



Pregnant Women, Junk Science, and Zealous Defense

There is no such thing as a “crack” or “meth baby”¹ and no state has a statute that makes it a crime for a drug-using pregnant woman to continue her pregnancy to term, to give birth, or to suffer a miscarriage or stillbirth. Nevertheless, some pregnant women and new mothers are still being arrested in the United States when they give birth or suffer a stillbirth and test positive for an illegal drug or alcohol. These prosecutions not only lack legal foundation, they also lack medical and scientific foundation. In other words, they are based on junk law and junk science.

In 1993, *The Champion* published an article entitled *Winning Strategies: Defending the Rights of Pregnant Addicts*.² It outlined the statutory and constitutional arguments that could be used to challenge the prosecution of pregnant women who continued to term in spite of a drug problem. These arguments remain valid today, and with the exception of the Supreme Court of South Carolina, have been used successfully to get charges dismissed and convictions overturned in scores of cases in dozens of states.³ Additional arguments, including Fourth Amendment claims, have

also been successful⁴ and international human rights principles weigh strongly against such prosecutions.⁵

Nevertheless, there are many cases in which women have pleaded guilty to non-existent crimes and are serving significant sentences because they continued or tried to continue a pregnancy to term in spite of a drug problem. The vast majority of these cases are based on the claim that use of any amount of an illegal drug creates such unique risks or actually causes such significant harms, that judicially creating new pregnancy-related crimes is justified.

In 2008, an unlikely source made clear that failing to challenge the science behind these prosecutions could constitute ineffective assistance of counsel. A unanimous South Carolina Supreme Court overturned Ms. Regina McKnight’s conviction for homicide by child abuse based on the claim that her use of cocaine during pregnancy caused her to suffer a stillbirth.⁶ This ruling is particularly poignant since it comes from the only court in the country to have authorized such prosecutions in the first place.

In a powerful example of judicial activism, in 1977 the Supreme Court of South Carolina in a 3-2 decision rewrote the state’s child abuse law, holding that it could be applied to a woman who gave birth to a healthy newborn that tested positive for cocaine.⁷ The court held that under law unique to South Carolina, the word “child” included viable fetuses.⁸ In 2003, in another 3-2 decision, the Supreme Court of South Carolina upheld the application of the state’s homicide laws to pregnant women, ruling that a pregnant woman who unintentionally heightens the risk of a stillbirth can be found guilty of depraved heart homicide.⁹ The Supreme Court of South Carolina is

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the only one in the nation to reinterpret state child abuse and homicide laws to make them applicable to pregnant women in relationship to the fetuses they carry.

Nevertheless, as a result of ongoing post-conviction relief efforts, the very same court was finally persuaded that the conviction was based on “outdated” and inaccurate science. The court ruled that Regina McKnight had not received a fair trial and that her trial counsel was ineffective in her preparation of McKnight’s defense through expert testimony and cross-examination. Specifically, the court found that the research the State relied on was “outdated” and that trial counsel failed to call experts who would have testified about “recent studies showing that cocaine is no more harmful to a fetus than nicotine use, poor nutrition, lack of prenatal care, or other conditions commonly associated with the urban poor.”¹⁰

Media Hype and Enduring Myths Are Not the Same as Science

Prosecutors, public defenders, judges, and even some health care providers still believe that a pregnant woman who uses any amount of an illegal drug will inevitably harm or even kill her fetus. This is not surprising based on the extraordinary misinformation that appeared so frequently in the popular press.

For nearly two decades, the popular press was full of highly prejudicial and often inaccurate information about the effects of *in utero* cocaine exposure. In 1986, when crack cocaine began to attract substantial media attention, “six of the nation’s largest and most prestigious news magazines and newspapers had run more than one thousand stories about crack cocaine. *Time* and *Newsweek* each ran five ‘crack crisis’ cover stories. ... [T]hree major network television stations ran 74 stories about crack cocaine in six months. ... Fifteen million Americans watched CBS’ prime-time documentary ‘48 Hours on Crack Street.’”¹¹ This hype, which built on pre-existing cultural and racial stereotypes about Black motherhood in particular, went largely unchallenged.¹²

But media hype is not the same as science. That is why in 2004, 30 leading doctors and researchers in the field of prenatal exposure to illegal drugs signed an open letter regarding the “crack

baby” myth. Virtually every expert in the field joined this letter explaining:

Throughout almost 20 years of research, none of us has identified a recognizable condition, syndrome or disorder that should be termed “crack baby.” Some of our published research finds subtle effects of prenatal cocaine exposure in selected developmental domains, while other of our research publications do not. This is in contrast to Fetal Alcohol Syndrome, which has a narrow and specific set of criteria for diagnosis.

The term “crack-addicted baby” is no less defensible. Addiction is a technical term that refers to compulsive behavior that continues in spite of adverse consequences. By definition, babies cannot be “addicted” to crack or anything else. In utero physiologic dependence on opiates (not addiction), known as Neonatal Narcotic Abstinence Syndrome, is readily diagnosed, but no such symptoms have been found to occur following prenatal cocaine exposure.¹³

Today courts and leading federal government agencies confirm that “the phenomena of ‘crack babies’ ... is essentially a myth.”¹⁴ As the National Institute for Drug Abuse has reported, “Many recall that ‘crack babies,’ or babies born to mothers who used crack cocaine while pregnant, were at one time written off by many as a lost generation. ... It was later found that this was a gross exaggeration.”¹⁵ As the U.S. Sentencing Commission concluded, “research indicates that the negative effects from prenatal exposure to cocaine, in fact, are significantly less severe than previously believed.”¹⁶ And finally, in 2009, the *New York Times* tried to set the record straight in a story entitled *The Epidemic That Wasn’t*.¹⁷ In this story leading researchers, including Dr. Deborah Frank who is also featured in an online video entitled *Prenatal Drug Exposure: Award-Winning Pediatrician Discusses What the Science Tells Us*,¹⁸ explain that while researchers have found some effects of prenatal exposure to cocaine, those “effects are less severe than those of alcohol and are comparable to those of tobacco — two legal substances that are used much more often by pregnant women, despite health warnings.”¹⁹

