

LESSONS LEARNED AT THE INTERFACE OF MEDICINE AND PSYCHIATRY

The Psychiatric Consultation Service at Massachusetts General Hospital (MGH) sees medical and surgical inpatients with comorbid psychiatric symptoms and conditions. Such consultations require the integration of medical and psychiatric knowledge. During their thrice-weekly rounds, Dr. Stern and other members of the Psychiatric Consultation Service discuss the diagnosis and management of conditions confronted. These discussions have given rise to rounds reports that will prove useful for clinicians practicing at the interface of medicine and psychiatry.

Dr. Bhuvaneshwar is a clinical fellow in psychiatry at Harvard Medical School (HMS) and a resident in psychiatry at MGH/McLean Hospital; Dr. Chang is an associate physician in the Psychiatry Department of Brigham and Women's Hospital and an associate professor of psychiatry at HMS; Dr. Epstein, formerly the chief resident on the Psychiatric Consultation Service at MGH, is currently a fellow in psychosomatic medicine at Columbia Presbyterian Hospital; and Dr. Stern is chief of the Psychiatric Consultation Service at MGH and a professor of psychiatry at HMS.

Corresponding author and reprints: Theodore A. Stern, M.D., Massachusetts General Hospital, Fruit Street, WRN 605, Boston, MA 02114 (e-mail: tstern@partners.org).

Alcohol Use During Pregnancy: Prevalence and Impact

Chaya G. Bhuvaneshwar, M.D.; Grace Chang, M.D., M.P.H.;
Lucy A. Epstein, M.D.; and Theodore A. Stern, M.D.

Have you ever wondered which of your patients continue to drink alcohol during pregnancy? Have you deliberated about how to best educate the pregnant alcohol-dependent woman who presents to your practice without prenatal care? Have you been concerned about the risk of suicide or of a psychiatric illness in one of your patients who is pregnant and drinking alcohol?

If you have, then the following questions and answers should serve as a stimulus for the management of the psychiatric aspects of alcohol use during pregnancy and the postpartum period for the mother and the neonate.

How Common Are Alcohol Use and Abuse in Pregnancy?

Alcohol use in pregnancy is a major public health problem and the focus of widespread media attention. Despite being clearly established as a teratogen since the 19th century, alcohol is used by approximately 15% of pregnant women, with rates as high as 20% reported in recent decades.¹ Historically, estimates of prevalence have relied on self-report, as through the National Household Survey on Drug Use and Health.²

Extensive data suggest that downstream dysfunction is seen over decades rather than solely as a manifestation of congenital anomalies or withdrawal syndromes in the neonate.³ Subtle yet often pervasive developmental abnormalities may in turn predispose the mother to substance relapse and her child to behavioral problems and an increased vulnerability to addiction.⁴

What Were the Early Approaches to Alcohol Use During Pregnancy?

Images of women with their children dissolutely drinking alcohol in various stages of undress and pregnancy in William Hogarth's *Gin Lane* (1751) conveyed a Victorian sense of horror and moral judgment.⁵ Yet, despite public awareness and outcry over the problem, it was French pediatrician Paul Lemoine in 1967 who characterized alcohol as a teratogen through an early case series and Seattle-based pediatrician Kenneth Lyon Jones (a dysmorphologist who focused on a constellation of physical abnormalities) who published the 1973 *Lancet* article that coined the term *fetal alcohol syndrome*.⁶ By 1996, a range of other conditions (including alcohol-related birth disorder and alcohol-related neurodevelopmental disorder) associated with alcohol use in pregnancy was identified. This in turn led to the search for more subtle abnormalities associated with other substance use in pregnancy, thereby widening the scope of responsibility assigned to women along with the scientific understanding of the problem.

How Are Alcohol Abuse and Dependence Defined?

