FEATURE ARTICLE

Continuing Education Module

Making Sense of Advice About Drinking During Pregnancy: Does Evidence Even Matter?

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ABSTRACT

Women have been told not to drink during pregnancy for decades; last year, the Centers for Disease Control and Prevention (CDC) extended that advice to all women who were at risk for experiencing a pregnancy. This commentary puts the recent CDC guidelines in historical perspective and considers the unintended consequences of public health messages that extend beyond what is supported by evidence.

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Pregnant women have long been subject to a wide range of warnings and admonitions about their actions during pregnancy, often based on superstition or fear. One hundred and fifty years ago, medical journals were full of articles about the "doctrine of maternal impressions," a theory that held that a woman's emotions and experiences during pregnancy could leave a permanent mark or imprint on her child. A woman who succumbed to a craving for strawberries might give birth to a child with a birthmark. A woman who saw a rabbit during pregnancy might have a baby with a hare lip. A woman who gazed at something speckled or spotted would give birth to a child with freckles. And a woman who experienced some kind of shock or extreme fright while pregnant and touched her own face in response would have a baby with a birthmark in that same spot. The effect could be mental as well—a grieving woman would give birth to a melancholic child, for example. Women's emotions during pregnancy were translated into physical marks or manifestations on their children. Women themselves—through their thoughts, feelings, and deeds, especially their untamed appetites—were believed to influence directly the developing fetus in the womb. The doctrine of maternal impressions was a way to make sense of unexpected and untoward outcomes. For instance, a bright red birthmark—what we today would recognize as a hemangioma—was attributed to the mother's consumption of berries or even just her unrestrained craving for that fruit. The doctrine of maternal impressions was also a way to express social and moral ideals for how women ought to behave.

That was then; this is now. We understand so much more about the physiology of pregnancy and fetal development, although human reproduction remains inherently uncertain. Our desire for control

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is, if anything, stronger than ever, but our advice for pregnant women today ought to be based on evidence, not superstition. Women face a long list of "dos and don'ts" during pregnancy—and one of the "don'ts" expressed most forcefully in contemporary American society is the prohibition against drinking *any* amount of alcohol during pregnancy. Since fetal alcohol syndrome (FAS) was first described in the medical literature in 1973, public health agencies and doctors in the United States have warned women not to drink alcohol at all during pregnancy. But the Centers for Disease Control and Prevention (CDC) last year extended that prohibition to encompass not just pregnant women but any woman of reproductive age who is not actively using contraception, claiming that "sexually active women who stop using birth control should stop drinking alcohol" (CDC, 2016b).

This recommendation immediately caused a great deal of consternation—and generated considerable anxiety, concern, criticism, and even derision (Kukla, 2016; Macmillen, 2016; Petri, 2016; Skenazy, 2016). Women who had consumed alcohol between the time they conceived and the time they realized they were pregnant began to wonder if they had unwittingly harmed their future baby. Could a glass of wine with dinner or a happy hour cocktail really cause brain damage in their future child? The reaction to the reformulated CDC warning was instantaneous. Social media lit up with questions, complaints, and even parodies of this new addition to the long list of things women should or should not do when they are pregnant—or even "pre-pregnant" in the language of one CDC official. And mothers and pregnant women began to wonder and worry whether and how much they might have unwittingly damaged their children. The truth is that most of that worry is needless and baseless. Now is a good time to review the evidence base for the recommendation that women should not drink *at all* if they are or might become pregnant.

Let's first consider the diagnosis of FAS, which was first described in the medical literature some 40 years ago. The diagnosis is based on several criteria: certain craniofacial anomalies, central nervous system deficits, and low birth weight and growth retardation after birth, along with confirmed prenatal alcohol exposure (Stratton, Howe, & Battaglia, 1996). The diagnosis was confined to children born to women who were chronic alcoholics, women whose own health and well-being are severely compromised by their drinking. There is no evidence that FAS occurs in babies born to women who drink occasionally or moderately during pregnancy. Indeed, even among women who drink heavily throughout pregnancy, only 4%–5% of their babies will be born with FAS (Gray & Henderson, 2006). Moreover, FAS typically occurs in concert with a host of other factors that raise the risk of an adverse outcome, including smoking, drug use, poverty, advanced maternal age, environmental exposures, poor nutrition, maternal depression, and lack of social support (Abel, 1993). There is also evidence that patterns of drinking behavior matter: binge drinking in particular is associated with neurodevelopmental deficits (Henderson, Kesmodel, & Gray, 2007). Researchers hypothesize this effect is related to peak blood alcohol content (BAC) levels reached—with more drinks in a concentrated time leading to higher BAC levels. What really matters in terms of the effect on the fetus is the peak BAC reached—and this is why binge drinking is of particular concern—consuming large quantities of alcohol over a concentrated time appears to be a greater risk than having one drink every day, for example. In other words, it's not just how much a woman drinks but *how* she drinks—at what pace.