The newer hype about so-called “meth babies” is similarly unjustified. In 2005, a national expert panel reviewed published studies concerning the developmental effects of methamphetamine and related drugs and concluded that “the data regarding illicit methamphetamine are insufficient to draw conclusions concerning developmental toxicity in humans.”²⁰ In that same year more than 90 leading medical doctors, scientists, psychological researchers, and treatment specialists released an open letter requesting that “policies addressing prenatal exposure to methamphetamines and media coverage of this issue be based on science, not presumption or prejudice” and warning that terms such as “meth babies” lack medical and scientific validity and should not be used.

Although research on the medical and developmental effects of prenatal methamphetamine exposure is still in its early stages, our experience with almost 20 years of research on the chemically related drug, cocaine, has not identified a recognizable condition, syndrome or disorder that should be termed “crack baby” nor found the degree of harm reported in the media and then used to justify numerous punitive legislative proposals.

The term “meth-addicted baby” is no less defensible. Addiction is a technical term that refers to compulsive behavior that continues in spite of adverse consequences. By definition, babies cannot be “addicted” to methamphetamines or anything else.²¹

In 2006, the American College of Obstetrics and Gynecology created a special information sheet about methamphetamine use in pregnancy, noting that “the effects of maternal methamphetamine use cannot be separated from other factors” and that there “is no syndrome or disorder that can specifically be identified for babies who were exposed *in utero* to methamphetamine.”²² Most recently, a peer-reviewed research article concerning stillbirths concluded that “despite widespread reports linking methamphetamine use during pregnancy with preterm birth and growth restriction, evidence confirming its association with an increased risk of stillbirth remains lacking.”²³

Prenatal exposure to opiates, most commonly heroin and oxycodone, is not associated with fetal malformations.²⁴ Moreover, there is no scientific evidence that growth and development are compromised by exposure to opiates themselves.²⁵ Some newborns exposed prenatally to opiates experience an abstinence (withdrawal) syndrome at birth. Withdrawal symptoms may also occur when adults with opioid addictions abstain from opiate use. In pregnant women, withdrawal symptoms are known to cause uterine contractions, miscarriage or early labor, but these symptoms can be prevented through methadone maintenance treatment, the medically approved treatment for opiate addiction that is particularly recommended during pregnancy. The U.S. Department of Health and Human Services advises:

If you're pregnant and using drugs such as heroin or abusing opioid prescription pain killers, it's important that you get help for yourself and your

Prenatal Exposure to Marijuana

Based on my 30 plus years of experience examining the newborn, infants, toddlers, children, adolescents and young adults born to women who used marijuana during pregnancy it is important to emphasize that to characterize an infant born to a woman who used marijuana during pregnancy as being 'physically abused' and/or 'neglected' is contrary to all scientific evidence (both mine and subsequent work by other researchers). The use of marijuana during pregnancy ... has not been shown by any objective research to result in abuse or neglect.

There have been a few reports of mild negative effects in high-risk populations on the birth weight or birth length of newborns but, in those studies, these effects were no longer present after a few months. This is in contrast to many other substances that are commonly used during pregnancy, including alcohol and cigarettes, where the effects on growth are much more pronounced.²⁸

Peter Fried, a leading researcher on the effects of prenatal exposure to marijuana.

unborn baby. Methadone maintenance treatment can help you stop using those drugs. It is safe for the baby, keeps you free of withdrawal, and gives you a chance to take care of yourself.²⁶

For those newborns that do experience withdrawal, identification of such infants by trained caregivers is not difficult, and safe and effective treatment can be instituted in the nursery setting.²⁷

While research demonstrates that some drugs such as alcohol can cause harm to fetuses, whether drug or alcohol use caused a particular harm or even unique risks of harm in any given pregnancy is a scientific question that requires careful examination. For example, although alcohol can unquestionably have teratogenic effects,²⁹ much remains unknown about the specific effects, if any, that any individual pregnant woman's pattern of alcohol use may have in any particular pregnancy. While many medical experts, particularly in the United States, recommend as a precautionary matter abstaining from alcohol altogether during pregnancy,³⁰ there is in fact no medical certainty regarding the level of alcohol consumption during a particular pregnancy that will result in negative fetal outcomes.³¹ Even the exact mechanism that establishes a causative link between alcohol ingestion and manifestation of harmful fetal symptoms has yet to be definitively established.³²

Moreover, the difficulty of isolating the influence of alcohol from that of other factors, such as poverty, poor nutrition, or smoking, on fetal outcomes or infant health renders inferences about causation based on *in utero* exposure to alcohol alone unreliable.³³ As researchers explain, "defining the factors that place certain women at risk of giving birth to an alcohol-affected child is a key research issue. Risk factors include maternal age, socioeconomic status, ethnicity, genetic factors, and maternal alcohol metabolism, among others." Researchers note that "further research is needed to evaluate the relative contributions of the various risk factors for FAS [fetal alcohol syndrome]."³⁴

The principal import of existing research is not that drug and alcohol use during pregnancy is "safe," but rather that no scientific or legal basis exists for concluding that exposure to these substances will inevitably cause harm or that the risks presented by use

of these substances are any greater than those associated with many other conditions and activities common in the lives of all people, including pregnant women.

