Prevalence of Drug-Exposed Infants

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In the Spring 1991 issue of The Future of Children on Drug-Exposed Infants, based on the best available evidence, it was estimated that between 2% and 3% of newborns may be cocaine-exposed and between 3% and 12% may be marijuana-exposed while in the womb.1 Three new statewide surveys and two large surveys have since been completed.2–6 These new studies are notable because they used some of the most reliable methods to assess drug exposure: They screened the mother’s or newborn baby’s urine, blood, and/or meconium (stool); and they surveyed the population in an entire state, or large representative populations. This article updates the estimates of the number of substance-exposed infants, examines racial group differences in illicit drug use by pregnant women, and updates the information on the birth outcomes of women who use drugs during pregnancy.

The Prevalence of Illicit Drug Use During Pregnancy

Cocaine
Measures of drug use by pregnant women in an entire state (for example, California, Ohio, Rhode Island, and South Carolina)2–4 continue to report much lower rates of substance exposure than do studies based at selected hospitals (for example, Boston Hospital).7 (See Table 1.) Rates of cocaine use during pregnancy in the four statewide studies ranged from a low of 0.7% in Utah to a high of 2.6% in Rhode Island. Cocaine use was also very low at ten clinic sites in Utah (0.7%) and slightly higher in a study of seven university hospitals across the United States (2.3%). Surveys at selected hospitals still have the highest reported rates of cocaine use (46% among a selected high-risk group in San Francisco8 and 18% in Boston7).

The data from 1984 through 1992, suggest that each year approximately 1% to 2%, or 35,000 to 70,000 infants, were born cocaine-exposed in the United States. This new estimate is lower than that used in this journal in 1991 because of the relatively low exposure rates in the recent statewide studies. It is unclear if the lower reported rates of drug use from the recent statewide surveys are the result of overall reductions in the use of cocaine over time, the result of the selection of more representative samples of women, or a combination of both.

Marijuana
Rates of marijuana use during pregnancy are higher than rates of cocaine use during pregnancy. Marijuana use in the four...
### Table 1

**Percentage of Mothers Using Drugs During Pregnancy**

<table>
<thead>
<tr>
<th>Study/Location, Endnote Number, Year(s), and Screening Method</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cocaine</td>
</tr>
<tr>
<td><strong>Boston City Hospital</strong>&lt;sup&gt;1&lt;/sup&gt; 1984 through 1987 Mother’s urine during pregnancy and after delivery</td>
<td>18.0</td>
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<tr>
<td><strong>Seven University Hospitals</strong>&lt;sup&gt;6&lt;/sup&gt; 1984 through 1989 Mother’s blood during pregnancy and maternal interviews</td>
<td>2.3</td>
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<tr>
<td><strong>Pinellas County, Florida</strong>&lt;sup&gt;1&lt;/sup&gt; 1989 Mother’s urine during pregnancy</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Rhode Island</strong>&lt;sup&gt;1&lt;/sup&gt; 1989 Mother’s urine at delivery</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>National Institute on Drug Abuse Survey</strong>&lt;sup&gt;1&lt;/sup&gt; 1990 Interviews with nonpregnant women</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Ohio</strong>&lt;sup&gt;1&lt;/sup&gt; 1990 Baby’s urine after birth</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>South Carolina</strong>&lt;sup&gt;2&lt;/sup&gt; 1990 through 1991 Mother’s urine at delivery and infant meconium</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>California</strong>&lt;sup&gt;1&lt;/sup&gt; 1992 Mother’s urine at delivery</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Ten Clinics in Utah</strong>&lt;sup&gt;5&lt;/sup&gt; 1992 Mother’s urine during pregnancy</td>
<td>0.7</td>
</tr>
</tbody>
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<sup>a</sup> See the related endnote following this article for the complete citation of a publication in which the relevant study is described and/or discussed.

<sup>b</sup> Information based on an interview with the mother.

<sup>c</sup> The other drugs identified were amphetamines.

<sup>d</sup> Information based on infant urine screening at birth.
statewide studies ranged from a low of 1.9% (in California) to a high of 3.0% (in Rhode Island). Like cocaine, much higher rates of marijuana use were detected at specific hospitals (27% in Boston, 12% in Pinellas County, Florida, and 11% in seven university-based clinics). The data from 1984 through 1992 suggest that each year approximately 2% to 3%, or 70,000 to 105,000 infants, were born marijuana-exposed in the United States. Recent data based on the National Household Survey on Drug Abuse suggest that marijuana use may have peaked in the early 1980s and has been declining since. However, data from individual clinic sites is conflicting. A New York City study showed an increase in marijuana use between 1988 and 1992, and a study of seven university-based clinics from 1984 through 1989 showed a significant decrease in marijuana use starting in 1988.

**Racial Group Differences in Drug Use During Pregnancy**

The recent completion of large statewide studies provide clear evidence of large racial group differences in illicit drug use by pregnant women. These statewide studies all used scientific sampling methods to obtain a representative sample of pregnant women in the state. Among the four statewide studies, rates of cocaine use during pregnancy were between 4 and 26 times higher among African-American women than among white women. An exception to this was the seven-university clinic study, where there were no racial group differences in cocaine use. Among the four statewide studies, white women were approximately two to three times more likely to use marijuana during pregnancy than African-American women. The Rhode Island and California surveys showed little or no difference in marijuana use by race. Asian and Hispanic women in California had extremely low rates of illicit drug use during pregnancy.

