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

By Lorrie Harris-Sagaribay, MPH, Teratogen Information Specialist and Coordinator, MotherToBaby North Carolina

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.

Lorrie Harris-Sagaribay, MPH is the Coordinator of MotherToBaby North Carolina and a bilingual Teratogen Information Specialist. After working with midwives as a community health educator with the Peace Corps in Honduras, she earned her Master of Public Health at the University of North Carolina at Chapel Hill. She has worked in the field of maternal and child health for over 25 years.

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.*

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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.

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

By Sonia Alvarado, MotherToBaby California Teratogen Information Specialist

I wrote a blog about marijuana and pregnancy three years ago and it's become the most visited blog on the MotherToBaby website. No surprise, considering that marijuana is an even hotter topic today than it was previously! Three years ago, two states had laws allowing recreational use. Now, 29 states allow medicinal use, recreational use or both (with limits on amounts varying from state to state). I was recently asked to revisit this topic and to provide an update on what we know about marijuana use during pregnancy and breastfeeding.

In this blog article, I use the terms marijuana, cannabis or pot interchangeably, as do most people.

At this time, there is no FDA approved indication for cannabis use as a medical treatment. The FDA gives approval to drugs only when the manufacturers of those drugs have gone through all of the required testing, have met the standards for safety, and have shown that it works when treating specifically named conditions. Marijuana has not met these standards. However, there are two FDA-approved drugs that contain man-made (synthetic) forms of marijuana.

These medications, dronabinol and nabilone, are used to treat nausea caused by cancer medications. Neither one has been studied in human pregnancy, so we do not know how safe they are if taken during pregnancy.

The use of marijuana by pregnant women, either unintentionally before they know that they are pregnant or intentional use after pregnancy recognition, continues to increase. One survey suggests that marijuana is the leading recreational drug that pregnant women report using. The National Survey of Drug Use and Health reported that 3.85% of pregnant women reported using marijuana in the past month in 2014, compared with 2.37% in 2002. Other self-report studies indicate the number may be 5-8%. Our information service also receives many questions from pregnant and breastfeeding women who want to continue to use marijuana. Because of increasing legalization, the reported increased use and the need for answers from the public and health care providers, MotherToBaby has set aside sections of its June 2017 professional meeting in Denver, Colorado to bring experts together to discuss the latest research.

What do pregnant women, doctors and teratogen specialists, like myself, want to know about cannabis use during pregnancy?

- We know that the developing baby is exposed to drugs, medications, infections and chemicals in the mother's blood. Pregnant women, their health care providers and researchers want to know the differences in the amounts of the drug that reach the blood when cannabis products are used topically, when they are ingested and when they are smoked.
- We also want to know the risks associated with each type of exposure and the doses that are associated with the risk. For example, what is the difference in risk if a pregnant woman smokes pot once a day (a hit or two or more) vs. smoking pot once a week (one hit or two)? What about if she ingests the drug? What is the difference in risk to her developing baby?

It used to be that teratogen specialists like me were mostly concerned about the risk for birth defects, such as cleft lip and palate, or heart defects. However, now we know that for some drugs, the risks are not specific just to the baby's structure, such as development of limbs. Instead, some drugs, like alcohol, affect development of the baby's brain and therefore the effects on the child's learning and behavior might not be noticed until much later. We need studies that follow children exposed prenatally to marijuana, in all its forms and at a range of doses, so that we can better inform pregnant women if their babies have risks for learning or mental health problems.

What the Available Studies Do Show

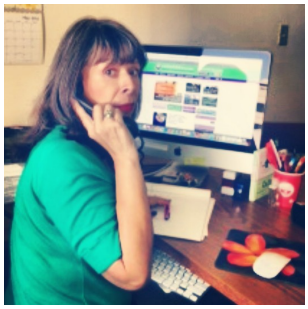
The few studies that have focused on birth defects like heart defects or cleft lip and palate have not found a specific pattern of birth defects linked with marijuana when it is smoked. This does not mean that we know for sure that the drug does not ever cause birth defects. What it could mean is that the risk may be small or there is an increased risk only at higher doses or more frequent use. Larger and better studies are needed to determine if there is or is not an increased risk. We do not know for sure yet, and studies are continuing.