In spite of scientific fact, prosecutors continue to use medical misinformation to justify new arrests of pregnant women and to ask courts to radically rewrite state law to permit the prosecution of pregnant women.³⁵ It is time for criminal defense attorneys to zealously challenge the junk science at the heart of these prosecutions.

Using Daubert as a Guide To Zealous Advocacy For Pregnant Women

The landmark case of *Daubert v. Merrell Dow Pharmaceuticals*³⁶ established the federal standard for admission of scientific expert testimony. That case and its history also provide a surprisingly useful guide for attorneys who want to ensure that pregnant women get fair trials. That case reminds us that even when a pregnant woman takes a drug and her child is born with severe "deformities," it does not mean that there is, in fact, a connection between the drug and the harm the child suffered.³⁷

In *Daubert*, two minors brought suit against Merrell Dow Pharmaceuticals, claiming that they suffered limb reduction birth defects "because their mothers had taken Bendectin, a drug prescribed for morning sickness to about 17.5 million pregnant women in the United States between 1957 and 1982."³⁸ Merrell Dow was vigorously defended, and after extensive discovery, the company moved for summary judgment, contending that Bendectin does not cause birth defects in humans and that the plaintiffs would be unable to come forward with any admissible evidence to establish that it did. Applying the *Frye* standard, the district court granted the motion for summary judgment, concluding that the scientific evidence was not admissible because the principle upon which it was based was not "sufficiently established to have general acceptance in the field to which it belongs."³⁹ The minors appealed, and the U.S. Supreme Court granted certiorari.

The Court held that the *Frye* test was superseded by the adoption of the Federal Rules of Evidence, specifically Rule 702. The Court observed that nothing in the text of Rule 702 establishes "general acceptance" as an

absolute prerequisite to admissibility. The Court then identified things that trial judges could and should look for to help them determine whether the evidence proposed is scientifically valid and therefore reliable as required by Rule 702: (1) whether the theory or technique at issue can be tested;⁴⁰ (2) whether the scientific method at issue has been subjected to peer review and publication; (3) for a technique, the trial court should consider the proffered technique's known or potential rate of error; and (4) the degree to which the new theory has gained acceptance in the scientific community may be pertinent, but such acceptance is not required.⁴¹ The court must also ascertain whether the expert's testimony will assist in understanding the evidence or determining the fact in issue.⁴²

With the new standards set, the highest Court sent the case down to the appellate court to apply those standards. The pharmaceutical company argued that even under the new, seemingly more liberal standard, the proffered evidence of causation was not admissible.

On remand, the Ninth Circuit explained:

[S]omething doesn't become "scientific knowledge" just because it's uttered by a scientist; nor can an expert's self-serving assertion that his conclusions were "derived by the scientific method" be deemed conclusive, else the Supreme Court's opinion could have ended with footnote two. As we read the Supreme Court's teaching in *Daubert*, therefore, though we are largely untrained in science and certainly no match for any of the witnesses whose testimony we are reviewing, it is our responsibility to determine whether those experts' proposed testimony amounts to "scientific knowledge," constitutes "good science," and was "derived by the scientific method."⁴³

This means that the "expert's bald assurance of validity is not enough. Rather, the party presenting the expert must show that the expert's findings are based on sound science, and this will require some objective, independent validation of the expert's methodology."⁴⁴

On remand, the Ninth Circuit explored, in depth, the limits of scientific evidence concerning the causes of

birth defects in general, and the specific evidence that the plaintiffs offered that their birth defects were caused by the drug Bendectin. The court noted on the issue of birth defects in general:

For the most part, we don't know how birth defects come about. We do know they occur in 2-3 percent of births, whether or not the expectant mother has taken Bendectin. Limb defects are even rarer, occurring in fewer than one birth out of every 1000. But scientists simply do not know how teratogens (chemicals known to cause limb reduction defects) do their damage.⁴⁵

In terms of causation, or the "biological chain of events that leads from an expectant mother's ingestion of a teratogenic substance to the stunted development of a baby's limbs," the court cautioned that "[n]o doubt, someday we will have this knowledge, ... in the current state of scientific knowledge, however, we are ignorant."⁴⁶

The court recognized that in some cases, such evidentiary problems could be overcome, and looked specifically at the proffered evidence linking Bendectin to the pregnancy outcomes in that case. Considering whether the testimony reflected "scientific knowledge," was "derived by the scientific methods" and "amounted to good science," the court concluded that the plaintiffs' evidence was not admissible as expert scientific testimony.⁴⁷

Factors that led to this holding included: that only one of the plaintiff's experts had done original research; that none of the experts based his testimony on preexisting or independent research; and that the proffered analysis and conclusion had not been subjected to normal scientific scrutiny through peer review and publication.⁴⁸ The court specifically rejected the testimony of Dr. Palmer, who was the only expert willing to testify that Bendectin caused the limb defects in each of the children.

In support of this conclusion, Dr. Palmer asserts only that Bendectin is a teratogen and that he has examined the plaintiffs' medical records, which apparently reveal the timing of their mothers' ingestion of the drug. Dr. Palmer offers no tested or testable theory to explain

how, from this limited information, he was able to eliminate all other potential causes of birth defects, nor does he explain how he alone can state as a fact that Bendectin caused plaintiffs' injuries.⁴⁹

The court concluded that "[t]he record in this case categorically refutes the notion that anyone can tell what caused the birth defects in any given case,"⁵⁰ and that Dr. Palmer's testimony was "rendered inadmissible by the total lack of scientific basis for his conclusions."⁵¹

