

# PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

## Alcohol Consumption and Related Risk Factors

Recent media stories of frail, drug-exposed babies have heightened public awareness concerning the dangers of substance abuse for pregnant women and their unborn children. According to a report compiled by the Institute of Medicine, of all the substances of abuse, including heroin, cocaine and marijuana, *alcohol* produces by far the most serious neurobehavioral effects in the fetus.<sup>1</sup> Excessive drinking during pregnancy can result in a wide range of problems for the developing fetus, including fetal death, mental retardation, and a specific pattern of birth defects called fetal alcohol syndrome or FAS. Children with FAS have physical abnormalities in the features of the face, reduced growth, and problems of behavior, learning and development.<sup>2</sup> Other children exposed to alcohol before birth may experience developmental impairments or structural birth defects, but do not have all the features required for a diagnosis of FAS. By avoiding alcohol use during pregnancy, FAS and other alcohol-related impairments are entirely preventable. While a precise “safe” level of alcohol consumption has not been identified,<sup>3</sup> it is clear that women who drink heavily or abusively are at the greatest risk.<sup>4</sup> An important first step toward prevention is to gain a better understanding of Oklahoma women most at risk and identify those factors associated with drinking before and during pregnancy.

### Materials and Methods

The PRAMS survey asks women, “In the 3 months before you got pregnant, how many alcoholic drinks did you have in an average week? (A drink is: one glass of wine, one wine cooler, one can or bottle of beer, one shot of liquor, or one mixed drink.)” A similar question is asked about alcohol consumption during an average week three months before delivery. Women who reported they did not drink during the given time period were classified as non-drinkers and women who reported less than one drink per week (drk/wk) or more were classified as drinkers. Data from women who reported drinking were stratified by the number of drinks per week: light (<7 drk/wk), moderate (7-13 drk/wk) or heavy (14+ drk/wk).

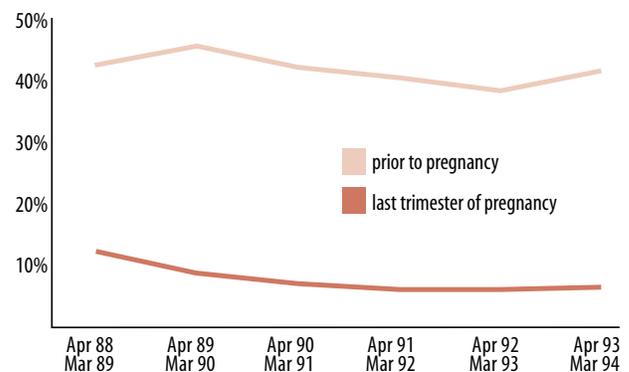
In this report, all data presented as “before” or “prior to” pregnancy will refer specifically to the three-month period of time before pregnancy. Similarly, all data presented as “before delivery” or “during pregnancy” will refer specifically to the three-month period of time before delivery.

Of those women who responded to the PRAMS survey, 95% answered questions regarding alcohol use. Comparison of proportions was done using 95% confidence intervals (95% CI). All data cited are self-reported.

### Reported Alcohol Use Before and During Pregnancy

Over the six-year period of time beginning April 1988 and ending March 1994, 42% of women surveyed reported drinking alcohol in the three months prior to pregnancy; approximately 8% reported alcohol use in the three months before delivery (Figure 1).

Figure 1 Percent of Women Drinking Prior to and During Pregnancy



The percentage of women who drink before pregnancy has remained relatively consistent over the last six years with statistically insignificant variations in the rates over time. There has been a decrease in the rate of drinking during the last three months of pregnancy, from a high of 13% during the first year of PRAMS to approximately 6% throughout the last four years. Alcohol beverage

### In Oklahoma:

- Nearly one-half of women use alcohol during the three months *before pregnancy*.
- One in 13 women consume alcohol during the three months *before delivery*.
- Women age 35+ are 3.4 times more likely to drink *before delivery* than women under 20.
- Women who smoke *before delivery* are 2.3 times more likely to drink *before delivery* than non-smokers.
- One in four mothers report their health care provider did not talk to them about the harmful effects alcohol can have on their baby.

warning labels, required as of November 1989, and state-wide public awareness campaigns may have contributed to the declining rate of reported drinking during pregnancy.

### Characteristics of Women Reporting Alcohol Use Prior to and During Pregnancy

White women were 1.4 times more likely than African-American women to report any level of alcohol consumption in the three months prior to pregnancy (Table 1). Women who had completed some college (13+ years) were more likely to use alcohol before pregnancy than women who had not yet completed high school ( $\leq 11$  years). Moreover, women whose source of family income was a job or business (44.4%) were significantly more likely to consume alcohol prior to pregnancy than women who received income from public assistance (37.4%). Single women (46.3%) were slightly more likely to consume alcohol before pregnancy than married women (40.5%), and women over age 20 were significantly more likely to drink before pregnancy than younger women.

