

Oregon Prenatal Substance Use Prevalence and Health Service Needs Study

EXECUTIVE SUMMARY

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INTRODUCTION

Prenatal substance use, involving tobacco, alcohol, and illicit drugs, is a leading cause of morbidity among both mothers and their newborn infants. Prenatal exposure to tobacco smoke has been associated with multiple adverse birth outcomes, including neonatal asphyxia, spontaneous abortion, prematurity, SIDS, and long-term neurobehavioral deficits. Prenatal alcohol use has been associated with pregnancy complications, prematurity, congenital anomalies, growth retardation, and neurobehavioral disorders. The use of cocaine, amphetamines, and heroin during pregnancy have been associated with increased rates of perinatal death, abruptio placentae, premature births, low birth weight, neonatal seizures, birth defects, neurobehavioral disorders, and long term psychosocial problems. The adverse effects of maternal substance use are not limited to birth outcomes and developmental problems. Alcohol and illicit drug using mothers often present impaired abilities to nurture and provide for their children, as reflected in high rates of child abuse and neglect, and high rates of removal of drug exposed infants from their biological parents.

Reducing substance use among pregnant women is vital to improving overall maternal and child health. To this end, the United States Public Health Service Expert Panel on the Content of Prenatal Care and the American College of Obstetricians and Gynecologists have both recommended universal substance use screening and counseling of all prenatal patients. The need to assess the prevalence of prenatal substance use has been highlighted in Oregon, where reduction of substance use constitutes one of the urgent Benchmark goals. These goals include reducing the prevalence of prenatal tobacco use to 5%, alcohol use to 1%, and illicit drug use to 1% by the year 2000. Demonstrating the progress toward these goals requires reliable baseline and repeated estimates of statewide prevalence. Achieving progress towards these goals requires demographic and behavioral information which can be used to facilitate counseling and treatment of women who use substances. Progress also requires an understanding of the effectiveness of the prenatal health care environment in identifying and advising pregnant substance users.

The study described here was developed as a descriptive assessment of prenatal substance use in Oregon. It was designed to: 1) Develop a 1994 baseline estimate of the statewide prevalence of prenatal tobacco, alcohol, and illicit drug use; 2) compare the relative efficacy of different methods of identifying substance users; 3) profile maternal demographic and behavioral characteristics associated with substance use; and 4) describe prenatal health care provider-patient interactions regarding substance use.

METHODS

Sources of Information

The protocol for this study drew upon three sources of information. Oregon 1994 birth certificate records provided information on maternal use of tobacco, alcohol and illicit drugs, demographic characteristics and prenatal health care. Infant meconium¹ screens provided objective information on illicit drug use during the second and/or third trimester of pregnancy. Telephone interviews of women at six weeks postpartum provided quantitative and qualitative information on substance use prior to and during pregnancy, demographics, behavioral characteristics, and prenatal health care. Using an anonymous coding system, these sources of information were electronically linked.

Selection of Study Participants

Meconium Screening

Sampling for meconium screening was designed to produce a representative group of women in Oregon. Thirty-seven hospitals in all regions of Oregon, representing 92% of statewide births, were selected for meconium sampling. The sampling strategy accounted for the rural/urban status, racial/ethnic balance, and socioeconomic characteristics of the counties in each region. Thirty-four or 92% of selected hospitals were able to comply with the protocol requirements. A total of 1,456 meconium samples were targeted and 1,275 or 88% of samples were collected. The detection of illicit drugs in meconium specimens was based on Abbott TDX fluorescence

STUDY QUESTIONS

What is the prevalence of prenatal tobacco, alcohol, and illicit drug use in Oregon?

How can reliable estimates be obtained to measure progress toward the Benchmark 2000 goals?

Are there maternal demographic and behavioral characteristics which reflect higher risk of substance, use and provide a framework for counseling and treatment?

To what extent are patients screened for substance use by their prenatal health care providers, and do patients disclose their use?

¹ Meconium is the waste product that accumulates in the fetal intestinal tract during the second and third trimesters of gestation.

polarization immunoassay (FP) as the primary screen, with confirmatory gas chromatography-mass spectrometry (GC-MS) of all specimens testing positive by FP in a modified assay².