As a result of the ruling, the children and families never even went to trial. The pharmaceutical company was safe from civil suit and financial liability. *Daubert* does not stand alone in applying stringent standards for the admission of expert testimony about causation in civil actions seeking to hold someone accountable for bad birth outcomes. Indeed, there are more than a dozen published decisions about Bendectin, with most delving into and turning on the admissibility of expert evidence about whether Bendectin caused a birth defect.⁵² Civil actions alleging that a birth defect was caused by a drug or pesticide are vigorously, and often successfully, defended by challenging the admissibility of expert evidence.⁵³

In another example, New York plaintiffs alleged that Malathion, a pesticide sprayed by a county agency, caused birth defects. The defendant challenged the expert evidence about causation, and the trial court conducted a hearing to determine whether it was generally accepted in the medical and scientific communities that Malathion caused birth defects.⁵⁴ Finding that no scientific organizations or peer-reviewed articles accepted a relationship between Malathion and birth defects and that the plaintiff's proposed expert relied on "fundamentally speculative" methodology, the court concluded that the expert's testimony was not admissible. Because the plaintiff presented no other evidence on the issue of causation, the lower court granted summary judgment for the defendant, and the appellate division affirmed.⁵⁵

Consider Scientific Evidence, Not Junk Science

When those accused of causing harm to newborns are pregnant women rather than pharmaceutical companies and what is at stake is a

mother's liberty and not just money, the standards for expert evidence often do not even come into play. In many cases, the delivering doctor or the local medical examiner is allowed to testify as to causation of a stillbirth, birth defect, or the creation of risk of harm. Yet, the "average medical doctor is not a trained researcher"⁵⁶ and is not necessarily qualified to address as a matter of science whether a particular drug has caused a particular risk or outcome.

On the subject of pregnant women, however, pretty much everyone seems to be considered an expert. A good example of this comes from the *Starks* case in Oklahoma.⁵⁷ Julie Starks, a pregnant woman, was arrested in a trailer that was allegedly being used, or that had once been used, to manufacture methamphetamine. In addition to being arrested and charged with manufacturing methamphetamine, the State began proceedings in the family court to declare her "unborn" child dependent. The family court took emergency custody of Ms. Starks' fetus and also raised Ms. Starks' bail for the criminal charges in order to prevent her release from jail. Despite the lack of a positive drug test and a recent evaluation by a treatment provider concluding that Ms. Starks was not using drugs, the State alleged that Ms. Starks used drugs. The State's case, however, focused on the claim that while pregnant, she had been in a location that exposed her unborn child to dangerous "fumes that permeate in the air[.]"⁵⁸

In describing how Ms. Starks's fetus was endangered, the State argued:

It does not take a rocket scientist, so to speak, to figure out that these kinds of chemicals would be harmful to not only the mother but the unborn child. The child breathes the same thing as the mother does. That child, because it's unborn cannot leave that residence. It's helpless. It can't do a thing. As investigator Stinnett says, it can't even cry.⁵⁹

Indeed, as these exchanges from hearings in the case make clear, the State was allowed to use law enforcement officials to give opinions on medical and scientific facts:

State Q: Sergeant Stinnett, do you need to have a medical

degree in order to advise a pregnant woman not to step out in front of a car coming down the highway?

A: I don't, no, sir.

Q: Do you think you need a medical degree that would enable you to have an opinion that a pregnant woman should not have been in the environment that you were in [when you arrested her] on August 23rd of 1999?

A: I don't believe I need a medical degree for that, no.⁶⁰

And similarly:

State Q: Okay. Let me ask you, Deputy [Dunlap], was there anything unusual that you noticed about Ms. Starks?

A: She appeared to be pregnant.

Q: And were you able to verify whether or not she was?

A: She said she was pregnant.

Q: Okay. And do you have an opinion as to whether or not she and her child's safety were placed in danger by being in that lab?

A: I felt it was. ...

Q: Deputy, you have a little boy, do you not?

A: That is correct.

Q: And he is, if I remember correctly, not very old?

A: He is about a half-year old.

Q: Six months old. When your wife was seven months pregnant, would you have wanted her to be in a methamphetamine lab?

A: No, sir, I would not.⁶¹

In other words, as the *Starks* case and these exchanges demonstrate, if a pharmaceutical company's pocket book is at stake, a high standard for the admission of expert testimony is

applied. But if a pregnant woman's liberty is at stake, it is often true that no standard is applied at all. Sometimes, public defenders, who themselves may believe the medical misinformation, fail to challenge the scientific grounds for the case, fail to ask for *Daubert* hearings (or their state equivalent), fail to challenge the expertise of the State's witnesses, fail to vigorously cross-examine those witnesses who are allowed to testify, or fail to call their own experts. Courts should act as gatekeepers regardless of whether defense attorneys challenge the admissibility of scientific evidence, but too often do not. Moreover, even when counsel does object to the admission of junk science and unqualified witnesses, their motions are sometimes overruled. Similarly, when defense counsel request *Daubert* hearings and funding for experts, courts may deny those motions and refuse to authorize expenditures for experts for indigent defendants. And prosecutors arguably violate ethical principles by proceeding with cases that they know or should know are based on junk science and made-up law.⁶² Defendants who are pregnant or parenting, however, deserve to have the junk science challenged.