The DSM-IV specifies that substance abuse consists of a "maladaptive pattern of use leading to significant impairment in occupational or social functioning within a 12-month period."^{7(p197)} It is crucial to define dependence in

order to characterize psychological symptoms, as well as to understand the need for specialized medical management of withdrawal risks for the mother, fetus, and neonate. Per the DSM-IV, dependence “requires that 3 or more of the following criteria be met within the preceding 12 months: tolerance, withdrawal, an unsuccessful attempt to cut down, time in obtaining or consuming the substance accompanied by a reduction in other activities, and continued use despite physical or psychological costs.”^{7(p197)}

In recognition of the widespread nature of the problem (and in particular the high rate of alcohol use in pregnancy), the American College of Obstetrics and Gynecology (ACOG) has created a training module and an awareness program to educate the public as well as clinicians about the phenomenon of “risky drinking” among non-pregnant women. Risky drinking often precedes the use that occurs during pregnancy and accounts for women’s difficulty in attaining abstinence even when they are concerned about risks to the fetus. *Risky drinking* (for non-pregnant, reproductive-age women) is defined as more than 7 drinks per week and more than 3 drinks on a single occasion.⁸ While risky drinking falls short of meeting criteria for alcohol dependence or abuse, risky drinkers are advised to cut down their alcohol use prior to conception, in recognition of the fact that past drinking is the best predictor of prenatal drinking and because many women do not know they are pregnant until after embryogenesis (in the first 8 weeks).⁹ The ACOG guidelines present a longitudinal approach that cuts across the socioeconomic spectrum and reaches women who would never identify themselves as problem drinkers (because of the absence of negative consequences).

Diagnosis is also facilitated by physical findings (which include dermatologic, otolaryngologic, respiratory, genitourinary, cardiovascular, gastrointestinal, musculoskeletal, and neurologic findings) that can aid in the detection and management of alcohol use among pregnant patients during routine outpatient visits.¹⁰ Physical findings consistent with injection drug use and with the end-organ consequences of stimulant use, for example, are particularly relevant among women who use these other substances in addition to alcohol. However, the majority of women who drink during pregnancy are not addicted to illicit substances.

What Are the Main Risk Factors for Alcohol Use in Pregnancy?

Risk factors for alcohol use in pregnancy include poverty, homelessness, substance use by one’s partner, and preconception substance use, with preconception use being the strongest predictor of all these factors.¹¹ Comorbid psychiatric illness and a personal history of physical or sexual abuse, respectively, carry great risk for alcohol use during pregnancy: between 56% and 92% of alcohol users

have other psychiatric illnesses, and up to 70% have experienced childhood sexual abuse.^{12–14}

What Is the Epidemiology of Alcohol Use in Pregnancy?

Rates of alcohol use appear to have decreased over the past decade due either to the positive function of public education and greater awareness or to the decrease in self-reporting under a greater burden of social stigma. In multiple surveys prior to 2001, 20% of all women reported consuming some alcohol during pregnancy.¹⁵ Between 2002 and 2003, 9.3% of pregnant women reported use of some alcohol, with 4% reporting binge drinking (defined as > 3 drinks at 1 sitting).¹⁵ In 2005, 12% to 15% of pregnant women reported use of some alcohol, with 3% to 4% reporting binge drinking during pregnancy.¹⁵

How Does Alcohol Use Affect the Normal Physiology of Pregnancy?

Women have a decreased “first-pass” metabolism of alcohol linked to the presence of less alcohol dehydrogenase in their gastric mucosa.¹⁶ Therefore, end-organ effects of alcohol are more rapid in women. In pregnant women, alcohol can precipitate preterm labor and, contrary to popular myths about the effect of drinking Guinness or other ales, can lead to decreased rather than increased production of breast milk.¹⁷ Any alcohol consumption in the first trimester may also increase the risk of spontaneous abortion (as noted by 1 retrospective study) by as much as 4-fold.¹⁸

Despite alcohol’s ability to cross the placenta into fetal-maternal compartments, the fetus is exposed longer than is the mother to the same amount of alcohol, as the fetus has less alcohol dehydrogenase to metabolize the alcohol than does the mother. Concurrent tobacco smoking by the mother also appears to increase fetal exposure to alcohol.¹⁹

What Is Fetal Alcohol Syndrome?

