

We've Come a Long Way, Baby! What Have Four Decades Taught Us about Alcohol and Drugs in Pregnancy?

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Back in the early 1970s, pregnant women and their health care providers didn't talk about alcohol and drugs in pregnancy. Birth defects caused by alcohol? Unheard of! Then, along came two pediatric specialists at the University of Washington who changed everything: Drs. David W. Smith and Kenneth Lyons Jones noticed that a group of babies who had been exposed to high amounts of alcohol during pregnancy were all born with a similar pattern of unusual facial features and developmental delay. Their astute observations, along with further research and collaboration, led them to coin the term Fetal Alcohol Syndrome (FAS) in 1973.

The discovery that alcohol was a teratogen (an exposure that can cause birth defects) fueled the research on other exposures and opened up a world of questions. What about other drugs? What about medications? In order to share findings from the limited but ongoing research, Dr. Jones established the first teratogen information service in 1979, housed in a small apartment in San Diego and run by a dedicated staff of three. This service was the beginning of what would later become MotherToBaby.

Fast forward to June 2017, when experts from MotherToBaby and other teratogen information services around the world gathered in Denver, Colorado for the 30th Annual Meeting of the Organization of Teratology Information Specialists (OTIS). There, dozens of experts presented the latest research on exposures during pregnancy. Speakers summarized what we've learned, pointed out what we still don't know, and suggested priorities for future research. Here are a few highlights from the meeting:

Prescription Opioids

At one time, opiates were peddled as remedies for fatigue, menstrual cramps, and even teething in children (search Mrs. Winslow's Soothing Syrup as an example). Now, more than a century later, we are in the middle of an epidemic of substance use disorders from opioid pain relievers. And according to a 2014 study, more than 14% of pregnant women in the U.S. are prescribed opioids at least once during pregnancy for reasons such as back pain and migraines. Pregnant women who develop opioid use disorders (either before or during the pregnancy) are encouraged to undergo maintenance therapy such as methadone treatment, which is less risky to the baby and more likely to result in successful recovery than sudden withdrawal would be.

Infants with ongoing exposure to opioids during pregnancy can experience withdrawal symptoms at birth, commonly called neonatal abstinence syndrome (NAS). Like Fetal Alcohol Syndrome, NAS was first described in the literature in the 1970s, by Dr. Loretta Finnegan. The syndrome has gotten renewed attention during the current opioid epidemic as providers and researchers consider the best ways to prevent and manage NAS. Studies have shown that hospitalized infants with NAS have better outcomes—less severe symptoms, less need for medication, and shorter hospital stays—when they are breastfed, even if the mothers are still on opioid maintenance therapy. But some health care providers hesitate to encourage breastfeeding in these cases out of concern about baby's ongoing exposure to the mother's medication through the milk. Continued funding can help address these concerns by developing consistent standards of care for infants with NAS. If you are using opioids for any reason, be sure to talk to your health care provider as soon as you find out you are pregnant. Together, you can work on a plan for the best possible care for you and baby during and after the pregnancy.

Cocaine

To study the effects of cocaine in pregnancy, researchers have followed a group of young adults, now in their early 20s, since they were born. About half the group was exposed to cocaine before birth. Early on, the researchers observed that those with cocaine exposure had challenges with attention and remembering what they saw when compared to the children who had not been exposed to cocaine. In older years, exposed children had more difficulty

with language skills, more behavior problems at school and at home, reported more substance use and risk-taking behavior, and had more difficulty with everyday skills such as staying organized, thinking ahead, and controlling their own behavior. Some dropped out of school. Interestingly, having a positive home environment seemed to help with some, but not all, of these challenges. For example, children in foster or adoptive homes had better language and reasoning skills than children who still lived with their birth mothers who used cocaine, but there was no difference in their behaviors. As the study continues, researchers hope to learn more about how prenatal cocaine exposure affects these individuals into adulthood.

E-cigarettes

E-cigarettes are marketed and often seen as a “safer” option to cigarettes. In fact, the most common users are current and former cigarette smokers who are using e-cigarettes to replace or reduce the number of cigarettes they smoke. In a study of over 1,300 pregnant women, those using e-cigarettes reported doing so because they felt they were less harmful than cigarettes, or to help with smoking cessation. They also preferred the sweeter flavors, and thought they were even less harmful than the tobacco-flavored liquids.

E-cigarettes don’t expose users to the combustion by-products of traditional cigarettes, but even those labeled “nicotine-free” do contain nicotine, and vaporization creates its own potentially harmful by-products. Since e-cigarettes are liquid-filled and can be smoked longer, it’s more difficult to monitor actual exposure to nicotine than it is with traditional cigarettes. Plus, because e-cigarettes are not regulated by the FDA, there is no way of knowing exactly what they contain and what your pregnancy is exposed to when you use them.