Postpartum Interviews

All patients in the maternity unit during the period of meconium sampling at each hospital received a letter of invitation and consent form to participate in the interview study. Of the 314 women who consented to be interviewed, a total of 212 were selected to participate. Interviewees were selected through a process of dual oversampling, aimed at ensuring participation by racial/ethnic minorities and gathering as much information as possible about substance using women. All women who had birth certificate record notations of minority status or tobacco, alcohol, or illicit drug use were included. The remaining interviewees were a random sample of women who had no such notation and who were matched for month and hospital of delivery. Participants completed an in-depth interview (in English or Spanish) regarding their use of substances, previous experiences and personal history, current social support and stability, postnatal health behavior, and experiences with prenatal health care³.

STUDY METHODS

Birth certificate records

Meconium substance screens

Postpartum interviews

Data Analysis

Prevalence Estimates

Statewide substance use prevalence for 1994 was estimated using the sample population for which birth certificates, interviews, and (for illicit drugs) meconium were obtained. The method used to estimate prevalence accounted for differences between the sample population and the statewide population in proportions of birth certificates which indicated no substance use. Rates of tobacco, alcohol, and illicit drugs reported during interviews or found on meconium screens were calculated for women without notations of substance use on birth certificates. These rates were then used to adjust the number of women in the state without notations of substance use on birth certificate records. The prevalence of use of each substance was calculated as the ratio of the number of

² Screening was conducted by the Department of Clinical Chemistry and Toxicology, Oregon Health Sciences University.

³ According to birth certificate records, there were no differences between the meconium sample population and the statewide population in demographic or prenatal care characteristics. By design, interviewees were more likely to use tobacco (32% versus 18%) and alcohol (24% versus 3%) than women in the statewide population. Interviewees were also less likely to have insurance (45% versus 57%) and more likely to be on public assistance (51% versus 35%); this may have been related to the lower demographic characteristics found for tobacco users, as well as the \$15 reimbursement for participating in the study.

women expected to have used based on sample findings to the total number of 1994 Oregon birth certificates⁴.

Comparison of Rates of Prenatal Substance Use

For the comparison of rates of prenatal substance use in relation to maternal characteristics, the meconium sample population provided demographic information and the interview population provided behavioral information. Rates of prenatal substance use in relation to demographic and behavioral characteristics were examined using Pearson χ^2 for univariate comparisons and logistic regression for multivariate comparisons. A finding is reported as significant if the probability that the difference was found by chance alone was less than 5% ($p < .05$). Variables with $p < .20$ on univariate analysis were included in stepwise multivariate logistic regression models.

RESULTS

Identification of Prenatal Substance Use and Prevalence Estimates

Prenatal Tobacco Use

Oregon birth certificate records indicate that 18.1% of women used tobacco during pregnancy in 1994⁵. However 31.6% of women who were interviewed had notations of tobacco use on their birth certificate records or self-reported use during interviews. Overall, 7.1% of woman interviewed who were not reported as tobacco users on birth certificates reported that they had used tobacco during pregnancy. Using this rate to adjust birth certificate records, the estimated prevalence of tobacco use in Oregon during 1994 was **24.0% with a margin of error of 1.8%**, suggesting that approximately **9,990 infants**⁶ (range of 9,280 to 10,710) were exposed prenatal to tobacco.

Of those who reported smoking during the six months prior to pregnancy, 26% did not smoke during pregnancy. However, 85% of those who smoked prenatally continued through their second and third trimesters, 47% smoked more than 10 cigarettes per day during at least one trimester, and 2% continued smoking more than 10 cigarettes during their second or third trimester.

⁴ The percentages of minorities obtained for the interview sample did not differ from the Oregon population. Therefore, race/ethnicity did not need to be accounted for separately when estimating the prevalence of prenatal substance use.

⁵ In 1994, there were 41,832 births in Oregon, but only 41,694 included tobacco use information, and 41,199 included alcohol use information (Center for Health Statistics, Oregon Health Division).

⁶ All estimates of the number of infants exposed were rounded to the nearest 10.