The fetal alcohol syndrome was first described by Kenneth Lyon Jones and David W. Smith in 1973²⁰; it now has well-established diagnostic criteria and characteristic facies and facial features (including microcephaly [with a head circumference below the fifth percentile on the growth chart], small palpebral fissures, a flat nasal bridge, a smooth or indistinct philtrum, a thinned upper lip, and flattening of the midface).²⁰ Minor criteria include epicanthal folds, as well as low-set or mildly malformed ears. Fetal alcohol syndrome more generally reflects the way in which alcohol affects central nervous system development, as well as the growth of the heart, eyes, legs, arms, teeth, ears, palate, and external genitalia.²⁰

While the overall incidence of fetal alcohol syndrome is estimated at a rate of 1 in 300 to 1 in 1000 live births per

year, it is higher among Native Americans (29.9 per 10,000 births); this higher incidence may be due to cultural variations in drinking patterns, ethnic differences in metabolism of alcohol between different Native American tribes, and resource differences among communities. The rate for blacks is 6.0 per 10,000 births, which is higher than the rates for Asian Americans (0.3), Latinos (0.8), and whites (0.9).²⁰ Roughly 2.6 million infants suffer significant intrauterine alcohol exposure each year, with the treatment and care of these children (including services for profound mental retardation) incurring a national cost of \$746 million annually.²⁰

Previously, first trimester exposure was thought to be of primary importance in the risk for fetal alcohol syndrome. However, as mentioned previously, recent research has confirmed a role for alcohol as a teratogen throughout pregnancy, with variable manifestations on an individual basis rather than according to the timing of exposure or even the quantity of alcohol consumed; levels as low as 1 to 2 drinks per week in the second and third trimesters can exert negative effects.²¹ These studies have resulted in the characterization of fetal alcohol spectrum disorders, with developmental delay, increased rates of attention-deficit/hyperactivity disorder, and mild cognitive impairment. When these longer-term sequelae are considered, fetal alcohol spectrum disorders are 10 times as prevalent as fetal alcohol syndrome and have an even greater public health impact.²²

How Can Alcohol Use During Pregnancy Be Detected?

Because there is no safe drinking level in pregnancy, it is beneficial to identify and modify consumption as much as possible. Some women voluntarily disclose their drinking. Others have already modified their use upon learning that they are pregnant and may not report on prior use.²³ Finally, even moderate drinkers may underreport their alcohol use for a variety of reasons (including the misapprehension that small amounts of alcohol are inconsequential or because of fears of stigmatization). Hence, the standard quantity and frequency questions about alcohol use may not be helpful for the pregnant woman.²⁴

In conceptualizing screening for alcohol use by pregnant women, it may be helpful to keep in mind that studies have identified at least 2 distinct cohorts of drinkers. According to the 2000–2001 National Pregnancy Risk Assessment Monitoring System data, women may be either (1) > age 35 years, have a high socioeconomic status and level of education, not be users of any illicit drugs, be married, be non-Hispanic white, and have a 6% to 15% probability of using alcohol during pregnancy or (2) < age 30 years, be single, smoke cigarettes, be a poly-substance user (with marijuana the most common comorbid drug along with cocaine and opiates), be more likely

to binge drink during pregnancy, and have a 1% to 3% prevalence of alcohol use during pregnancy.²⁵ Asking open-ended specific questions may capture some of this diversity, as can asking about drinking patterns during the 3 months prior to knowledge of pregnancy.²⁶

Consistent use of a validated screening instrument should improve the identification of prenatal alcohol use. However, popular instruments (such as the CAGE [Cut-down, Annoyed, Guilt, Eye-opener] or the Michigan Alcohol Screening Test) have been developed and tested in other populations (such as heavy-drinking men) and so may be less accurate for use in pregnant women.²⁷ The T-ACE (Tolerance, Annoyed, Cut-down, Eye-opener) is a simple 4-item screening instrument based on the CAGE and has been studied in diverse patient populations.²⁸ The T-ACE has identified a range of alcohol use, including current prenatal alcohol consumption, prepregnancy risky drinking (defined as drinking more than 2 drinks per day), and lifetime alcohol diagnoses based on the DSM-III-R.^{28,29} Clinicians may wish to use other screening instruments (such as the TWEAK [Tolerance, Worried, Eye-opener, Amnnesia, and K/cut-down), but the level of risky drinking identified by the TWEAK is double the currently accepted definition of 1 drink per day.^{30,31}