Many of the studies have continued to report a higher risk for low birth weight babies, preterm delivery, babies that are small for gestational age and higher rates of admission to intensive care nurseries for babies born to women who smoke marijuana during pregnancy. All of these complications are important and associated with serious health risks for the newborn baby. They could require a longer hospital stay, medical treatment and in some cases, could result in life-long disability. Prematurity, regardless of the cause, is associated with a higher risk for apnea, bleeding in the brain, lung problems (breathing problems), intestinal problems, a higher risk for infections and other problems. Studies continue to look at the issue of complications from smoking pot during pregnancy.

THC and Baby's Brain

Another issue that is very important is the risk of learning and mental health problems from prenatal exposure to cannabis. As many people know, the primary psychoactive component of cannabis is Δ9-tetrahydrocannabinol or THC. This part of the plant produces the "high" when it binds to cannabinoid receptors in the brain. In the field of psychiatry, for some time it has been reported that smoking pot is linked to psychosis or schizophrenia. This type of research has generated questions about the risk to the unborn baby's brain from exposure to the drug. Because the brain of the baby continues to grow after birth, there is also concern about what can happen if the baby is exposed to THC through breastmilk. This is part of the important research that will be presented at the MotherToBaby/OTIS conference in Denver this month. We look forward to hearing what the researchers have been learning about cannabis in pregnancy

and lactation. Let's just say I have a strong feeling that after this meeting and as we get more and more up-to-date, evidence-based information for our readers, marijuana blog #3 will be right around the corner!



Sonia Alvarado is a bilingual (Spanish/English) Senior Teratogen Information Specialist at MotherToBaby's California affiliate. MotherToBaby aims to educate women about medications and more during pregnancy and breastfeeding. Along with answering women's and health professionals' questions regarding exposures during pregnancy/breastfeeding via MotherToBaby's toll-free helpline, email and private chat counseling service, Alvarado has provided educational talks regarding pregnancy health in community clinics and high schools over the past decade.

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

By Lori Wolfe, Certified Genetic Counselor and Teratogen Information Specialist, MotherToBaby North Texas

Have you ever had a pregnant friend tell you, "it is OK to have just one glass of wine now and then, that's what my doctor said," or "my mother drank beer when she was pregnant with me, and I turned out fine." As a Teratogen Counselor (a birth defects expert), I hear these statements more than you would imagine. You may think it is common knowledge that there is no safe level of alcohol use during pregnancy, and that any use of alcohol while pregnant has the potential to harm the baby. Yet that message is not getting out there to everyone. Studies have long shown that heavy use of alcohol during pregnancy can cause Fetal Alcohol Syndrome, while more recent studies suggest that moderate use (and possibly even light use) can cause long term developmental problems in an exposed child. In fact, Fetal Alcohol Spectrum Disorder is thought to be the leading cause of developmental delays in children. Despite this, studies also show that 1 in 10 to 1 in 13 women continue light drinking of alcohol, even after they know they are pregnant. So I started thinking… Why do some woman continue to drink alcohol during pregnancy?

1. You Didn't Know You Were Pregnant
Most women find out they're pregnant when they are 4-6 weeks along – and many may not recognize the signs of pregnancy for quite a few months. So unless you are planning your pregnancy (50% of all pregnancies today are unplanned!), you may indulge in alcoholic beverages before you even know you are pregnant. Thankfully, the majority of women will stop using alcohol once they find out they are pregnant. But unfortunately, the damage could already be done. Harmful exposures (like alcohol) during those first critical weeks of pregnancy have the greatest risk of causing major birth defects. This is why experts at the Centers for Disease Control and Prevention (CDC) recommend that women avoid alcohol not only if they are pregnant or trying to become pregnant, but also if they are sexually active and not using an effective method of birth control.

