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Facial dysmorphism, defects of the central nervous system, heart, and other systems, and prenatal and postnatal growth delay all characterize fetal alcohol syndrome.

PRENATAL COUNSELING

Prevention of fetal alcohol syndrome requires routine screening of all women of reproductive age

IN THIS ARTICLE

**Binge drinking—
don't downplay
the danger**

Page 78

**Screening for risk
of overconsumption**

Page 79

**What works to
reduce use?**

Page 80

Investigations of maternal alcohol consumption have consistently produced the same finding: Even a low level of alcohol—especially in the first trimester—has a harmful effect on fetal development. The American College of Obstetricians and Gynecologists (ACOG), American Academy of Pediatricians, and the US Surgeon General now support the tenet that no lower limit of alcohol consumption is safe during pregnancy.

Although a specific fetal alcohol syndrome (FAS) was not identified until 1968, the adverse effects of alcohol during pregnancy have been observed for centuries. FAS is the most severe manifestation of maternal alcohol consumption and is estimated to affect 0.2 to 1.5 of every 1,000 births. The term

refers to a “constellation of physical abnormalities” and “problems of behavior and cognition in children born to mothers who drank heavily during pregnancy.”¹ The syndrome is also “completely preventable.”¹

The US Surgeon General recommends that health professionals:

- routinely inquire about alcohol consumption in women of childbearing age
- inform them of the risks of alcohol consumption during pregnancy
- advise them not to drink during pregnancy.²

New drinking pattern emerges

Of special concern is binge drinking, initially defined as the consumption of five or more drinks during one session,

even among women who do not chronically consume alcohol. Like lower levels of alcohol consumption during pregnancy, binge drinking increases the risk of developmental and growth delays in the child. The higher peak levels of alcohol associated with binge drinking appear particularly deleterious to fetal neurodevelopment. And because a woman may engage in binge drinking before she is aware that she is pregnant, the issue merits particular attention.

Hallmarks of FAS

FAS causes facial dysmorphism, including short palpebral fissures, flattened midfacies, epicanthal folds, and micrognathia. Defects of the central nervous system and cardiac, renal, and skeletal systems also can occur, along with prenatal and postnatal growth delay. In addition, developmental delay is present.

FAS can be present even if history of alcohol exposure is uncertain

In 1996, the Institute of Medicine broadened the classification of FAS to include:

- Category 1 – FAS with a confirmed history of maternal alcohol exposure
- Category 2 – FAS with no confirmed history of maternal alcohol exposure

- Category 3 – partial FAS with a history of maternal alcohol exposure
- Category 4 – alcohol-related birth defects (physical anomalies only)
- Category 5 – alcohol-related neurodevelopmental disorders.¹

The last two categories were included to describe defects or disorders that have been linked to maternal alcohol consumption in clinical or animal research but may have additional causative factors in a particular case.

Alcohol exposure linked to a spectrum of effects

In 2005, the term “fetal alcohol spectrum disorder” (FASD) entered the lexicon. FASD is not intended to be used as a clinical diagnosis but to describe a spectrum of conditions that may result from prenatal alcohol exposure.

The prevalence of FASD is uncertain, although alcohol-related neurobehavioral abnormalities that affect learning and behavior may occur in three additional children for every one child who is given a diagnosis of classic FAS.

In this Update, I highlight recent studies or publications that:

- describe drinking patterns among women of reproductive age
- offer screening strategies or
- suggest a framework for counseling the patient to reduce or eliminate alcohol consumption.

Which women are most likely to drink during pregnancy?

Tsai J, Floyd RL, Green PP, Bouyle CA. Patterns and average volume of alcohol use among women of childbearing age. *Matern Child Health J.* 2007;11:437–445.

Tsai J, Floyd RL, Bertrand J. Tracking binge drinking among childbearing-age women. *Prev Med.* 2007; 44:298–302.

Caetano R, Ramisetty-Mikler S, Floyd L, McGrath C. The epidemiology of drinking among women of childbearing age. *Alcohol Clin Exp Res.* 2006;30:1023–1030.

Studies that led to the phenotypic description of FASD focused on women who had recognized alcohol dependency and who drank heavily. Additional research has identified another subset of women who are likely to continue alcohol consumption during pregnancy: binge drinkers. Many women who report binge drinking do not consider

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their alcohol consumption to be chronic or excessive.

Binge drinking is on the rise among women of childbearing age...