Past studies have observed that prenatal exposure to nicotine affects baby’s brain development and increases the chance of later behavior problems and depression in adolescence. It even predicts baby’s own cigarette use in his/her teen years. And recent studies have shown that those adolescents who use cigarettes are more likely to also use e-cigarettes as teens and adults than their peers who don’t use cigarettes. We will learn more about the possible long-term effects of prenatal e-cigarette use as the first generation of children who were exposed to them in pregnancy gets older.

Marijuana

Marijuana is the most common “illicit” drug used in pregnancy. Some health care providers in Colorado, where marijuana is now legal, are seeing more pregnant women who believe that using it is not harmful and might even be beneficial. For example, pregnant women in one survey reported using marijuana to help manage depression or anxiety, help with pain, or ease nausea and vomiting, among other reasons. Without crucial data about exactly how marijuana might be harmful to a pregnancy, some health care providers are hesitant to talk to women about it, even if they know they are using it in pregnancy.

There is little doubt that marijuana can be harmful in pregnancy: THC crosses the placenta and, even in very early pregnancy, can affect the cells that form the baby’s brain. But studies on its effects on overall brain development and pregnancy outcomes have had mixed results so far, and they face challenges such as co-exposures (women using other substances along with marijuana) and, in some cases, relying on self-reporting to know how much of the drug a pregnancy is exposed to (this can skew the data if users do not accurately reveal how much and how often they use.) As researchers forge ahead to provide better answers, the best advice is still to avoid marijuana altogether in pregnancy.

Alcohol

Since those early years, we have discovered that the facial features and developmental delay often seen with FAS are not the only possible effects of prenatal exposure to alcohol. In some children, subtle changes to the brain might not be noticed until the child is older and begins to struggle with learning and behavior problems that can follow them into adulthood. This range of possible effects has been more recently named Fetal Alcohol Spectrum Disorder (FASD). According to Dr. Jones, FASD affects about 2% of babies born in the U.S. each year—more common than autism—despite the fact that it is 100% preventable.

Looking ahead.

The decades ahead require not only continued research, but also increased awareness of what we already know. To that end, each September we observe FASD Awareness Month. MotherToBaby is happy to answer your questions about alcohol and other exposures in pregnancy—in fact, check out **our brief YouTube video here**. Together, we can continue the work towards the best possible outcomes for future generations.



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About MotherToBaby

MotherToBaby is a service of the Organization of Teratology Information Specialists (OTIS), suggested resources by many agencies including the Centers for Disease Control and Prevention (CDC). If you have questions about exposures during pregnancy and breastfeeding, please call MotherToBaby toll-FREE at 866-626-6847 or try out MotherToBaby's new text information service by texting questions to (855) 999-3525. You can also visit MotherToBaby.org to browse a library of fact sheets about dozens of viruses, medications, vaccines, alcohol, diseases, or other exposures during pregnancy and breastfeeding or connect with all of our resources by downloading the new MotherToBaby free app, available on **Android and **iOS** markets.**

References:

Bateman BT et al. Patterns of Opioid Utilization in Pregnancy in a Large Cohort of Commercial Insurance Beneficiaries in the United States. *Anesthes* 2014;120(5):1216-1224.

McQueen K and Murphy-Oikonen J. Neonatal Abstinence Syndrome. *N Engl J Med* 2016; 375:2468-2479.

Presented at the (joint) Annual Meetings of OTIS (Organization of Teratogen Information Specialists), DNTS (Developmental Neurotoxicology Society), RSA (Research Society on Alcoholism) and the Teratology Society in Denver, Colorado on June 25-27, 2017:

- **From the FAS to OTIS - A Long Strange Trip.** Buzz Chernoff, California Environmental Protection Agency (Retired).
- **The Opioid Epidemic and Impact of Prenatal Exposure on Child Development.** Lynn Singer, Case Western Reserve University.
- **Project Newborn: What We Have Learned from 20 Years of Research on Prenatal Cocaine Exposure.** Sonia Minnes, Case Western Reserve University.
- **Epigenetic Changes Induced by Prenatal Nicotine and Cocaine Exposure.** Pradeep Bhide, Florida State University.
- **Effects of Prenatal Nicotine Exposure on Adolescent Dopamine Systems.** Frances Leslie, University of California at Irvine School of Medicine.
- **Electronic Cigarette Use in Pregnancy: Patient and Provider Perspectives.** Katrina Mark, University of Maryland School of Medicine.
- **Pathways from Prenatal Tobacco Exposure to Electronic Cigarette Use.** Natacha M. DeGenna, University of Pittsburgh School of Medicine.
- **Perceptions and Use of Electronic Cigarettes during Pregnancy: Implications for Infant Outcomes.** Laura Stroud, Brown Medical School.

- **Pathways from Prenatal Exposures to Tobacco and Cannabis to Adult Electronic Cigarette Use.** Natacha De Genna, University of Pittsburgh Medical School.
- **Counseling Women about Prenatal Marijuana Use: Weeding through the Data.** Torri D. Metz, University of Colorado-Denver.
- **Introduction: Marijuana and Child Development Symposium.** Diana Dow-Edwards, SUNY/Downstate Medical Center.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

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