2. Mixed Messages
It's not uncommon for pregnant women to receive mixed messages from people they trust about how safe alcohol may be in pregnancy. Even her own doctor may tell her that an occasional glass of alcohol won't harm her baby. There's a lot of misinformation out there, even among healthcare providers! It's important for you and your healthcare provider to keep in mind that the experts at the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics (among many others) advise that women avoid alcohol entirely while pregnant, because no amount of alcohol – even light-to-moderate amounts – can be considered safe for a developing baby.

3. It's A Social Thing
Social pressure from family or friends can be strong. If a woman is used to going out on weekends with her friends and everyone has a glass of wine, she may feel that she needs to drink too, just to fit in. Plus many women feel that the risk of having just a little alcohol during pregnancy is low. These same woman may be doing everything else that they can to remove all other risks to their pregnancy, but they still continue to use alcohol. At MotherToBaby, we understand that the use of alcohol during pregnancy may have perceived benefits to a woman. But we also know that alcohol provides ZERO benefit for a developing baby, and, in fact, can only harm the baby. And because the exact amount of alcohol that could harm a baby is unknown at this point (and does vary woman-to-woman and even pregnancy-to-pregnancy), our philosophy is: WHY TAKE THE RISK?

4. It Helps Me Relax, De-Stress, and Just Deal with Everyday Life
Recently a 35 year old caller told me that she continued to enjoy a half glass of wine every weekend as a treat to

herself. “Susan” (not her real name) knew that she was not supposed to drink alcohol, and she even said she got a lot of negative feedback from family and friends, yet she continued to drink throughout her pregnancy. Without realizing it, Susan and other women may be using alcohol to help deal with other unrecognized issues in their lives, such as depression and anxiety, high levels of stress, or little outside support for the pregnancy. At MotherToBaby, it is our job to help women understand how fragile and vulnerable a pregnancy can be to certain exposures; alcohol is one of the dangerous ones. While it may seem a hardship to give up alcohol entirely while pregnant, think about it this way: Pregnancy is only 9 months long (less if you base it on when a woman learns she is pregnant). If a woman is strong enough to survive childbirth, courageous enough to take on the toughest job on earth (parenthood), and resilient enough to survive that job, then abstaining from alcohol for the duration of a pregnancy is nothing. And if it means giving your baby a chance at the best possible start in life, then not drinking alcohol while pregnant is everything.

What Do We Know? There is not a known safe level of alcohol use during pregnancy.
We have known about Fetal Alcohol Syndrome for over 40 years now. Dr. Kenneth Jones, the doctor who first named Fetal Alcohol Syndrome in 1973 states: “When talking about the prenatal effects of alcohol, we usually think exclusively about the dose, the strength, and the timing of alcohol exposure. However, perhaps even more important are factors involving the mother – her genetic background and nutritional status to name just two. Without knowing those genetic and nutritional factors that are critically involved with the way a woman metabolizes alcohol, it is not possible to make any generalizations about a “safe” amount of alcohol during pregnancy.” Studies have shown moderate use, and possibly even light use, of alcohol during pregnancy can cause long term developmental problems in the exposed children. In fact, Fetal Alcohol Spectrum Disorder is thought to be the leading cause of developmental delays in children. Scientists are continuing to study how and why alcohol affects the developing baby, and in future years we will know more about this. But for now we do know there are always risks with drinking alcohol during pregnancy.

Lori Wolfe is a board certified Genetic Counselor and the Director of MotherToBaby’s North Texas affiliate. MotherToBaby aims to educate women about medications and more during pregnancy and breastfeeding. Along with answering women’s and health professionals’ questions regarding exposures during pregnancy/breastfeeding via MotherToBaby’s toll-free number and by email, Wolfe also teaches at the University of North Texas, provides educational talks regarding pregnancy health in community clinics and high schools, and counsels adoptive parents.