Prenatal Alcohol Use

Oregon birth certificate records indicated that 2.7% of women used alcohol during pregnancy in 1994⁷. However, 23.6% of women who were interviewed had notations of alcohol use on their birth certificate records or reported that they had used alcohol during their pregnancies. Overall, 18.9% of women interviewed who were not reported as alcohol users on birth certificates reported drinking alcohol during their pregnancy. Using this rate to adjust birth certificate records resulted in an estimated statewide alcohol use prevalence of **21.1% with a margin of error of 2.7%**. The estimated number of infants exposed prenatally to alcohol during 1994 was approximately **8,700** (range of 7,570 to 9,820).

Of those who reported drinking alcohol during the six months prior to pregnancy, 57% did not drink during pregnancy. Of those who continued drinking during pregnancy, 44% drank more than 5 drinks on a single occasion in a month, and 38% continued drinking through their second and third trimesters of pregnancy.

Prenatal Illicit Drug Use

Only 1.1% of women were reported to have used illicit drugs during pregnancy on 1994 Oregon birth records. Second and/or third trimester illicit drug use was identified in 6.6% of women whose infants had meconium screens, and 6.6% of interviewees self-reported prenatal illicit drug use. Interviews and meconium screens were complimentary methods because they identified different illicit drug using women. Interviewees were more likely to report that they had used drugs during their first than later trimesters, while meconium screens could only identify second and third trimester users.

When information collected from interviews and meconium screens were linked to birth certificate records, 11.6% of women were identified as illicit drug users. Overall, 10.4% of women who were not reported as illicit drug users on birth certificate records were identified as users through meconium screens or interviews. Using this rate to adjust birth certificate records resulted in an estimated 1994 statewide prenatal illicit drug use prevalence of **11.4% with a margin of error of 2.5%**, suggested that **4,760 infants** (range of 3,710 to 5,810) were exposed prenatally to illicit drugs.

⁷ In 1994, there were 41,832 births in Oregon, but only 41,694 included tobacco use information, and 41,199 included alcohol use information (Center for Health Statistics, Oregon Health Division).

The distribution of drug types estimated through meconium screens and interviews was: Marijuana (44%), opiates (24%), methamphetamine (21%), barbiturates (17%), and cocaine (8%)⁸.

<u>1994 ESTIMATED STATEWIDE PREVALENCE</u>			
	Prevalence	Margin of Error	Number of infants exposed (Range)
Prenatal tobacco use	24.0%	1.8%	9,990 (9,280-10,710)
Prenatal Alcohol use	21.1%	2.7%	8,700 (7,570-9,820)
Prenatal illicit drug use	11.4%	2.5%	4,760 (3,710-5,810)

MATERNAL CHARACTERISTICS ASSOCIATED WITH PRENATAL SUBSTANCE USE

The demographic characteristics of women whose infants had meconium screens and the behavioral characteristics of women who completed the postpartum interviews were examined in relation to prenatal use of tobacco, alcohol, and illicit drugs.

Characteristics which were significantly more likely to occur among substance users than nonusers were determined using univariate analyses. However, because the univariate associations of specific demographic and behavioral characteristics with substance use could have been due to other related characteristics, multivariate analyses were completed to determine the set of characteristics which were independently predictive of substance use. Although many differences found on univariate analyses were not independently associated with substance use on multivariate analyses, all significant univariate findings are discussed here as they may represent important pathways to substance use.

Prenatal Tobacco Use

Tobacco use during pregnancy was found to be associated with a number of demographic and behavioral factors. Tobacco users were more likely than nonusers to have less than 12 years of education, be unmarried, be less than 25 years of age, have no insurance or be on public assistance, and have inadequate prenatal care⁹. Hispanic women were half as likely as others to use tobacco during pregnancy, but there were no other racial/ethnic differences.

⁸ Sum of drug types exceeds 100% due to multiple substance use.