Use of biological methods (such as a breath analyzer or urinalysis) in pregnant patients is rarely feasible due to the rapid metabolism of alcohol and the pattern of drinking by most pregnant women. Blood biomarkers for heavy prenatal alcohol exposure that result in overt alcohol-related deficits have also been studied, but the most significant and common result of prenatal alcohol exposure (i.e., neurobehavioral dysfunction) is not an outcome recognized in the newborn period. Hence, the applicability of these blood markers is questionable for the majority of pregnant women.³²

What Obstacles to Seeking Treatment Do Women Experience?

Several studies have identified obstacles to seeking treatment. These obstacles include: a lack of knowledge of specific harms to the fetus from alcohol, a fear of being judged, a fear of legal charges, a sense of personal guilt, and family and social stressors as well as inadequate access to prenatal care in the context of young age (< 20 years), a lack of family or social supports, and the burden of other responsibilities (i.e., having custody of several minor children).^{33,34} Even in the absence of financial resources, however, factors that appear to positively predict that a woman will seek treatment include a history of attempts at treatment, having 1 or more children in foster care or in the custody of child welfare agencies, and having at-home supports, whether by family members or, in some instances, by visiting nurses.³⁵

Should Pregnant Alcohol Users Be Reported to the Authorities?

Contemporary dilemmas about substance use during pregnancy often center on the nature and extent of prosecution and the incarceration of women. While popular images (such as a pregnant Gwyneth Paltrow drinking Guinness³⁶) have provoked commentary by celebrity gossip columnists, more serious media attention has focused on the impact of the War on Drugs on pregnant substance abusers. Currently, none of the 50 states have laws against substance abuse during pregnancy. Many addicted pregnant women affected by current drug policies find themselves in an isolated and resource-poor position—coping with poverty, having a lack of education and social supports, and being involved in violent and unstable intimate relationships.

The question of whether women in alcohol abuse recovery should regain custody of their children has also stirred debate. Most of the mandated treatment programs use custody as an incentive, e.g., “Follow the program if you want to see your children again.” The starkness of the separation often evokes demoralization, increased guilt, and a sense of worthlessness; reinforces the vulnerability to abusive relationships; and, in more extreme circumstances, facilitates involvement in the sex industry.³⁷ Few programs have the resources to offer comprehensive services for grief counseling or group psychotherapy, management of comorbid psychiatric disorders, vocational and parenting classes, and other psychosocial supports to facilitate a transition from addiction to recovery to being a responsible mother. Yet, those who do offer these services, rather than limiting themselves to pregnancy-related issues, show better long-term outcomes for families.³⁸

How Should Alcohol Use Be Managed During Pregnancy?

Referral options to both general psychiatry practices and to addiction services remain important for the primary care clinician.³⁹ However, it should be emphasized that a brief intervention, in the form of counseling as a follow-up to screening and appropriate referral, can be offered by the primary care clinician to the majority of women who drink during pregnancy and who are unlikely to meet physiologic criteria for dependence.^{40,41}

It should be emphasized that identifying regular alcohol consumption and not only treating abuse and dependence but also providing education to those for whom it is not a problem behavior is an important part of preconception care. Examples of how to provide such education to reproductive-age women are outlined in the Fetal Alcohol Spectrum Disorders Prevention Toolkit available free of charge from ACOG.⁸ Research over the past 3 decades has increasingly shown the importance of such education from a public health perspective.⁴²