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By Beth Conover, APRN, CGC, MotherToBaby Nebraska

So…you were really good during your entire pregnancy, giving up every drop of alcohol, quitting smoking tobacco, and, of course, avoiding any drug like marijuana. You were concerned about the development of your baby, and doing everything you could to make a healthy outcome more likely. Good job! But now here you are….you've had your baby, you're giving breastfeeding your best shot…do you still need to be so careful? If you're wondering this, you're not alone. It is a top question I get as a health care provider and one of the top questions we get from moms through MotherToBaby's text information line. I'm a mom myself and after I had my boys, I asked the same things, like "would having a glass of wine when I'm on a date with my husband be the end of the world if I'm breastfeeding?"

Alas, many years later (and many published studies later), I have answers for you.

Let's start with the facts about breastfeeding. Breastfeeding is good for you and the baby, and you should continue nursing for at least 6 months… and better-yet, a year.

I think of alcohol and tobacco as 'recreational drugs' because there is not any medical reason to use them. And while medical use of marijuana is becoming more widespread, for most of us the use of marijuana is not medically necessary. We don't want rules surrounding the use of alcohol, tobacco, and marijuana to be unnecessarily strict so that they discourage nursing for the optimal amount of time. But we also want nursing moms to know that each of these drugs are passed to breast milk. Fortunately, there are often ways that we can limit the amount that baby gets.

Let's take a closer look at each one…

Alcohol—alcohol of all kinds (wine, beer, liquor) passes into your milk. Babies don't like the taste of it, and, if it happens often enough, babies may show developmental delays from exposures to alcohol through breast milk. Fortunately, waiting 2-3 hours after drinking a single alcoholic beverage results in lower amounts in milk. If you have two drinks, wait 4-6 hours…you get the idea. You can pump for comfort and to maintain your milk supply, but be sure to throw away the milk since it likely has alcohol in it. Chronic or heavy users of alcohol probably should not breastfeed.

Tobacco—you know that it is best for your health and that of your baby to avoid smoking tobacco, but if you cannot resist, keep the number of cigarettes as low as possible (preferably less than ½ pack per day) and never smoke around your baby. Nicotine gets into your milk, so try to wait several hours after you smoke before nursing your baby. Second hand smoke increases your baby's risk for ear and respiratory infections, asthma, and even sudden infant death syndrome. The immunoglobulins in your milk help to lessen those risks, which is why most experts still recommend breastfeeding even if a woman is smoking small amounts of tobacco.

Marijuana – THC, the active ingredient in marijuana, passes into breast milk. Marijuana production is not very well regulated, so there may be other dangerous contaminants. There are not many studies regarding use of marijuana and breastfeeding, but there are concerns that exposure to THC via milk might affect baby's development. It can also reduce your milk supply. Until more is known, it is recommended that marijuana be avoided in breastfeeding women, and that an effort also be made not to expose the infant to second hand marijuana smoke. If you happen to use marijuana, waiting 1-2 days before resuming nursing will help reduce the amount in milk. Pump and throw away milk in the meantime for comfort and to maintain your milk supply.

Bottom line, by breastfeeding, you're already taking the first step in providing continued important nutrition for your baby. Way to go! Taking steps to make sure your breastmilk stays as healthy as possible for the entire time you breastfeed will be well worth the effort. Stay strong, live well.

Beth Conover, APRN, CGC, is a genetic counselor and pediatric nurse practitioner. She established the Nebraska Teratogen Information Service in 1986, also known as MotherToBaby Nebraska. She was also a founding board member of the Organization of Teratology Information Specialists (OTIS). In her clinical practice, Beth sees patients in General Genetics Clinic, Prenatal Clinic, and the Fetal Alcohol Syndrome Clinic at the University of Nebraska Medical Center. Beth has provided consultation to the FDA and CDC. Two of her recent publications are, "The Art and Science of Teratogen Risk Communication" and "Safety Concerns Regarding Binge Drinking in Pregnancy: A Review."

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By Jennifer Lemons, MS, CGC, MotherToBaby Texas TIPS

It was the longest 3 minutes of her life. As she opened her eyes to glance at the test, her heart stopped. She couldn't breathe. Frantically, she tore open the instructions that came with the test to confirm what she already knew. She was pregnant. She laid her head on the bathroom stall, tears threatening to fall. It was then that the bell rang, signaling the end of lunch. It was time to go to class. But all she could think was, "I'm only 16…"

May is National Teen Pregnancy Prevention Month, a good time to focus on the specific challenges a young, pregnant mother may face. Teen pregnancy raises a myriad of emotions and thoughts from the most practical of, "How am I going to finish school?" or "What will my parents think?" to the more profound, "Should I even keep it?" or "Could I have harmed the baby somehow?"