⁹ Inadequate prenatal care was defined as having ≤ 4 visits or care beginning after 7 months gestation (Center for Health Statistics, Oregon Health Division)

Tobacco users were more likely than nonusers to also use alcohol and illicit drugs. With respect to previous experience and personal history, tobacco users were more likely than nonusers to have grown up in a family where someone had a substance use dependency, have a problematic relationship with parents, experienced physical abuse while growing up, and have a history of substance use dependency. With respect to current social support and stability, tobacco users were more likely than nonusers to be living with parents or a partner who was not a spouse, have a partner who used substances, have moved residences during pregnancy, have experienced physical abuse while pregnant, state that this pregnancy had been unplanned, and have had ambivalent or negative feelings about being pregnant. With respect to postnatal health behavior, tobacco users were more likely than nonusers to have stopped breast feeding their infants by 8 weeks postpartum.

<u>PREDICTORS OF PRENATAL TOBACCO USE</u>
Less than 12 years of education
Unmarried
Public assistance
Inadequate prenatal care
Previous substance dependency
History of family violence
Substance using partner

Seven demographic and behavioral characteristics were found in multivariate analyses to be independently predictive of prenatal tobacco use. These include having less than 12 years of education, being unmarried, being on public assistance, having had inadequate prenatal care, having a previous substance dependency, having a history of family violence, and having a partner who used substances. Hispanic ethnicity was predictive of a lower level of prenatal tobacco use.

Prenatal Alcohol Use

Alcohol use during pregnancy was found to be associated with marital status and race/ethnicity. Alcohol users were more likely than nonusers to be unmarried. Native American women were almost twice as likely to use alcohol as other racial/ethnic groups, while Hispanic women were less than half as likely to use alcohol during pregnancy.

<u>PREDICTORS OF PRENATAL ALCOHOL USE</u>
Less than 12 years of education
Unmarried
30 years of age or older
Previous substance dependency
Problematic relationships with family
Substance using partner
Ambivalent/negative attitude toward pregnancy

Alcohol users were more likely than nonusers to also use tobacco and illicit drugs, have problematic relationships with parents, have had ambivalent or negative feelings about being pregnant, and have stopped breast feeding their infant by 8 weeks postpartum.

Seven demographic and behavioral characteristics were found in multivariate analyses to be independently predictive of prenatal alcohol use. These include having less than 12 years of education, being unmarried, being 30 years of age or older, being on public assistance, having a previous substance dependency, having problematic family relationships, and having a partner who used substances, and having ambivalent or negative feelings about the pregnancy. After controlling for the effects of education level, marital status, and age, Native Americans were no longer at higher risk of alcohol use. Hispanic ethnicity remained predictive of a lower level of alcohol use.

Prenatal Illicit Drug Use

Illicit drug use prevalence was higher for women who had less than 12 years of education, were unmarried, had no insurance or were on public assistance. Native Americans showed nearly twice the level of illicit drug use as other racial/ethnic groups.

Illicit drug users were more likely than nonusers to also use tobacco and alcohol. Drug users were more likely than nonusers to have a history of substance use dependency, be living with parents, state that the pregnancy was unplanned, and have had ambivalent or negative feelings about being pregnant.

Six demographic and behavioral characteristics were found in multivariate analyses to be independently predictive of prenatal illicit drug use. These include having less than 12 years of education, being 25 years of age or older, being on public assistance, having a previous substance dependency, having problematic relationships with family, and living with parents. After controlling for education level, age, and public assistance, Native Americans were no longer at higher risk of illicit drug use than others. Hispanic women were less likely than other racial/ethnic groups to use illicit drugs during pregnancy.

<u>PREDICTORS OF PRENATAL ILLICIT DRUG USE</u>
Less than 12 years of education
25 years of age or older
Public assistance
Previous substance dependency
Problematic relationships with family
Living with parents

PRENATAL HEALTH CARE PROVIDER-PATIENT INTERACTIONS REGARDING SUBSTANCE USE

Prenatal health care provider screening¹⁰ of patient substance, patient disclosure of substance use, and provider advice given regarding the risks associated with substance use were examined through interviews.

Provider Screening of Patient Substance Use

The proportion of all patients who were screened by their prenatal health care providers was 89% for tobacco, 88% for alcohol, and 84% for illicit drug use. The proportion of illicit drug users who were screened for illicit drug use was 69%.