Specialized inpatient detoxification treatment is required for the pregnant woman who is physiologically dependent on alcohol (typically associated with drinking 5 days or more per week), who is actively drinking, who has ever had a withdrawal syndrome, or who is at risk for alcohol withdrawal (which can result in mortality of the mother or her fetus). Conservative management dictates that, when alcohol consumption during pregnancy has been detected, the patient should be assessed for referral to an outpatient detoxification program. Seizures during pregnancy should raise the possibility of an alcohol withdrawal syndrome as well as eclampsia or an autoimmune phenomenon such as systemic lupus erythematosus. As the rate of elimination of benzodiazepines may be faster in pregnancy, a tailored short-acting benzodiazepine protocol, often dosed hourly, may be useful. Adjunctive treatments under appropriate inpatient supervision may include use of clonidine (0.1–0.2 mg every 8 hours), which has been shown to be safe in pregnancy as an adjunct to epidural analgesia.⁴³

Referral to detoxification services should be accompanied by close, ongoing, coordinated follow-up by the primary care physician, obstetrician, or addictions specialist. Concurrent participation in Alcoholics Anonymous meetings, specialized support groups for pregnant women attempting medically monitored sobriety, and individualized social work services are recommended for the pregnant woman undergoing alcohol treatment to ensure that the female patient will have the supports required to maintain sobriety as well as to care for a child who may prove to have special needs in the immediate postpartum period and its aftermath. Psychopharmacologic treatment (e.g., acamprosate, naltrexone, and disulfiram) may play a role in helping women maintain sobriety, though they are not currently approved by the U.S. Food and Drug Administration for use during pregnancy. However, treatment of comorbid mood, anxiety, thought, and affective disorders during and after pregnancy is strongly recommended.^{44,45} In addition, screening for suicidality (as well as thoughts of infanticide) should be undertaken at every visit using straightforward, nonjudgmental questions such as, “Have you thought about harming yourself?” “Have you wished that you were not pregnant?” and “Have you thought about harming the baby?” While screening instruments such as the Beck Depression Inventory and the Primary Care Evaluation of Mental Disorders (a mental health instrument for primary care physicians) may be useful, open-ended questions in conjunction with specialized screening tools (e.g., the Edinburgh Postnatal Depression Scale and Center for Epidemiologic Studies Depression Scale) may be the most sensitive and specific.⁴⁶

Clinical considerations also include the emotional import of the process of disclosure of alcohol problems to a physician or to others that has resulted in continued use

during pregnancy; relationship difficulties that may have surrounded the initial, perhaps unexpected, event of conception; and inner conflicts associated with possible ambivalence about seeking help versus continuing to harm the fetus by consuming alcohol. The patient's feelings may range from guilt to relief at getting help to anger at the way in which the pregnancy may expose a long-standing alcohol problem; in addition, a relationship with a partner who is alcohol-dependent or simply a failure of birth control and an unintended pregnancy may be problematic. Ongoing supportive discussions, as well as an expression of compassion and respect during clinical screening and beyond, after the period of safe detoxification, may be particularly important for the patient and reinforce the behavior of coming forward and obtaining help.

In conclusion, resources (including review articles and relevant Web sites) describing the safe use of psychotropic medications in pregnancy for substance-using and other pregnant women are available.^{47,48} In addition, practical references for the referral and support process, including a federally-supported Internet treatment facility locator for pregnant women requiring detoxification and other referrals, are accessible.⁴⁹