**Birth Outcomes of Substance-Exposed Infants**

In contrast to the number of excellent studies that provide good estimates of the number of women who use drugs during pregnancy, there are few studies that examine the pregnancy outcomes of these women. Initial reports have tended to show very high correlations between adverse pregnancy outcomes such as low birth weight and preterm birth. However, most studies linking drug use and pregnancy outcomes have been inconclusive because they were confined to very small or highly selected subgroups of women, relied on self-reported information about drug use, or did not control for important confounding factors. These types of shortcomings in study design would all tend to bias the study results toward finding positive associations between drug use and birth outcomes, even when positive associations truly did not exist. In addition, publication bias, where scientists and publishers are more likely to submit and publish studies with positive findings, may also have played a role in the dissemination of information about illicit drug use and pregnancy outcome.

New evidence from a large multicenter study showed no association between cocaine or marijuana use during pregnancy and low birth weight or preterm births. This study was one of the first to use unbiased methods to measure both drug exposure and pregnancy outcomes. Information about drug use was obtained by blood serum screening and personal interviews at seven university-based clinics across the United States. Results indicated that cocaine and marijuana use in these seven clinics was rare and was not related to increased rates of infant low birth weight or preterm birth. Therefore, the elimination of cocaine or marijuana use in this population of women would have little or no measurable impact on birth outcomes.

The women at these seven clinics were a selected sample of women who came in for prenatal care, which makes them a population much less likely to use drugs. There is good evidence from the California survey that women who receive no prenatal care have the highest rates of drug use. In California, cocaine was used by 11.5% of pregnant women who received no prenatal care.
care, amphetamines by 7.0%, and marijuana by 5.7%. However, only 2.4% of all the women in California did not obtain any prenatal care. Even though illicit drug use is relatively common among women who obtain no prenatal care, the number of women who obtain no prenatal care is relatively small and, therefore, will have little impact on overall rates of drug use or birth outcomes.

Although tens of thousands of women use illicit drugs during pregnancy, most women use drugs only occasionally. Based upon data from the statewide surveys, consistent abuse of illicit drugs appears to be relatively uncommon among pregnant women in the United States in general. The occasional use of drugs during pregnancy, which is typified in the seven-clinic study, appears to have little or no measurable effect on birth outcomes such as low birth weight or prematurity. However, there is clear evidence that regular use or the abuse of cocaine has the potential to cause harm to the fetus. Very high serum concentrations of cocaine and marijuana metabolites were associated with low birth weight and preterm birth.

**Conclusions**

From the accumulated data, it is clear that there was no widespread nationwide epidemic of cocaine use among pregnant women in the United States during the mid-1980s to early 1990s. Based on data from 1984 through 1992, each year approximately 1% to 2%, or 35,000 to 70,000 infants, were born cocaine-exposed. However, rates of cocaine drug use at particular cities or hospitals appear to be very high. Recent data based on general population surveys suggest that cocaine use may have peaked in the late 1980s and decreased in the early 1990s.

Marijuana is the most commonly used illicit drug in the United States. As is true of cocaine, there is no evidence of a widespread nationwide epidemic of marijuana use during pregnancy; however, there are several hospitals across the United States with very high rates of marijuana use among pregnant women. As many as 2% to 3%, or 70,000 to 105,000 infants, each year were born marijuana-exposed. Recent data based on general population surveys suggest that marijuana use may have peaked in the early to mid-1980s and has been declining since the late 1980s.

Universal screening for drug use among pregnant women is not a productive method to identify drug users. The low prevalence of illicit drug use nationally makes widespread screening very inefficient. Moreover, accurate information about drug use during pregnancy in any population is virtually impossible to obtain. Surveys often underestimate drug use during pregnancy. Drug tests of urine or blood often miss women who use illicit drugs once or twice during pregnancy. Women are also reluctant to report illicit drug use during pregnancy to health care providers. Moreover, surveys of drug use during pregnancy exclude women who do not come in for prenatal care. Future surveys and studies may need to rely on testing of maternal hair which is able to provide information about the history of drug use during the entire pregnancy.

The discovery of large racial group differences in drug use by pregnant women in California led the study’s authors to recommend that communities with large African-American populations be targeted for extensive clinical and educational interventions. They suggested several strategies to reduce the number of women who might use drugs during pregnancy in the future. Strategies included prenatal drug counseling and residential treatment programs for pregnant women and educational campaigns for African-American adolescents. It was also noted that keeping young African-American women from starting to use drugs would be an especially promising strategy because African-American women appear to start drug use at a much later age than adolescents from other racial groups.

A disturbing finding in the statewide surveys of drug use is that women who receive no prenatal care, while representing only 2.4% of all pregnant women, are the ones

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*Cigarette smoking is the single largest modifiable cause of low birth weight and infant mortality.*
most likely to use illicit drugs during pregnancy. Drug-abusing women as a group would benefit greatly from prenatal care if it included appropriate drug counseling and drug cessation therapy.

All of the media attention surrounding the use of cocaine and crack should not divert public attention from the largest known risk to the health of unborn babies—cigarette smoking. Virtually all studies show that tobacco is clearly the most commonly abused drug during pregnancy. Because of its high rate of use and the large impact it has on the fetus, cigarette smoking is the single largest modifiable cause of low birth weight and infant mortality. Cigarette smoking causes up to 20% of all low birth weight infants. Women who quit smoking during pregnancy significantly reduce the chances that their baby will be born low birth weight. A key element of all prenatal care, therefore, should be access to smoking cessation programs.