Like the research available about Bencectin at the time of *Daubert*, the research about cocaine, methamphetamine, and other illegal drugs fails to establish, as a matter of science, a causal link between exposure to those drug and stillbirths, a wide range of alleged harms, or even unique risks substantially different from exposures to legal substances and a wide variety of life circumstances experienced by pregnant women. As the American College of Obstetricians and Gynecologists ethics statement on this issue provides:

[P]regnant women should not be punished for adverse perinatal outcomes. The relationship between maternal behavior and perinatal outcome is not fully understood, and punitive approaches threaten to dissuade pregnant women from seeking health care and ultimately undermine the health of pregnant women and their fetuses.⁶³

Other advocates have argued that *Daubert* has not been adequately incorporated into criminal defense practice.⁶⁴ This omission, however, is especially

dangerous in cases involving pregnant women because pregnant women charged with crimes are not like other defendants. As the Illinois Court of Appeals noted when refusing to create a tort of prenatal maternal negligence:

The relationship between a pregnant woman and her fetus is unlike the relationship between any other plaintiff and defendant. No other plaintiff depends exclusively on any other defendant for everything necessary for life itself. No other defendant must go through biological changes of the most profound type, possibly at the risk of her own life, in order to bring forth an adversary into the world. It is, after all, the whole life of the pregnant woman which impacts on the development of the fetus. As opposed to the third-party defendant, it is the mother's every waking and sleeping moment which, for better or worse, shapes the prenatal environment which forms the world for the developing fetus. That this is so is not a pregnant woman's fault: it is a fact of life.⁶⁵

Because pregnancy and pregnancy loss occur inside a woman's body, the State can, in effect, make out virtually every element of a circumstantial case of guilt by simply producing evidence of a positive drug test, a stillbirth or some alleged harm, and the fact of cocaine use or any other unwise or unpopular behavior. This makes it especially important for trial counsel to attack the State's case for causation. In other words, in these kinds of prosecutions, ceding the issue of causation is not an option.

In a prescient passage, the *Stallman* court warned of the role prejudice and presumption, rather than probative scientific facts, could play in cases involving pregnant women.

If a legally cognizable duty on the part of mothers were recognized, then a judicially defined standard of conduct would have to be met. It must be asked, by what judicially defined standard would a mother have her every act or omission while pregnant subjected to State scrutiny? By

what objective standard could a jury be guided in determining whether a pregnant woman did all that was necessary in order not to breach a legal duty to not interfere with her fetus' separate and independent right to be born whole? In what way would prejudicial and stereotypical beliefs about the reproductive abilities of women be kept from interfering with a jury's determination of whether a particular woman was negligent at any point during her pregnancy?⁶⁶

This is just one reason why, even if a causal link between a drug and harm could be established, these cases should never come to trial.⁶⁷ But if a motion to dismiss fails, and the case does proceed to trial, effective defense attorneys must challenge the qualifications of the State's experts and the scientific claims on which the prosecutions are based. Moreover, effective representation requires the introduction of scientific evidence to counteract the numerous prejudicial and stereotypical beliefs about pregnancy and addiction that are bound to influence the judge and jury.

On the basis of popular literature, warning labels, and general confidence in the advances of modern medicine, many people wrongly believe that women have a high degree of control over their pregnancy outcomes. For example, the best selling pregnancy advice book *What to Expect When You're Expecting*⁶⁸ warns women to avoid contact with anyone who is smoking, changing a cat litter box, consuming unpasteurized cheese or undercooked meat, gardening without gloves, inhaling when handling household cleaning products, and ingesting caffeine, thereby creating the illusion that women who conform to all prescriptions can guarantee a healthy pregnancy outcome.

The longstanding and constant medical reality, however, is that as many as 20-30 percent of all pregnancies will end in miscarriage or stillbirth. In fact, stillbirth is one of the most common adverse outcomes of pregnancy,⁶⁹ and it occurs despite the best intentions and numerous precautions taken by individual women. Similarly, as the president of the March of Dimes noted in a letter to the *Wall Street Journal*:

No one would deny parents play a significant role in the health and well-being of their child, both before and after birth. But ... every day in America women who did everything "right" during pregnancy — that is, they got good prenatal care, they were married to the father of the child, their neither smoked nor drank nor abused drugs — nevertheless give birth to babies with birth defects or low birth weight. ... Scientific progress in understanding the causes of some birth defects inclines people to overestimate what is known, but the truth is that more than 60 percent of all birth defects are of unknown origin.⁷⁰

Conclusion

The decision in the *McKnight* case, a growing body of helpful popular and scientific, peer-reviewed literature, as well as an increasing number of real experts who may be available to testify on a pro bono basis should all encourage defense counsel not to accept the junk science behind the prosecutions of pregnant women. Model briefs and motions, evidence-based research, and contact information for some of the leading experts are available from National Advocates for Pregnant Women.

Pregnant women charged with non-existent crimes may not have the financial resources available that pharmaceutical companies have. They, however, are no less entitled to a zealous defense.

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Notes

1. See David C. Lewis et al., *Meth Science Not Stigma; Open Letter to the Media*, July 25, 2005, <http://www.jointogether.org/news/yourturn/commentary/2005/meth-science-not-stigma-open.html>; David C. Lewis et al., *Physicians, Scientists to Media: Stop Using the Term 'Crack Baby'*, Feb. 27, 2004, <http://www.jointogether.org/news/yourturn/announcements/2004/physicians-scienc>

tists-to-stop.html.