REFERENCES

1. US Dept Health Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Household Survey on Drug Abuse, 1994. Rockville, Md: US Dept Health Human Services; 1995
2. US Dept Health Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Household Survey on Drug Use and Health, 2001. Rockville, Md: US Dept Health Human Services; 2002
3. Wattendorf DJ, Muenke M. Fetal alcohol spectrum disorders. *Am Fam Physician* 2005;72:279–282, 285
4. Day NL, Goldschmidt L, Thomas CA. Prenatal marijuana exposure contributes to the prediction of marijuana use at age 14. *Addiction* 2006; 101:1313–1322
5. Rodin AE. Infants and gin mania in 18th-century London. *JAMA* 1981; 245:1237–1239
6. Jones KL, Smith DW. Recognition of the fetal alcohol syndrome in early infancy. *Lancet* 1973;2:999–1001
7. American Psychiatric Association. The Diagnostic and Statistical Manual of Psychiatric Disorders, Fourth Edition (DSM-IV). Washington, DC: American Psychiatric Association; 2004
8. Department of Health and Human Services, Centers for Disease Control. Fetal Alcohol Spectrum Disorders Prevention Toolkit for Women's Health Care Providers. Available at: http://www.cdc.gov/ncbddd/fas/acog_toolkit.htm. Accessed on Nov 2, 2007
9. Chang G, McNamara TK, Orav EJ, et al. Alcohol use by pregnant women: partners, knowledge, and other predictors. *J Stud Alcohol* 2006;67:245–251
10. Little BB, Gilstrap LC, Cunningham FG. Social and illicit substance use during pregnancy. In: Cunningham G, McDonald PC, Gant NF, eds. *Williams Obstetrics*. 18th ed. Norwalk, Conn: Appleton and Lange; 1990
11. Regier DA, Farmer ME, Rae DS, et al. Comorbidity of mental disorders with alcohol and other drug abuse: results from the Epidemiological Catchment Area (ECA) study. *JAMA* 1990;264:2511–2518
12. Bayatpour M, Wells RD, Holford S. Physical and sexual abuse as predictors of substance use and suicide among pregnant teenagers. *J Adolesc Health* 1992;13:128–132

13. Kissin WB, Svikis DS, Moylan P, et al. Identifying pregnant women at risk for early attrition from substance abuse treatment. *J Subst Abuse Treat* 2004;27:31–38
14. Velez M, Montoya I, Jansson L, et al. Exposure to violence among substance-dependent pregnant women and their children. *J Subst Abuse Treat* 2006;30:31–38
15. Office of Applied Studies. Substance Abuse and Mental Health Services Administration. Substance abuse and mental health statistics. Available at: <http://www.drugabusestatistics.samhsa.gov/>. Accessed on Nov 2, 2007
16. Greenfield S, Sugarman D. The treatment and consequences of alcohol abuse and dependence during pregnancy. In: Yonkers K, Little B, eds. *Management of Psychiatric Disorders in Pregnancy*. London, England: Arnold Publishers; 2001
17. Mennella JA, Pepino MY, Teff KL. Acute alcohol consumption disrupts the hormonal milieu of lactating women. *J Clin Endocrinol Metab* 2005; 90:1979–1985
18. Rasch V. Cigarette, alcohol, and caffeine consumption: risk factors for spontaneous abortion. *Acta Obstet Gynecol Scand* 2003;82:182–188
19. Flynn HA, Marcus SM, Barry KL, et al. Rates and correlates of alcohol use among pregnant women in obstetrics clinics. *Alcohol Clin Exp Res* 2003;27:81–87
20. Fetal alcohol syndrome. Available at: <http://www.cdc.gov/reproductivehealth/Products&Pubs/DatatoAction/pdf/Chl18.pdf>. Accessed on Nov 2, 2007
21. Manning MA, Hoyme H. Fetal alcohol spectrum disorders: a practical clinical approach to diagnosis. *Neurosci Biobehav Rev* 2007;31:230–238
22. Calhoun F, Attilia ML, Spagnolo PA, et al. National Institute on Alcohol Abuse and Alcoholism and the study of fetal alcohol spectrum disorders: the International Consortium. *Ann Ist Super Sanita* 2006;42:4–7
23. Smith IE, Lancaster JS, Moss-Wells S. Identifying high risk drinkers: biological and behavioral correlates of continued heavy drinking during pregnancy. *J Stud Alcohol* 1987;48(4):304–309
24. Chang G, McNamara TK, Orav EJ, et al. Alcohol use by pregnant women: partners, knowledge, and other predictors. *J Stud Alcohol* 2006;67:245–251
25. Phares TM, Morrow B, Lansky A, et al. Surveillance for disparities in maternal health-related behaviors: selected states, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000–2001. *MMWR Surveill Summ* 2004 2;53:1–13
26. Whitehead N, Lipscomb L. Patterns of alcohol use before and during pregnancy and the risk of small-for-gestational-age birth. *Am J Epidemiol* 2003;158:654–662
27. Verkerk PH. The impact of alcohol misclassification on the relationship between alcohol and pregnancy outcome. *Int J Epidemiol* 1992;21 (suppl 1):S33–S37
28. Sokol RJ, Martier SS, Ager JW. The T-ACE questions: practical prenatal detection of risk-drinking. *Am J Obstet Gynecol* 1989;160:863–871
29. Chang G. Screening and brief intervention in prenatal settings. *Alcohol Res Health* 2004/2005;28:80–84
30. Bradley KA, Boyd-Wickizer J, Powell SH, et al. Alcohol screening instruments in women: a critical review. *JAMA* 1998;280:166–171
31. Chang G, Wilkins-Haug L, Berman S, et al. Alcohol use and pregnancy: improving identification. *Obstet Gynecol* 1998;91:892–898
32. Jones KL, Chambers C. Biomarkers of fetal exposure to alcohol: identification of at-risk pregnancies. *J Pediatr* 1998;133:316–318
33. Wilson LM, Reid AJ, Midmer DK, et al. Antenatal psychosocial risk factors associated with adverse postpartum family outcomes. *CMAJ* 1996;154:785–799
34. Messer K, Clark KA, Martin SL. Characteristics associated with pregnant women's utilization of substance abuse treatment services. *Am J Drug Alcohol Abuse* 1996;22:403–422
35. Starn JR. Community health nursing visits for at-risk women and infants. *J Comm Health Nurs* 1992;9:103–110
36. Pregnant Gwyneth Paltrow drinks Guinness: brilliant! Available at: http://www.starpulse.com/news/index.php/2006/03/31/pregnant_gwyneth_paltrow_drinks_guinness/. Accessed on Nov 2, 2007
37. Farmer P, Connors M, Simmons J, eds. *Women, Poverty and AIDS: Sex, Drugs and Structural Violence*. 2nd ed. Monroe, ME: Common Courage Press; 2007
38. Uziel-Miller ND, Lyons JS. Specialized substance abuse treatment for women and their children: an analysis of program design. *J Subst Abuse Treat* 2000;19:355–367

