studied nearly 400 children for 20 years since their births in the mid-1990s.

For this study, researchers analyzed the meconium of 216 subjects for levels of FAEE. (FAEE are composed of a group of products from metabolizing alcohol; this study examined ethyl myristate, ethyl oleate ethyl linoleate and ethyl linolenate.) They then gave intelligence tests at ages 9, 11 and 15.

The conclusion: There was a link between those with high levels of FAEE at birth and lower IQ scores.

"Although we already knew a mother's alcohol use during her pregnancy may cause cognitive deficits, what is significant is that the early marker, not previously available, predicted this, establishing the predictive validity of FAEEs for determining alcohol exposure in utero" Min said.

Her team's findings were published in the April 2015 issue of the *Journal of Pediatrics* (Volume 166, 1042-1047), "Association of Fatty Acid Ethyl Esters in Meconium and Cognitive Development during Childhood and Adolescence."

The study was among the first to examine an association between FAEEs in meconium and [cognitive development](#) during childhood and adolescence.

Newborns with distinctive fetal alcohol facial characteristics—such as a smaller head and eyes, thin upper lip and a smooth ridge between upper lip and nose—are more easily identifiable. But many babies exposed to alcohol can still appear normal. And many mothers are reluctant to reveal how much they drank while pregnant because of the stigma. So [prenatal alcohol exposure](#) is often missed. Thus, clinical biomarkers are instrumental for identifying alcohol-exposed neonates, regardless of mothers' report of alcohol use or not during pregnancy.

It is estimated that as many as 2 to 5 percent of younger school children in the United States and Western Europe are affected by developmental disabilities resulting from alcohol exposure in utero, with a much higher prevalence (17 percent) reported in the child welfare system.

Previously, Project Newborn researchers found associations between high levels of FAEE and mental and psychomotor development problems during the first two years. The new study is an extension of the previous findings. In the current study researchers reported that:

- 60 percent of the 191 mothers reported drinking while pregnant, with an average of 6.5 standard drinks weekly (one standard drink equals to 0.5 oz. of absolute [alcohol](#)).
- Of those women, 63 percent engaged in risk drinking.
- 15 mothers (13 percent) had at least 12 drinks per week.

Provided by Case Western Reserve University

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