2. Lynn Paltrow, *Winning Strategies, Defending the Rights of Pregnant Addicts*, THE CHAMPION, Aug. 1993 at 19.

3. Some more recent examples of successful efforts to get charges dismissed or convictions overturned are: *State v. Geiser*, 763 N.W.2d 469 (N.D. 2009) (reversing conviction for endangerment of a child based upon suffering a stillbirth and testing positive for methamphetamine and holding that “pregnant woman cannot be charged for a crime allegedly committed against her unborn child” because the plain meaning of the word “child” does not include a fetus); *State v. Wade*, 232 S.W.3d 663 (Mo. Ct. App. 2007) (affirming the dismissal of child endangerment charge based on allegation that child tested positive for methamphetamine and marijuana at birth and stating that “[t]he plain language of the child endangerment statute does not proscribe conduct harmful to fetuses, and Section 1.205.4 clearly prohibits any cause of action against a mother for improper prenatal care”); *State v. Martinez*, 137 P.3d 1195 (N.M. Ct. App. 2006) (refusing to apply child abuse statutes to punish a woman for continuing her pregnancy to term in spite of a cocaine addiction); *Kilmon v. State*, 905 A.2d 306 (Md. 2006) (holding that the reckless endangerment statute does not apply to the context of pregnancy); *Ward v. State*, 188 S.W.3d 874 (Tex. App. 2006) (reversing the convictions of Tracy Ward and Rhonda Smith, who had both been convicted of delivery of a controlled substance to a “child” for their alleged *in utero* transfer of drug metabolites to their fetuses, holding that the plain language of the statute made clear that the state legislature did not intend the drug delivery statute to apply to the context of pregnancy); *State v. Aiwohi*, 123 P.3d 1210 (Haw. 2005) (holding that according to the plain language of the Hawai‘i manslaughter statute, the definition of person did not include fetus); *State v. Dunn*, 916 P.2d 952 (Wash. Ct. App. 1996) (holding that the legislature did not intend to include fetuses within the scope of the term “child” which was defined “as a person under 18 years of age”); *Reinesto v. Superior Court*, 894 P.2d 733 (Ariz. Ct. App. 1995) (dismissing child abuse charges filed against a woman for heroin use during pregnancy and holding that that the ordinary meaning of “child” excludes fetuses, and to conclude otherwise would offend due process notions of fairness and render statute impermissibly vague); *Collins v. State*, 890 S.W.2d 893 (Tex. App. 1994) (charges brought for substance abuse during pregnancy dismissed because application of the statute to pre-

natal conduct violates federal due process guarantees); *Ex Parte Lovill*, 287 S.W.3d 65 (Tex. App. 2008), *rev’d on other grounds*, No. PD-0401-09 (Tex. Ct. Crim. App. Dec. 16, 2009) (finding that the decision to revoke a woman’s probation because she was pregnant constituted impermissible sex discrimination, and remanding habeas claim to trial court for determination of whether the discrimination could survive Equal Protection review).

4. See *Ferguson v. City of Charleston*, 532 U.S. 67 (2001).

5. See *Amicus Curiae Brief of Medical, Public Health, and Child Welfare Experts and Advocates in Support of Respondent Amber Lovill at 38, Ex Parte Lovill*, No. PD-0401-09 (Tex. Ct. Crim. App. Aug. 5, 2009), *available at* http://advocatesforpregnantwomen.org/briefs/Lovill_TexasAmicusBrief.pdf.

6. *McKnight v. State*, 661 S.E.2d 354 (S.C. 2008).

7. *Whitner v. State*, 492 S.E.2d 777 (S.C. 1997); Lynn Paltrow, *Pregnant Drug Users, Fetal Persons, and the Threat to Roe v. Wade*, 62 ALBANY L. REV. 999 (1999).

8. *Whitner*, 492 S.E.2d at 777.

9. *State v. McKnight*, 576 S.E.2d 168 (2003).

10. *McKnight v. State*, 661 S.E.2d 354, 358 n.2 (S.C. 2008).

11. LAURA GÓMEZ, MISCONCEIVING MOTHERS: LEGISLATORS, PROSECUTORS, AND THE POLITICS OF PRENATAL DRUG EXPOSURE 14 (1997) (reporting that without knowing that cocaine was used by their mothers, clinicians could not distinguish so-called crack-addicted babies from babies born to comparable mothers who had never used cocaine or crack); see also John P. Morgan & Lynn Zimmer, *The Social Pharmacology of Smokeable Cocaine Not All It’s Cracked Up to Be*, in *CRACK IN AMERICA: DEMON DRUGS AND SOCIAL JUSTICE* 131, 152 (Craig Reinerman & Harry G. Levine eds., 1997).

12. See, e.g., Dorothy Roberts, *Unshackling Black Motherhood*, 95 MICH. L.R. 938 (1997).

13. David C. Lewis et al., PHYSICIANS, SCIENTISTS TO MEDIA: STOP USING THE TERM ‘CRACK BABY’ (2004), *available at*

<http://www.jointogether.org/news/yourturn/announcements/2004/physicians-scientists-to-stop.html>.

14. *United States v. Smith*, 359 F. Supp. 2d 771, 780 n.6 (E.D. Wis. 2005).

15. NAT’L INSTITUTE ON DRUG ABUSE, RESEARCH REPORT, COCAINE: ABUSE AND ADDICTION 6 (May 2009) (emphasis added), *available at* <http://www.drugabuse.gov/PDF/RRCCocaine.pdf>.

16. U.S. Sentencing Commission, Report to Congress: Cocaine and Federal Sentencing Policy 68, 70 (May 2007), *available at* http://www.ussc.gov/r_congress/

http://www.ussc.gov/r_congress/

cocaine2007.pdf.
17. Susan Oakie, *The Epidemic That Wasn’t*, N.Y. TIMES, Jan. 27, 2009, at D1, *available at* <http://www.nytimes.com/2009/01/27/health/27coca.html>. Other newspapers including those in Oklahoma and Kansas also eventually ran similar stories. See also Jeff Raymond, *Effects of Drugs Challenged*, NEWSOK, Nov. 15, 2007, <http://newsok.com> (“Deepening research shows babies who are exposed to cocaine or methamphetamine in the womb fare similarly to other babies as they age.”); Laura Bauer, ‘Crack Babies’ Aren’t Severely Damaged, *Researchers Find*, KAN. CITY STAR, Feb. 14, 2008, at A, *available at* http://advocatesforpregnantwomen.org/KansasStar_Crackbabiesnotseverely.pdf (After monitoring these children into their teen years, researchers think cocaine exposure is less severe than alcohol and comparable to tobacco use during pregnancy.).