Binge drinking has increased steadily over the past 10 years despite public health initiatives and other programs developed to educate consumers. Tsai and colleagues used data from the Centers for Disease Control and Prevention (CDC) Behavior Risk Factor Surveillance System from 2001 to 2003 to calculate the magnitude of alcohol consumption among women of childbearing age. The rate of binge drinking increased from 10.3% to 13% between 1991 and 2003. In 2003, the highest prevalence of binge drinking was observed in the 18- to 24-year-old age group (20.5%), and among non-Hispanic white (15.5%), employed (14%), college-educated (13.3%), and unmarried women (18.7%). The highest number of binge sessions in the preceding month followed the same pattern.

In 2004, as it became clear that the adverse effects of binge alcohol consumption were more significant in women than men, at-risk binge drinking was redefined as more than three drinks in a single session.

...and also on the rise among pregnant women

In a separate study by Tsai and colleagues using the same data, one in 50 gravidas reported alcohol consumption in a binge fashion during the current pregnancy, with a background rate of 9% to 12% of pregnant women who reported any use of alcohol. More than 50% of the pregnant women who reported binge drinking said they had engaged in binge drinking at least twice during the preceding month.

Binge drinking and unplanned pregnancy—a risky combination

Binge drinking among women of reproductive age is especially risky because

roughly half of all pregnancies in the United States are unplanned, so a woman may unwittingly engage in binge drinking during pregnancy. The rate of unintended pregnancy is highest among adolescents (82%) and 20- to 24-year-olds (61%), the groups with the highest rate of binge drinking (20%) and the most episodes in the preceding month (3.5). These figures suggest that efforts to prevent FAS should encompass the concept of binge drinking as an at-risk behavior and focus on all women of reproductive age, not just those known to be pregnant.

The typical binge drinker? She's young, white, single, and employed

Utilizing the 2002 National Epidemiologic Survey on Alcohol and Related Conditions, Caetano and colleagues explored alcohol consumption among women of reproductive age before they recognized they were pregnant. Women of childbearing age who are social drinkers but develop a pattern of binge drinking represent a larger percentage of the female population than do women who consume alcohol daily, but both groups face an increased risk of bearing a child with alcohol-related neurodevelopmental difficulties.

Unplanned pregnancies were associated with a higher rate of preconception binge drinking than were planned gestations, and unmarried Caucasian women who smoked were most likely to engage in preconception binge drinking.

When the year preceding the study was assessed for both alcohol use and pregnancy, Caetano and associates found that 20% of women met the criteria for binge drinking or alcohol dependence. The high prevalence probably reflects the longer time span for acknowledgment of alcohol consumption (an entire year) and the lower drink limit for the redefined term “binge drinking” (in this study, it was defined as four drinks or more rather than five or more drinks on one occasion). The highest-risk women

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One in 50 pregnant women reported binge drinking during the current pregnancy

were young, single, and Caucasian, and had a higher income (>\$40,000). White women had higher rates of binge drink-

ing than black or Hispanic women at comparable ages, marital status, and income levels.

What's the best way to screen for "at-risk" alcohol consumption?

Drinking and Reproductive Health: A Fetal Alcohol Spectrum Disorders Prevention Tool Kit. Washington, DC: American College of Obstetricians and Gynecologists; 2006. Available at: cdc.gov/ncbddd/fas/acog_toolkit.htm

In 2006, in collaboration with the CDC, ACOG developed a comprehensive educational tool kit for physicians. The kit, which can be downloaded from the CDC Web site, outlines office-based screening for at-risk drinking patterns in pregnant and nonpregnant women. It includes a screening tool—T-ACE—that has proved to be effective and can be incorporated into practice fairly efficiently. T-ACE and a similar tool—TWEAK—are presented in the **TABLE**.

ACOG recommends, and research supports, routine screening of all women of childbearing age. Studies assessing the

prevalence of at-risk drinking and the efficacy of various interventions suggest that screening for alcohol use should be a routine part of prenatal care—as well as annual gynecologic care among women of childbearing age. One applicable approach is incorporation of a screening tool into the health-and-habits questionnaire administered to the patient.

Available as companion pieces to the tool kit are patient education sheets covering the risks of alcohol exposure and emphasizing basic concepts such as:

- alcohol equivalency (12 oz of beer = 5 oz of wine = 1 oz of liquor)
- risks of alcohol exposure before pregnancy is recognized
- goals for reducing or eliminating alcohol consumption.