Patients who were screened for tobacco, alcohol, or illicit drug use did not differ on the basis of marital status, age, education level, race/ethnicity, or adequacy of prenatal care. However, when compared to patients of private providers, patients of public and midwife providers were 9 times as likely to be screened for tobacco and alcohol use, and 14 times as likely to be screened for illicit drug use.

PROVIDER SCREENING FOR SUBSTANCE USE

Nearly 1/3 of illicit drug users were not screened.

Patients of public and midwife providers were 9 times as likely to be screened for tobacco and alcohol use as patients of private providers.

Patient Disclosure of Substance Use

The proportion of all patients who disclosed their use was 96% for tobacco, 65% for alcohol, and 62% for illicit drugs.

Provider screening increased the likelihood of patient disclosure. Patients were 3 times as likely to disclose alcohol use and 10 times as likely to disclose illicit drug use if they had been screened by their providers. Substance use disclosure was not associated with any specific patient demographic characteristics, but was strongly associated with provider type. Patients were 3 times as likely to disclose alcohol use and 12 times as likely to

PATIENT DISCLOSURE OF SUBSTANCE USE

More than 1/3 of alcohol users and illicit drug users did not disclose to their prenatal health care provider.

Patients were 3 times as likely to disclose alcohol use and 10 times as likely to disclose illicit drug use to their provider if they had been screened.

Patients of public and midwife providers were 3 times as likely to disclose alcohol use and 12 times more likely to disclose illicit drug use as patients of private providers.

¹⁰ Screening was defined as verbal or written inquiry.

disclose illicit drug use to public and midwife providers as to private providers.

Provider Advice Regarding Substance Use

The proportion of all patients who received substance use advice from their prenatal health care providers was 87% for tobacco, 85% for alcohol, and 79% for illicit drugs. The proportion of illicit drug using patients who received advice about illicit drugs was 65%.

Patients were more likely to receive advice from their providers regarding tobacco, alcohol, and illicit drug use if they had been screened. Of patients who were not screened, 48% received advice regarding tobacco use, 33% received advice regarding alcohol, and 21% received advice regarding illicit drug use.

Provider advice was not associated with patient demographic characteristics, with the exception of inadequate prenatal care were 5 times as likely to have received advice regarding tobacco and alcohol use as patients who received inadequate prenatal care.

CONCLUSIONS

What is the prevalence of prenatal tobacco, alcohol, and illicit drug use in Oregon?

In general, medical information on birth certificate records has been shown to be highly correlated with information on patient medical records. However, there has long been concern over the accuracy of birth certificates with respect to substance use. In this study, birth certificates clearly underreported 1994 statewide prenatal tobacco, alcohol, and illicit drug use prevalence. Markedly higher rates were obtained through self-report during postpartum interviews and through meconium screens.

PROVIDER ADVICE REGARDING SUBSTANCE USE

1/3 of illicit drug using patients did not receive advice regarding illicit drug use.

Of patients not screened, 1/2 received advice tobacco use, 1/3 received advice on alcohol use, and 1/5 received advice on illicit drug use.

Patients who received adequate prenatal care were 5 times as likely to have received advice on tobacco and alcohol use as patients who received inadequate care.

Using these methods to adjust the number of women without notations of substance use on statewide birth certificates:

- The estimated statewide tobacco use prevalence of **24.0%** was 1.3 times the level reported on birth certificates (18.1%), suggesting that **9,990 infants** were exposed prenatally to tobacco.
- The estimated statewide alcohol use prevalence of **21.1%** was 7.8 times the level reported on birth certificates (2.7%), suggesting that **8,700 infants** were exposed to alcohol.
- The estimated statewide illicit drug use prevalence of **11.4%** was 10.4 times the level reported on birth certificates (1.1%), suggesting that **4,760 infants** were exposed to illicit drugs.

Prenatal use of five illicit drug types was identified through meconium screens and interviews. Applying the proportional distribution of drug types to the statewide estimate of 4,760 prenatal illicit drug users suggests that **2,090 infants were exposed to marijuana, 1,140 were exposed to opiates, 1,000 were exposed to methamphetamines, 810 were exposed to barbiturates, and 380 were exposed to cocaine.** (Prenatal use of multiple illicit drugs accounts for the number of cases in excess of 4,760.)