Table 1 Percentage of Women Drinking Prior to and During Pregnancy by Demographic Characteristics

Characteristic	Before Preg	95% CI	Last Tri	95% CI
<b>Race</b>				
White	44.4	(42.6, 46.2)	8.0	(7.0, 9.0)
African Am	32.2	(26.1, 38.3)	9.0	(5.2, 12.8)
Am Indian	36.0	(30.6, 41.5)	5.5	(2.9, 8.1)
<b>Education</b>				
< 11 yrs	34.0	(30.0, 37.9)	6.8	(4.7, 8.8)
12 yrs	40.8	(38.3, 43.3)	6.6	(5.3, 7.9)
13-15 yrs	45.8	(42.2, 49.3)	8.3	(6.2, 10.3)
16+ yrs	49.5	(45.9, 53.2)	10.5	(8.2, 12.8)
<b>Income Source</b>				
Job/Business	44.4	(42.5, 46.2)	7.9	(6.9, 8.9)
Welfare	37.4	(33.7, 41.1)	7.8	(5.8, 9.8)
<b>Marital Status<sup>1</sup></b>				
Single	46.3	(43.1, 49.4)	8.5	(6.8, 10.2)
Married	40.5	(38.6, 42.4)	7.4	(6.4, 8.5)
<b>Age</b>				
< 20	34.3	(29.9, 38.7)	3.8	(2.1, 5.5)
20-24	44.8	(41.8, 47.9)	6.4	(4.9, 7.9)
25-29	42.3	(39.3, 45.2)	8.1	(6.5, 9.8)
30-34	45.6	(41.9, 49.3)	11.4	(8.9, 13.8)
35+	41.3	(35.2, 47.3)	12.6	(8.5, 16.8)

<sup>1</sup>at conception

The percentage of women who report drinking during the last three months of pregnancy dropped significantly from the rates reported before pregnancy for all population groups (Table 1). However, similar patterns of alcohol use among groups can be observed. Women with 13 or more years of education were 1.4 times more likely to report alcohol use during pregnancy than women with 12 or fewer years. Women age 30 or older were nearly twice as likely to drink during pregnancy than younger women ( $\leq 29$  years).

### Associated Risk Factors

As seen in Table 2, alcohol use prior to and during pregnancy is associated with a number of co-existing prenatal risk factors. Women who planned their pregnancy (40.5%) were less likely to report drinking before pregnancy than women whose pregnancy was unintended (45.4%). Women who smoked before pregnancy were 1.6 times more likely to drink before pregnancy and those who smoked during pregnancy were 2.3 times more likely to drink during pregnancy than non-smokers. Those who had "someone very close" using drugs or who had been physically hurt by their husband/partner during the 12 months before delivery were significantly more likely to report alcohol use prior to pregnancy.

Table 2 Percentage of Women Drinking Prior to and During Pregnancy by Prenatal Risk Factors

Characteristic	Before Preg	95% CI	Last Tri	95% CI
<b>Preg Intention</b>				
Intended	40.5	(38.8, 42.7)	7.8	(6.5, 9.0)
Not Intended	45.4	(42.7, 48.0)	8.0	(6.6, 9.5)
<b>Entry into PNC</b>				
1st Trimester	43.4	(41.6, 45.2)	8.1	(7.1, 9.1)
2nd/3rd/No Care	38.6	(34.6, 42.7)	6.7	(4.7, 8.7)
<b>Tobacco Use</b>				
Non-Smoker	35.8	(33.9, 37.7)	6.1	(5.2, 6.9)
Smoker	57.5 <sup>1</sup>	(54.4, 60.6)	13.9 <sup>2</sup>	(11.3, 16.4)
<b>Someone Close Using Drugs</b>				
No	40.1	(38.3, 41.9)	7.2	(6.3, 8.2)
Yes	52.7	(48.6, 56.8)	9.8	(7.5, 12.2)
<b>Physically hurt by Husband/Partner</b>				
No	41.8	(40.1, 43.5)	7.5	(6.6, 8.4)
Yes	51.2	(43.8, 58.7)	12.0	(7.4, 16.5)

<sup>1</sup>Smoked prior to pregnancy

<sup>2</sup>Smoked during pregnancy

### Levels of Drinking and Changes in Drinking Behavior

Of all the women who reported alcohol use in the three months prior to pregnancy, 82.8% reported abstaining before delivery. Ten percent drank at the same or higher level and approximately 7.2% reported a reduction of at least one drink per week.