18. Prenatal Drug Exposure: Award-Winning Pediatrician Discusses What the Science Tells Us, *available at* <http://www.vimeo.com/3916613>.

19. Susan Oakie, *The Epidemic That Wasn’t*, N.Y. TIMES, Jan. 27, 2009, at D1, *available at* <http://www.nytimes.com/2009/01/27/health/27coca.html>.

20. CTR. FOR THE EVALUATION OF RISKS TO HUMAN REPRODUCTION, REPORT OF THE NTP-DERHR EXPERT PANEL ON THE REPRODUCTIVE & DEVELOPMENTAL TOXICITY OF AMPHETAMINE & METHAMPHETAMINE 163, 174 (2005).

21. See CESAR Weekly Fax from the Center for Substance Abuse Treatment, Vol. 14 Issue 33 (Aug. 2005); David C. Lewis et al., METH SCIENCE NOT STIGMA: OPEN LETTER TO THE MEDIA, (July 25, 2005), *available at* <http://www.jointogether.org/news/yourturn/commentary/2005/meth-science-not-stigma-open.html>.

22. Am. College of Obstetrics & Gynecology, Information about Methamphetamine Use in Pregnancy, Mar. 3, 2006, *available at* http://www.rhrealitycheck.org/emailphotos/ACOGmeth_talking_points.pdf.

23. Robert M. Silver et al., *Workup of Stillbirth: A Review of the Evidence*, 196 AM. J. OBSTETRICS GYNECOLOGY 433-444, 438 (2007).

24. Gary D. Hembrecht & Sivia Thiagarajah, *Management of Addiction Disorders in Pregnancy*, 2 J. ADDICTION MED. 1, 9 (2008).

25. See, e.g., Laura P. Finnegan & Stephen R. Kandall, *Maternal and Neonatal Effects of Alcohol and Drugs*, in *SUBSTANCE ABUSE: A COMPREHENSIVE TEXTBOOK* 805 (J. Lowinson, ed. 4th ed. 1997); W.F. Rayburn & M.P. Bogenschutz, *Pharmacotherapy for Pregnant Women with Addictions*, 191 AM. J. OBSTETRICS & GYNECOLOGY 1885 (2004).

26. SUBSTANCE ABUSE & MENTAL HEALTH SERVS. ADMIN., U.S. DEP’T HEALTH & HUMAN

SERVS., METHADONE TREATMENT FOR PREGNANT WOMEN, Pub. No. SMA 06-4124 (2006), *available at* <http://csat.samhsa.gov/publications/PDFs/PregnantWomen.pdf>. With regard to safety of methadone during pregnancy, the prestigious National Institute of Medicine reported that “[t]here is no reported evidence of any toxic effects of methadone in the woman, fetus or child, although such evidence has been sought.” INSTITUTE OF MEDICINE, FEDERAL REGULATION OF METHADONE TREATMENT 203 (1995), *available at* <http://www.nap.edu/openbook.php?isbn=0309052408>.

27. See generally METHADONE TREATMENT FOR PREGNANT WOMEN, *supra* note 26.

28. Affidavit of Peter Fried, Ph.D. in Support of Defendants’ Answer to Complaint for S.C. Code § 63-7-1650 at ¶ 4-5, S.C. Dep’t Soc. Servs. v. Doe (S.C. Fam. Ct. July 13, 2009) (on file with National Advocates for Pregnant Women).

29. See, e.g., Grace Chang, *Alcohol-Screening Instruments for Pregnant Women*, 25 ALCOHOL RESEARCH & HEALTH 204 (2001). Alcohol, (ethanol) intake during pregnancy, however, has also been shown to have a beneficial effect on women and fetal health by preventing pre-term labor, which poses high risks of infant morbidity. Until the recent development of alternative pharmacological agents offering lower risks and greater benefits, alcohol was routinely used in some circumstances to prevent pre-term labor in order to promote optimal fetal development *in utero*. See also Marc J.N.C. Keirse, *The History of Tocolysis*, 110 Br. J. OBSTETRICS & GYNECOLOGY 94, 95 (2003) (describing history of use and research on ethanol as a tocolytic agent for preterm labor as recently as 1981 and citing reports that “for ethanol to be effective you needed to achieve blood levels between 1.2 and 1.8 g/l. However, this caused depression and incontinence in women”); Nancy D. Berkman et al., *Tocolytic Treatment for the Management of Preterm Labor: A Review of the Evidence*, 188 AM. J. OBSTETRICS GYNECOLOGY 1648, 1649 (2003) (noting ethanol as among “five classes of tocolytic agents currently used to treat women in preterm labor,” although ethanol has been surpassed in usage by new treatments that are more effective and have fewer harmful side effects). Uncertainty about the optimal and, of course, harmful, dosage and timing of ethanol infusion merely highlights the difficulty of charging women without medical expertise with such knowledge for the purposes of imposing criminal liability.

30. See, e.g., Elizabeth M. Armstrong & Ernest L. Abel, *Fetal Alcohol Syndrome: The Origins of a Moral Panic*, 35 ALCOHOL &

ALCOHOLISM 276, 277 (2000) (comparing warning of the United States Surgeon General in 1981 that “women who are pregnant (or considering pregnancy) not to drink alcoholic beverages and to be aware of the alcoholic content of foods and drugs” to 1996 guidelines of the British Royal College of Obstetricians and Gynecologists recommending that “women should be careful about alcohol consumption in pregnancy and limit this to no more than one standard drink per day”) (citations omitted).