When trying to answer these questions, it should come as no surprise that teens are at a high risk for receiving misinformation from many sources, i.e. the internet, friends and media. As a certified genetic counselor at MotherToBaby, this concerns me greatly – for mom's sake, as well as baby's. When somehow that mom-to-be lands on the other end of my phone line, in my office or on the other end of an email, I am relieved. She's found a trustworthy resource available for pregnant teens to help them answer these important, and potentially life-changing, questions.

MotherToBaby, a service of the nonprofit Organization of Teratology Information Specialists (OTIS), provides the most up-to-date, evidence-based information to mothers, healthcare professionals, and the general public about potentially harmful exposures, like alcohol, drugs and medications, during pregnancy and while breastfeeding. Each question that MotherToBaby receives is researched by a professional like me. From questions about bug repellant to illegal drug use, MotherToBaby has seen it all! So, what are some of the most common questions I get from young moms?

ALCOHOL. "Can I drink any alcohol at all during my pregnancy?" No amount of alcohol is safe during pregnancy. However, babies exposed to large amounts of alcohol at one time (i.e. binge drinking) and/or frequently throughout a pregnancy may be at risk for Fetal Alcohol Spectrum Disorder (FASD). Babies with FASD may have one or more of the following: birth defects, intellectual disabilities, learning disorders and/or behavioral problems.

CIGARETTES. "Why can't I smoke cigarettes while I am pregnant?" There are over 4,000 chemicals and toxins in cigarette smoke. Several of these can cross the placenta and decrease the amount of oxygen and nutrients available to baby. Studies on heavy smoking (smoking 15 or more cigarettes per day) during pregnancy have shown an increased risk of oral clefts in newborns, as well as a higher chance for preterm delivery, low-birth weight or miscarriage. Long-term effects have included a higher risk for childhood asthma, bronchitis, and respiratory infections, as well as ADHD. It's never too late to quit smoking – even reducing the number of cigarettes smoked per day will help!

MARIJUANA. "I've heard it is OK to smoke marijuana during pregnancy. Is this true?" There is conflicting information available about the effects of marijuana on a pregnancy. While some recent studies have shown that it has not been associated with an increased risk for birth defects or complications, there is not enough data available to say this with 100% confidence. Additionally, cognitive and behavioral problems have been seen more often in children whose mothers were "heavy" marijuana users (used marijuana one or more times per day). Again, the evidence is not conclusive and some studies report conflicting results. Plus, smoking is smoking, so heavy marijuana use during pregnancy can be associated with many of the same problems as heavy cigarette use.

METHAMPHETAMINES. "I've used methamphetamines in the past. Is this OK to use now and then while I am pregnant?" Methamphetamines (meth) should not be used at any point during pregnancy. Meth use has been associated with an increased risk of miscarriage or preterm delivery. Meth use later in pregnancy has also been associated with babies experiencing withdrawal symptoms after being born. Currently, there is not enough data to know whether meth use during pregnancy increases the risk of birth defects, although heavy use of meth during pregnancy may increase the risk for learning problems.

There's no doubt the road ahead will be filled with many more questions for a young parent, but I'd like to think receiving a reliable personalized risk assessment about exposures during pregnancy and breastfeeding will be the start of an important support system she builds for herself.

Jennifer Lemons, MS, is a certified genetic counselor and clinical instructor in the Department of Pediatrics, Division of Genetics at the University of Texas Medical School. In addition to providing teratogen counseling for MotherToBaby TexasTIPS, she provides genetic counseling services at the Gulf States Hemophilia and Thrombophilia Center in Houston. Special thanks to Meagan Giles, a 2nd year genetic counseling student with the University of Texas Genetic Counseling Program, who also contributed information to this blog.