39. Herzig K, Danley D, Jackson R, et al. Seizing the 9-month moment: addressing behavioral risks in prenatal patients. *Patient Educ Couns* 2006;61:228–235
40. Whitlock EP, Polen MR, Green CA, et al. Behavioral counseling interventions in primary care to reduce risky/harmful alcohol use by adults: a summary of evidence for the US Preventive Services Task Force. *Ann Int Med* 2004;140:557–568
41. Floyd RL, O'Connor MJ, Bertrand J, et al. Reducing adverse outcomes from prenatal alcohol exposure: a clinical plan of action. *Alcohol Clin Exp Res* 2006;30:1271–1275
42. Rosett HL, Weiner L, Zuckerman B, et al. Reduction of alcohol during pregnancy with benefits to the newborn. *Alcohol Clin Exp Res* 1980;4:178–184
43. Parker RK, Connelly NR, Lucas T, et al. Epidural clonidine added to a bupivacaine infusion increases analgesic duration in labor without adverse maternal or fetal effects. *J Anesth* 2007;21:142–147
44. Ross LE, McLean LM. Anxiety disorders during pregnancy and the postpartum period: a systematic review. *J Clin Psychiatry* 2006;67:1285–1298
45. Lamberg L. Risks and benefits key to psychotropic use during pregnancy and postpartum period. *JAMA* 2005;294:1604–1608
46. Mosack V, Shore ER. Screening for depression among pregnant and postpartum women. *J Community Health Nurs* 2006;23:37–47
47. Massachusetts General Hospital Center for Women's Health. Reproductive Psychiatry Resource and Information Center. Available at: <http://www.womensmentalhealth.org/>. Accessed on Nov 5, 2007
48. Eriksson UJ. Fetal ethanol exposure during pregnancy-how big is the problem and how do we fix it? *Acta Paediatr* 2007;96:1557–1559
49. Substance Abuse and Mental Health Services Administration. US Department Health and Human Services. Substance Abuse Treatment Facility Locator. Available at: <http://www.findtreatment.samhsa.gov/>. Accessed on Nov 5, 2007