Despite this evidence—that only heavy drinking causes FAS and that binge drinking is riskier than light or occasional drinking—advice to women in the United States has long insisted that women avoid alcohol entirely during pregnancy. Advice to women that they should not drink at all if they are pregnant (or now if they might become pregnant) seems predicated on the notion that if a lot of alcohol causes major problems, perhaps a little bit of alcohol might cause lesser problems. This idea—that any amount of drinking is as risky as heavy drinking—began to permeate the medical literature within a few years of the discovery of FAS (Armstrong, 2003). But there is no well-accepted scientific evidence that low or moderate levels of alcohol consumption during pregnancy—even in the first few days and weeks after conception—cause FAS or other associated problems. A comprehensive review of the literature by epidemiologists at Oxford University concluded that there was "no consistent evidence of adverse effects from low-to-moderate prenatal alcohol consumption" (Gray & Henderson 2006). However, the

review noted that there was some evidence of neurodevelopmental effects caused by binge drinking during pregnancy (that report defined binge drinking as five or more drinks on any one occasion, whereas the recent CDC report defined binge drinking as four or more drinks in a 2- to 3-hour period). To summarize what we know about the risks of alcohol exposure *in utero*: FAS occurs only in babies born to women who drink heavily during pregnancy (and only in a small percentage of them at that), but women who consume large amounts of alcohol over short time may also be at risk for having children with alcohol-related neurodevelopmental disorders (Henderson et al., 2007).

What then should the message about drinking during pregnancy be? Based on the evidence, should we tell all women to abstain completely from alcohol when pregnant or potentially pregnant? Before we answer these questions, it is worth establishing a few precepts to guide decision making. In addition, we should consider the consequences of broad-based and absolute warnings like the one the CDC recently issued; are such warnings even effective?

First, we ought to focus on *evidence-based* recommendations for women. Evidence, not fear, superstition, or moral beliefs, should inform and guide public health recommendations. Second, we should remember that almost all women are highly motivated to protect the developing fetus—indeed, in our society, we observe women going to great lengths to have safe and healthy pregnancies (Lyerly et al., 2007). In fact, most women reduce their alcohol consumption or stop drinking altogether during pregnancy (Armstrong, 2003). Third, we should be mindful of the fact that women today often experience pregnancy and birth in an atmosphere of fear and anxiety. It's easy to understand why pregnancy generates so much anxiety—women are deeply invested in giving birth to healthy children but fearful that something, anything, or everything they do or don't do during pregnancy will affect their future child. Indeed, women today, as in the past, are made to feel responsible for *everything* that happens before, during, and after pregnancy and birth.