Overall, the majority of women (92%) who reported alcohol use before pregnancy were classified as light drinkers (<7 drk/wk). Of these light drinkers, 83.4% stopped drinking before delivery, 5.9% reduced their level of drinking by at least one drink per week and 10.7% continued drinking at the same or higher level.

Although no "safe" threshold for alcohol use during pregnancy has been established, studies have indicated that

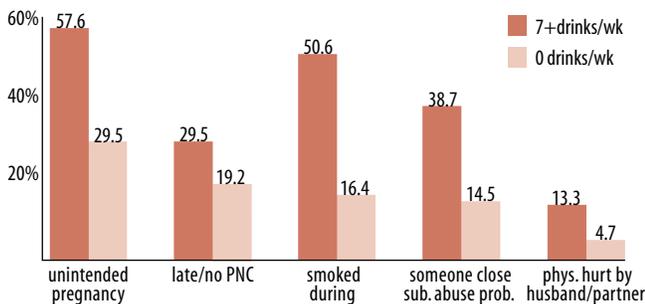
PRAMS is a population-based survey of Oklahoma women with a recent delivery. Analysis weights were applied to adjust for selection probability and non-response. By using weighted analysis, researchers can make strong statements about the preconception and perinatal periods for the entire population of women in Oklahoma delivering a live birth. Thus, state-specific decisions on policy and program development can be made. A stratified systematic sampling approach is used to select approximately 200 new mothers each month from the state's live birth registry. Up to three mailed questionnaires are used to solicit a response. Telephone interviews are attempted for non-respondents. Data for this report reflect live births occurring between April 1988 and March 1994. The response rate was 70%. This analysis includes information collected from 9,906 mothers. All data represent state estimates.

neurobehavioral and physical impairments are more likely to result from moderate to heavy (7+ drk/wk) consumption of alcohol during pregnancy.<sup>3</sup> Approximately 2% of Oklahoma mothers report moderate alcohol consumption (7-14 drk/wk) prior to pregnancy, while 1% report drinking 14 or more drinks per week (heavy drinking) prior to pregnancy. The rate of moderate and heavy drinking has remained fairly constant since 1988. More than 70% of these moderate to heavy drinkers report stopping before delivery and 2% report drinking at the same or higher level. Overall, it appears that the less a woman drinks before pregnancy, the more likely she is to quit drinking during pregnancy. Learning more about personal and social risk factors of women who continue heavy drinking during pregnancy might permit prevention efforts to be targeted more specifically to maternal risk drinkers.<sup>1</sup>

**Risk Factors Associated with Pre-Pregnancy Drinking**

In order to learn more about personal and social risk factors associated with risk drinking, further analysis of the women who reported moderate to heavy alcohol use prior to pregnancy was done. Reported alcohol use prior to pregnancy may actually reflect the three months before pregnancy recognition which includes conception and early gestation<sup>5</sup> when the developing fetus is most vulnerable to the harmful effects of alcohol.<sup>6,7</sup> Analysis of risk factors associated with heavier alcohol use during pregnancy is limited due to small sample size.

Figure 2 Adverse Prenatal Risks Among Women Reporting Moderate/Heavy Pre-Pregnancy Drinking



Women who reported drinking seven or more drinks per week before pregnancy were statistically more likely to have one or more serious prenatal risk factors, including higher rates of unintended pregnancy and late or no prenatal care (Figure 2). Nearly three-fourths (71%) of moderate to heavy drinkers smoked prior to pregnancy (data not shown), and over half (51%) reported smoking during the last trimester of pregnancy. Women who drank seven or more drinks per week before pregnancy were 2.7 times more likely to have someone close with a substance abuse problem. Finally, one-in-seven moderate to heavy drinkers reported being physically hurt by their husband or partner during the 12 months before deliv-

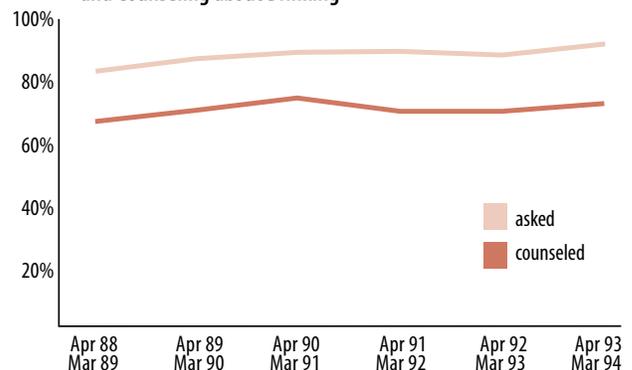
ery, which is nearly three times the rate for women who did not drink before pregnancy.