31. See, e.g., Elizabeth M. Armstrong, *Diagnosing Moral Disorder: The Discovery and Evolution of Fetal Alcohol Syndrome*, 47 Soc. Sci. MED. 2025–42, 2029 (noting disagreement among American and European researchers over risks of alcohol ingestion during pregnancy to fetal outcomes); Ulrik Kesmodel et al., *Does Alcohol Increase the Risk of Preterm Delivery?*, 11 EPIDEMIOLOGY 512, 512 (2000) (noting controversy among researchers over “whether there is a safe level of drinking during pregnancy”); Eugene Pergament et al., *Alcohol and Pregnancy*, ILL. TERATOGEN INFORMATION SERVICE NEWSLETTER (1994), *available at* http://66.242.154.95/resources/wp-content/uploads/2009/05/alcohol_jun1994.pdf.

32. See, e.g., Armstrong, *supra* note 31, at 2028 (noting possibility that effect of enzyme deficiencies that prevent breakdown of alcohol — rather than effect of alcohol itself — may explain why similar patterns of alcohol consumption do not necessarily correlate with the same incidence of fetal symptoms).

33. See Kenneth R. Warren & Laurie L. Foudin, *Alcohol-Related Birth Defects—The Past, Present, and Future*, 25 ALCOHOL RESEARCH & HEALTH 153, 156 (2001).

34. Armstrong & Abel, *supra* note 30 (disproportionate incidence of symptoms associated with fetal alcohol syndrome among poor women may result from their simultaneous experience with “smoking and poor diet, [which] exacerbate the effects of alcohol”) (citation omitted); Nesrin Bingol et al., *The Influence of Socioeconomic Factors on the Occurrence of Fetal Alcohol Syndrome*, 6 ADVANCES IN ALCOHOL & SUBSTANCE ABUSE 105 (1987) (demonstrating that differences in infant health are attributable to differences in economic status).

35. See, e.g., Adam Nossiter, *In Alabama, A Crackdown on Pregnant Drug Users*, N.Y. TIMES, Mar. 15, 2008, at A10, *available at* <http://www.nytimes.com/2008/03/15/us/15mothers.html> (describing Alabama Prosecutor Greg Gambriil’s arrests of at least eight women who were pregnant and sought to continue to term in spite of their

drug use problems).

36. Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579 (1993).

37. Daubert v. Merrell Dow Pharmaceuticals, 43 F.3d 1311, 1313 (9th Cir. 1995).

38. *Id.*

39. Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579, 583 (1993) (quoting district court).

40. *Id.* at 593.

41. *Id.* This list of factors is not exhaustive.

42. *Id.*

43. Daubert v. Merrell Dow Pharmaceuticals, 43 F.3d 1311, 1315-16 (9th Cir. 1995) (emphasis added).

44. *Id.* at 1316.

45. *Id.* at 1313 (internal citations omitted).

46. *Id.* at 1313–14.

47. *Id.* at 1315.

48. *Id.* at 1317–18.

49. *Id.* at 1319.

50. *Id.* at 1320 n.20.

51. *Id.* at 1321 n.18.

52. See, e.g., Merrell Dow Pharmaceuticals v. Havner, 953 S.W.2d 706, 709–10 (Tex. 1997) (discussing the numerous federal and state Bendectin cases).

53. See, e.g., E.I. du Pont de Nemours & Co. v. Robinson, 923 S.W.2d 549 (Tex. 1995); Rodriguez ex rel. Posso-Rodriguez v. Feinstein, 793 So.2d 1057 (Fla. Dist. Ct. App. 2001); Duran v. Cullinan, 677 N.E.2d 999 (Ill. App. 1997).

54. Lewin v. County of Suffolk, 795 N.Y.S.2d 659 (N.Y. App. Div. 2nd Dept. 2005).

55. *Id.*

56. Steven B. Karch, *Peer Review and the Process of Publishing of Adverse Drug Event Reports*, 14 J. FORENSIC & L. MED. 79 (2007).

57. See In re Unborn Child of Starks, 18 P.3d 342 (Okla. 2001); Order, In re Unborn Child of Starks, No. 93,606 (Okla. Sept. 23, 1999) (“petitioner’s confinement ... is ineffective and unenforceable as an unauthorized application of judicial force.”).

58. Transcript of Proceedings Held on August 30, 1999 at 12, In re Unborn Child of Starks, No. JF-99-127 (Okla. Dist. Ct. Rogers County Jan. 24, 2000).

59. Transcript of Jury Trial at 129-130, In re Unborn Child of Starks, No. JF-99-127 (Okla. Dist. Ct. Rogers County Jan. 24, 2000).

60. *Id.* at 284.

61. *Id.* at 333–34.

62. See Dwight L. Greene, *Abusive Prosecutors: Gender, Race & Class Discretion and the Prosecution of Drug-Addicted Mothers*, 39 BUFF. L. REV. 737 (1991).

63. Am. Coll. Obstetricians & Gynecologists, *Maternal Decision Making, Ethics, and the Law*, ACOG COMMITTEE OPINION, No. 321, Nov. 2005.

64. See, e.g., Peter Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice and Some Suggestions for Reform*, 95 AM. J. PUB. HEALTH S107 (2005).

65. *Stallman v. Youngquist*, 531 N.E.2d 355, 360 (Ill. 1988).

66. *Id.* at 360.

67. Sample motions to dismiss are available from National Advocates for Pregnant Women.

68. See, e.g., ARLENE EISENBERG, HEIDI E. MURKOFF, & SANDEE E. HATHAWAY, *WHAT TO EXPECT WHEN YOU'RE EXPECTING* 54–57 (2d ed. 1996).

69. See, e.g., R.L. Goldenberg, *Stillbirth: A Review*, 16 J. MATERNAL-FETAL & NEONATAL MED. 79, 79 (2004).

70. Jennifer L. Howse, *Infant Mortality: Don't Blame Parents*, WALL STREET J., Feb. 27, 1992, at 13. ■

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