Although it is true that we cannot say with certainty what level of alcohol exposure in pregnancy is *safe*, which leads people to the seemingly reasonable claim "better safe than sorry," it does not necessarily follow that telling women not to drink at all is good public health policy. Let's unpack some of the consequences of this kind of admonition. First, by telling women that any amount of alcohol exposure, no matter how minimal, is dangerous, we unnecessarily escalate the fear and anxiety that already plague the modern experience of pregnancy. It is probably not uncommon for women to drink occasionally before they realize they are pregnant—and fear about that potential exposure may overshadow women's initial joy about the pregnancy. Some women may even contemplate terminating a wanted pregnancy because they had a drink or two before realizing they were pregnant. For most women, this fear is completely unwarranted! Second, we run the risk of inducing message fatigue in women—when people are bombarded with endless health warnings, they may disengage or disregard all of them—especially when such messages are not grounded in evidence. We saw this reaction in the backlash to the CDC's recent warning—which was widely criticized, parodied, and pilloried on social media. Third, when dire warnings about the perils of alcohol consumption for all women like this recent one from the CDC are disseminated widely and diffusely, we do nothing to reach the women most at risk—those who already suffer alcoholism and who are unable to stop drinking based on moral exhortations alone. It is this small group of women who are truly at risk of adverse outcomes and who most need treatment and help. Universal strategies, whether in the form of warning labels or point-of-purchase signs or public health recommendations, are powerless to help anyone, pregnant or not, who suffers the disease of chronic alcoholism. Alcoholism is a devastating disease for those in its grip and for everyone around them; it takes an enormous toll on women's own health and well-being. Women who struggle to control their drinking may be unprepared for pregnancy and parenting in all kinds of ways. Women who cannot control their drinking and in particular women who binge drink may face increased risk for FAS or alcohol-affected births. As the CDC points out in its bulletin, doctors should screen all women carefully for evidence of alcohol abuse—and should refer women to appropriate care (CDC, 2016a). This is sound advice. Even in the absence of any risk of teratogenic effect of alcohol, we would want to give women with

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drinking problems extra care, attention, and counseling during pregnancy precisely because problem drinking threatens the woman's own health—and she, after all, is the patient. Moreover, we know that maternal health and well-being are the best guarantors of fetal health and well-being. Healthy women have healthy babies, for the most part. Finally, it is not just the teratogenic potential of alcohol that ought to trigger a heightened level of care for women who struggle to manage their drinking; heavy drinking threatens the health of future mothers and their future children in multiple ways. A woman who abuses alcohol before and during pregnancy is also at risk for compromised parenting after her child is born. We need a better definition of what kind of drinking actually is a problem in pregnancy. It's not that problem drinking shouldn't raise red flags—it's how we interpret and respond to those flags that matter.

Two further aspects of the current CDC warning are worthy of reflection. First, the CDC pronouncement encapsulates the increasingly fear-based approach that characterizes the experience of pregnancy today. Pregnancy and childbirth have always been awesome, "awe-inspiring," and inherently uncertain experiences. Consider the irony of a world in which reproduction is safer than ever, but women and their partners are ever more worried and anxious about pregnancy and birth. Endless warnings broadcast to all women regardless of actual risk form a dark and ominous cloud overshadowing the radiant joy of pregnancy and anticipation of the arrival of a child. This latest CDC warning reflects the increasingly fear-based approach to managing the uncertainty of pregnancy; it's a flashback to the idea that women could unwittingly harm their unborn children. Second, the CDC warning frames all women as potentially pregnant or pre-pregnant all the time. In this, the warning reflects the move to embrace the idea of "preconception health," an initiative that the CDC first launched in 2004. Although some aspects of the preconception health initiative are laudatory—especially the push to encourage women to plan their pregnancies and to prepare for pregnancy by optimizing their own health, other seem to take us backwards in time to a view of women as primarily reproductive vessels. Every time we impose without evidence another prohibition on pregnant women—or women who may someday be pregnant—we ratchet up the social pressure on women to be perfect, self-sacrificing mothers, and we constrain the ability of women to live fully realized lives (Waggoner, 2013). This is a not an argument for selfishness or wild abandon. It's a plea to weigh carefully the evidence base for and the consequences of public health messages. It's also an argument for accepting that we cannot control, manage, or erase every risk in pregnancy, no more so than in life. The same logic that animates advice to avoid alcohol entirely during pregnancy—or even during "prepregnancy" (also known as the better part of a woman's life span) might just as well dictate that pregnant women should not cross the street, walk down the sidewalk, take a yoga class, drive to the grocery store, provide hands-on care to young children or the elderly or anyone who is sick—each of these activities poses some risk to the fetus; indeed, some, like driving or riding in a car, pose much greater risk of bodily harm. Yet we commonly understand that pregnant women, like the rest of us, regularly make all kinds of risk assessments. Some women will decide to avoid alcohol entirely while they are pregnant. Some women will feel comfortable drinking occasionally—and they should feel reassured that there is no evidence that drinking moderately poses any risk of adverse outcome. Women deserve evidence-based information, not shaming and blaming, to guide their choices before, during, and after pregnancy.

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