**Counseling About Alcohol Use**

Women were asked two questions concerning their discussions with health professionals regarding alcohol use: 1) "When you went for prenatal care, did a doctor, nurse, or other health worker ask you if you were drinking alcoholic beverages? (beer, wine, wine cooler, or liquor)" and 2) "Did a doctor or nurse talk with you about how drinking during pregnancy could affect your baby?"

As noted in Figure 3 below, 89% of women who entered prenatal care reported being asked by a health care professional about alcohol use, with a moderately increasing trend over the last six years from 84 to 92%. The percentage of women who were counseled about the effects of alcohol on the fetus by their prenatal care provider has remained statistically constant at approximately 72%. Despite an improving trend, one in ten women report they are not asked by a health professional about alcohol use and one in four women are not counseled about the harmful effects of alcohol use on the developing baby.

Figure 3 Trend in the Percentage of Health Professionals Asking and Counseling about Drinking



It should be noted that women who drank prior to or during pregnancy were no more likely to be asked or counseled about alcohol use than were women who did not use alcohol. However, it is interesting that the specific population groups of women who were most likely to report drinking were the least likely to be asked or counseled about alcohol use. For example, although women with higher levels of education were more likely to report drinking before and during pregnancy, they were significantly less likely to be asked or counseled about alcohol use than women with lower levels of education (data not shown). White women were significantly less likely to be asked or counseled than either African-American or American Indian women. Women receiving care from private doctors were less likely to be asked or counseled than mothers receiving care from hospitals, health departments or the Indian Health Service (IHS). Mothers with an income from a job or business were less

likely to receive information about alcohol than mothers receiving assistance.

### Data Limitations

This report is subject to a number of limitations. Underreporting of alcohol use in pregnancy has been well documented, and heavy drinkers most frequently underreport their use.<sup>8</sup> Therefore, data included in this report are considered to be conservative estimates. Problem drinkers may be less likely to respond to the survey than non-drinkers or light drinkers. Assessment of the actual amount of alcohol consumed by an individual is difficult to determine by self-report. The alcohol content of a standard drink depends on the strength of the beverage and the volume of the glass or container used.<sup>9</sup> Further, the "dose" of alcohol varies with the size and metabolism of each individual. Finally, while PRAMS does ask about the average amount of alcohol consumed in a week, it does not ask about the pattern of alcohol consumption. Seven drinks per week, for example, may represent relatively heavy doses of alcohol on one or two drinking days rather than one drink per day. Consuming five or more drinks on any one occasion, particularly in early pregnancy, may be especially harmful to the developing fetus.<sup>10</sup>

### Recommendations

Health care providers play an important role in the prevention of FAS and other alcohol-related birth defects through early detection of problem drinking, patient education and appropriate referrals. According to PRAMS, 45% of pregnancies are unintended, and nearly 20% of women do not receive prenatal care in the first trimester.<sup>11</sup> Therefore, all women of childbearing age should be asked about alcohol use and counseled about the harmful effects of alcohol use in pregnancy *before* pregnancy occurs. Primary health care providers should learn to identify pregnant and non-pregnant women with alcohol problems through the use of simple alcohol screening tests such as the T-ACE<sup>12</sup> or TWEAK.<sup>5</sup> When problem drinking is identified, clinicians should be prepared to discuss all aspects of alcohol use, provide brief interventions, and make appropriate referrals for alcohol or other drug treatment services. Women of childbearing age who abuse alcohol should be counseled about the risks of alcohol use during pregnancy and be offered referral and access to family planning services to delay pregnancy until a time when abstinence throughout a nine-month pregnancy is possible. Women who drink and become pregnant should be advised to stop drinking as soon as possible to improve the chances of having a healthy baby.<sup>4,13</sup> And, although paternal drinking does not cause FAS, the important supportive role that the male partner plays in a healthy pregnancy is well established and cannot be emphasized strongly enough.<sup>1</sup>

Although traditional public education campaigns and warning labels often fail to change behavior in heavy

drinkers, their importance in raising awareness about the risks of alcohol use during pregnancy cannot be ignored.<sup>4,14</sup> The universal message that women should abstain from drinking alcohol prior to conception and throughout pregnancy should be emphasized. Finally, further research is needed to more clearly describe the population of women at risk for moderate to heavy drinking during pregnancy in order to develop more effective intervention strategies, thereby improving the health of women and their children.