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TABLE

Use these tools to screen for excessive alcohol consumption

FOCUS	QUESTION	POINTS
T-ACE (a positive screen is ≥2 points)		
(T) Tolerance	How many drinks does it take to make you feel high?	1 point per drink
(A) Annoyed	Have people annoyed you by criticizing your drinking?	Yes = 1 point
(C) Cut down	Have you ever felt you ought to cut down on your drinking?	Yes = 1 point
(E) Eye-opener	Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?	Yes = 1 point
TWEAK (a positive screen is ≥2 points)		
(T) Tolerance	Are more than two drinks necessary to make you feel high?	Yes = 2 points
(W) Worry	Are your friends or family worried about your level of alcohol consumption?	Yes = 1 point
(E) Eye-opener	Do you ever need to drink in the morning?	Yes = 1 point
(A) Amnesia	Do you ever black out when drinking?	Yes = 1 point
(K) Cut down	Do you believe you need to cut down on your drinking?	Yes = 1 point

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ACOG recommends screening all women of childbearing age for at-risk alcohol consumption

Are efforts to reduce alcohol use among gravidas successful?

Floyd RL, Sobell M, Velasquez M, et al; Project CHOICES Efficacy Study Group. Preventing alcohol-exposed pregnancies. A randomized controlled trial. *Am J Prev Med.* 2007;32:1-10.

Brief intervention has been a successful tool for changing the behavior of nonpregnant adults. It also appears to be effective and efficient in the pregnant population. A brief intervention typically consists of a time-limited motivational counseling session that aims to educate, recommend a change in habits, and help the patient set goals. Brief intervention has had special success among nondependent women and has been used effectively in obstetric clinics and among women of various racial, ethnic, and socioeconomic backgrounds.

This randomized, controlled trial by Floyd and colleagues focused on the pregnant population. Like three other brief intervention trials conducted between 2000 and 2006, it found that brief intervention reduced alcohol consumption, increased positive newborn outcomes, and decreased alcohol consumption in subsequent pregnancies.³⁻⁵

FRAMES model: 6 manageable steps

One successful brief intervention is the FRAMES model, which is included in the ACOG tool kit for physicians. It is based on concepts of:

- feedback (F) – compare the patient's level of drinking with drinking patterns that are not risky
- responsibility (R) – emphasize that it is up to her to change her habits
- advice (A) – counsel her to change her behavior
- menu (M) – identify risky drinking situations and offer tactics for coping
- empathy (E) – be understanding
- self-efficacy (S) – encourage the patient to set goals and commit to change.

Such brief interventions can be conducted by staff members with pro-

gram-specific training and do not require expertise in alcohol-dependence counseling.

Use an individualized approach to change behavior

Despite widespread, population-based educational efforts throughout the 1990s, the prevalence of alcohol consumption among nonpregnant and pregnant women remains largely unchanged or even increased, particularly binge drinking. Other approaches are needed to avert the largest preventable contributor to birth defects and childhood neurodevelopmental disability.

With improved and validated office-based methods for identifying alcohol consumption, along with referrals when appropriate, it is possible to reduce maternal alcohol consumption during pregnancy. These simple methods are also easy to incorporate into an office routine. Equally important is incorporation of these methods into the office visit for the nonpregnant woman of reproductive age, with the aim of reducing alcohol consumption and increasing use of effective contraception. ■

References

1. Stratton K, Howe C, Battaglia F, eds. *Fetal Alcohol Syndrome: Diagnosis, Epidemiology, Prevention, and Treatment*. Washington, DC: National Academy Press; 1996. Available at: www.nap.edu/openbook.php?record_id=4991&page=R1. Accessed December 5, 2007.
2. US Department of Health and Human Services, Office of the Surgeon General. *Surgeon General's Advisory on Alcohol Use in Pregnancy*. Available at: www.surgeongeneral.gov/pressreleases/sg02222005.html. Accessed December 5, 2007.
3. Manwell LB, Fleming MF, Mundt MP, Stauffacher EA, Barry KL. Treatment of problem alcohol use in women of childbearing age: results of a brief intervention trial. *Alcohol Clin Exp Res.* 2000;24:1517-1524.
4. Ingersoll KS, Ceperich SD, Nettleman MD, Karanda K, Brocksen S, Johnson BA. Reducing alcohol-exposed pregnancy risk in college women: initial outcomes of a clinical trial of a motivational intervention. *J Subst Abuse Treat.* 2005;29:173-189.
5. Chang G, Wilkins-Haug BS, Goetz MA. Brief interventions for alcohol use in pregnancy: a randomized trial. *Addiction.* 1999;94:1499-1508.

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Maternal alcohol consumption is the largest preventable contributor to birth defects and childhood neurodevelopmental disability