How can reliable estimates be obtained to measure progress toward the Benchmark 2000 goals?

The findings presented here suggest that optimizing identification of pregnant substance users and obtaining reliable prevalence estimates depend on **multiple methods**. Postpartum interviews were more effective than birth certificate records in identifying tobacco, alcohol and illicit drug users. Meconium screening was more effective than interviews at identifying illicit drug users. However, these two methods were complementary in that they identified somewhat different populations. Meconium screens could only measure second and third trimester illicit drug use, while interviewees were more likely to disclose first trimester use than later use.

Are there maternal demographic and behavioral characteristics which reflect higher risk of substance use, and provide a framework for counseling and treatment?

There was a complex of demographic and behavioral characteristics associated with prenatal use of tobacco, alcohol, and illicit drugs. Some characteristics were independently predictive of substance use, and there was overlap of characteristics across substance types.

Demographic Characteristics

Having less than 12 years of education was the only demographic characteristic predictive of prenatal use of all substances. Older age was predictive of prenatal use of alcohol and illicit drugs. Higher rates of alcohol and illicit drug use were found for women older than 30 and 25 years, respectively. However, there was no association of age with prenatal tobacco use. While a higher rate of prenatal tobacco use was observed among women under the age of 25 years, this association was no longer significant after accounting for marital status and education level. Inadequate prenatal care was predictive of tobacco use.

Prenatal alcohol use appeared to be more economically widespread than tobacco and illicit drug use. For example, being on public assistance was not associated with alcohol use but was predictive of tobacco and illicit drug use. Being unmarried was also a predictor of prenatal tobacco and alcohol use, and was associated with illicit drug use in univariate analysis. While Native Americans showed a higher prevalence of prenatal alcohol and illicit drug use when compared to other racial/ethnic groups, this risk was found to be related to other demographic characteristics (e.g., education level, marital status, and public assistance) which predicted use of these substances. Hispanic ethnicity predicted a lower level of prenatal use of tobacco, alcohol, and illicit drugs.

Behavioral Characteristics

Having had previous substance use and dependency and problematic relationships with the family of origin were the behavioral characteristics predictive of prenatal use of all substances. Having a substance using partner was predictive of tobacco and alcohol use. Feeling ambivalent or negative about being pregnant was also predictive of alcohol use. Prenatal use of one substance was highly correlated with the use of other substances.

There were many other behavioral characteristics associated with at least one type of prenatal substance use. Early life experiences with physical abuse, and growing up in a

family where someone had substance use dependency were more common in women who used substances during pregnancy. Similarly, instability and ambivalence toward pregnancy were more common in women who use substances. Having moved residences during pregnancy, living with parents, stating that this pregnancy was unplanned, and having stopped breastfeeding by 8 weeks postpartum were associated with at least one type of substance use.

Although many maternal demographic characteristics were related to prenatal substance use, using these characteristics as indicators for screening may result in many missed opportunities for detection. For example, while an increased risk of substance use has been found among women having inadequate prenatal care, the proportion of patients having inadequate prenatal care is quite low¹¹. Thus, although the proportion of patients identified as users may be higher in relation to certain characteristics, the total number of patients identified in this way may be small.

There are many ways in which the behavioral information presented here can be used in counseling and treatment programs. For example, these findings suggest that addressing the issue of a previous substance use dependency should be a priority for interventions aimed at reducing use of tobacco, alcohol, and illicit drugs. These findings also suggest that interventions aimed at reducing prenatal alcohol use should include counseling services related to early physical abuse; interventions aimed at reducing prenatal tobacco, alcohol, and illicit drug use should help patients understand how their own health behaviors resulting from ambivalent or negative feeling about pregnancy might influence the health of their unborn child; interventions aimed at reducing prenatal tobacco and alcohol use should help patients understand how their partner's substance use behavior might influence their own use.

To what extent are patients screened for substance use by their prenatal health care providers, and do patients disclose their use?

Prenatal health care provider screening of substance use was related to greater patient disclosure and a higher likelihood of provider advice given regarding the risks associated with use. Thus, failure of providers to screen patients for substance use were missed opportunities to reduce prenatal substance use. Although the majority of all patients were screened for and received advice regarding the risks of substance use, estimates of the number of patients who were not screened and did not receive advice constitute a substantial population.