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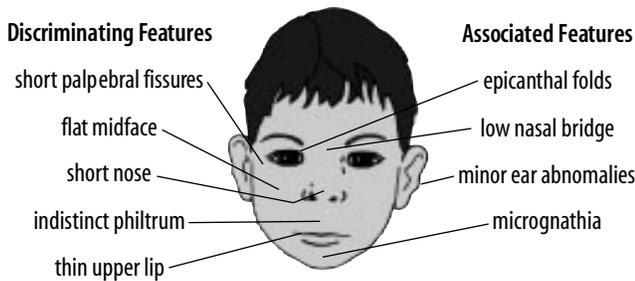
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# Fetal Alcohol Syndrome

## What is Fetal Alcohol Syndrome?

Fetal alcohol syndrome (FAS) is a specific pattern of birth defects that may develop when expectant mothers drink alcohol during pregnancy. Babies born with FAS are often small at birth and do not catch up as they grow older. They have specific facial features including small eyes, flat nasal bridge, smooth philtrum (the groove between the base of the nose and the upper lip), and a thin upper lip. Altered brain development before birth leads to mental retardation, developmental delays, or learning and behavior problems.

### Fetal Alcohol Syndrome in the Young Child



Streissguth, A.P. and Little, R.E. (1994) Alcohol, Pregnancy, and the Fetal Alcohol Syndrome. Project Cork Institute. Reprinted with permission from Milner-Fenwick, Inc.

Babies with FAS are often irritable and have difficulty sleeping and feeding. Children with FAS are easily distracted, impulsive, and have many learning and behavioral problems. Standard IQ scores for these children range from above average to severely mentally retarded. As children become adolescents and young adults, their disabilities caused by FAS often lead to school failure and inability to adjust to independent living.

## How much alcohol is safe during pregnancy?

Although research indicates that the full FAS complex is typically the result of heavy alcohol use in pregnancy, some studies report that learning and behavioral problems can occur with only one to two drinks a day. Women who drink heavily or who are alcoholic need to delay pregnancy until they are able to abstain from drinking throughout the nine months of pregnancy.

## Is there a cure?

There is no quick "cure" and children do not "outgrow" the disabilities which result from prenatal alcohol exposure. Infants and children who are suspected of having FAS should be evaluated by a pediatrician, pediatric neurologist, geneticist or developmental pediatrician who has experience with alcohol related birth defects. Children with FAS benefit from early intervention and education programs that provide a consistent, predictable and supportive environment.

## How can FAS be prevented?

FAS is entirely preventable by avoiding alcohol use during pregnancy. Health professionals should ask all women of childbearing age about alcohol use and provide accurate information about the harmful effects of drinking during pregnancy. Women who are abusing alcohol need supportive services such as family planning, prenatal care, and family-centered addiction treatment.

For more information about FAS:

**Fetal Alcohol Syndrome Prevention Center**  
1000 NE 10th St.  
OK State Dept of Health  
OKC, OK 73117-1299  
(405) 271-6617

**Reach-Out Hotline**  
OK Dept of Mental Health  
Substance Abuse Services  
P.O. Box 53277  
OKC, OK 73152  
(800) 522-9054

## Indicators of Problem Drinking Assessment Tools

### T-ACE

- T** How many drinks does it take to make you feel high? (**tolerance**)
- A** Have people **annoyed** you by criticizing your drinking?
- C** Have you felt you ought to **cut down** on your drinking?
- E** Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (**eye-opener**)

The *tolerance* question scores two points if women need more than two drinks to get high; and the *annoyed*, *cut down*, and *eye-opener* questions each score one point. Scores of two or more are considered positive.

Sokol, R., Martier, S. and Ager, J. American Journal of Obstetrics and Gynecology, 1989; 160: 863-70

### TWEAK

- T Tolerance:** How many drinks can you hold?
- W** Have close friends or relatives **worried** or complained about your drinking in the past year?
- E Eye-Opener:** Do you sometimes take a drink in the morning when you first get up?
- A Amnesia:** Has a friend or family member ever told you about the things you said or did while you were drinking that you could not remember?
- K(C)** Do you sometimes feel the need to **cut down** on your drinking?

A 7-point scale is used to score the test. The *tolerance* question scores 2 points if a woman reports she can hold more than five drinks without falling asleep or passing out. A positive response to the *worry* question scores 2 points, and a positive response to the last three questions scores 1 point each. A total score of 2 or more points indicates that a woman is likely to be a risk drinker.

Russell, M. and Skinner, J. Alcoholism: Clinical and Experimental Research, 1988; 12(6):824-830