¹¹ Only 5.7% of women had inadequate prenatal health care in 1994 (Center for Health Statistics, Oregon Health Division)

Applying the proportions of all patients who were not screened to the total number of statewide births (41,832) suggests that:

- **4,600 of all statewide patients were not screened for tobacco use.**
- **5,020 of all statewide patients were not screened for alcohol use.**
- **6,690 of all statewide patients were not screened for illicit drug use.**

Applying the proportions of all patients who did not receive advice from their prenatal health care provider regarding substance use to the total number of statewide births suggest that:

- **5,440 of all statewide patients did not receive advice regarding tobacco use.**
- **6,270 of all statewide patients did not receive advice regarding alcohol use.**
- **8,780 of all statewide patients did not receive advice regarding illicit drug use.**

Although the majority of tobacco users disclosed use to their providers, substantial numbers of alcohol and illicit drug users did not. Applying the proportions of substance using patients who did not disclose to their providers to the total number of statewide users suggests that:

- **400 of 9,990 tobacco users did not disclose.**
- **3,050 of 8,700 alcohol users did not disclose.**
- **1,810 of 4,760 illicit drug users did not disclose.**

The majority of patients who were not screened, did not disclose, and did not receive advice were the patients of private providers. Although this is partly because the vast majority of women use private providers¹², private providers were not less likely to have substance using patients, and private providers were less likely than public and midwife providers to screen patient and have patients disclose.

The findings presented on prenatal healthcare provider-patient interactions are based on patient responses; they do not include the views of the providers themselves.

Nevertheless, an important health service need has been defined. It is the perspective of the patient that provides the context in which behavior ultimately occurs. A patient's perception of the absence of a health message about the risks of prenatal substance use is their reality. Future studies should consider: 1) Provider identified barriers to screening, gaining disclosure, advising, referral, and reporting of patients; and 2) patient

¹² Of patients who used prenatal care in 1994, 86.7% used private providers, 10.7% used public providers, and 2.6% used other sources of care (Center for Health Statistics, Oregon Health Division).

identified barriers to early onset prenatal care, disclosure of substance use, and substance use treatment. This information could be used to develop provider interventions aimed at improving both the actual and perceived level of services delivered regarding prenatal substance use.

RECOMMENDATIONS

- ❑ Standardize screening of tobacco, alcohol, and illicit drugs by public, midwife, and private prenatal health care providers; provide multiple opportunities and multiple avenues of disclosure, by employing both written and verbal screening of all patients at least once during each of the first, second, and third trimesters of pregnancy.
- ❑ Standardize dissemination of information regarding the potential health hazards of prenatal substance use for women and their infants; provide multiple resources on multiple occasions, by offering both written and verbal information to all patients at least once during each of the first, second, and third trimesters of pregnancy.
- ❑ Ensure that substance use counseling and treatment programs for pregnant women recognize the influence of demographic as well as behavioral characteristics on substance use, including but not limited to low education level, unmarried status, need for public assistance, previous substance use dependency, problematic family relationships and family violence, presence of a substance using partner, ambivalent or negative feelings about being pregnant.
- ❑ Ensure that adequate resources are allocated for counseling and treatment of substance using pregnant women, taking into consideration the prevalence estimates provided here as well as the potential for standardized screening to increase the need for services.
- ❑ Gather information concerning the knowledge, attitudes, and clinical practice of prenatal health care providers throughout Oregon related to substance use, to include their views in addressing the needs of pregnant substance using women.
- ❑ Revise the Oregon Benchmark 2000 goals related to the reduction of statewide prenatal tobacco, alcohol, and illicit drug use to reflect the prevalence estimates provided by this study.
- ❑ Develop cost effective measures of progress toward the benchmark goals of reducing statewide prenatal use of tobacco and alcohol by increasing the reliability of reporting on birth certificate records.
- ❑ Continue to employ both quantitative and qualitative techniques (such as those used in this study) as a guidepost until more cost effective methods for estimating statewide prenatal tobacco, alcohol, and illicit drug use prevalence are established.