

Drug-Exposed Infants

Committee on Substance Abuse

Recent studies have documented that an increasing number of women of childbearing age are using licit and illicit substances. Although statistical data are insufficient, there are indications that approximately 1 in 10 infants may have been exposed to illicit drugs in utero. The Office of Applied Studies 1992 National Household Survey¹ revealed that 6.8% of women of childbearing age admitted to having used an illicit drug in the month before questioning. Recent state surveys have shown that between 8% and 12% of women delivering in their hospitals had used illegal drugs at some time during the pregnancy, including just before delivery.²⁻⁵ These studies support information from a study in Pinellas County, FL, which demonstrated that illicit substance use during pregnancy occurs in all racial and socioeconomic lines.^{6,7} In addition to the use of illegal drugs, the use of alcohol or nonprescribed drugs shortly before delivery is also identified as a problem.⁸

These incidence data parallel the increasing number of infants being admitted to special-care nurseries for complications caused by intrauterine exposure to alcohol and other drugs. Drug-exposed infants also often go unrecognized and are discharged from the newborn nursery at increased risk for a complex of medical and social problems, including abuse and neglect.

This statement addresses illicit substance use in pregnancy and its medical, educational, social, mental health, and legal consequences for children and families. The Academy recently has developed a separate statement to address the issue of infants exposed to alcohol in utero.⁹

The Problem

All illicit drugs reach the fetal circulation by crossing the placenta and can cause direct toxic effects on the fetus, as well as fetal and maternal dependency.¹⁰ For example, the opiate-exposed fetus may experience withdrawal in utero when drugs are withdrawn from a dependent mother or, after delivery, when the mother's use no longer directly affects her newborn. Although the incidence of breastfeeding by substance-abusing mothers is generally low, it is impor-

tant to counsel nursing mothers that drugs of abuse are hazardous to them and their infants.¹¹

Symptoms of neonatal opiate withdrawal are often present at birth but may not reach a peak until 3 to 4 days or as late as 10 to 14 days after birth.¹² Evidence of withdrawal from opiates can persist in a subacute form for 4 to 6 months after birth.¹² Common features of the neonatal abstinence syndrome mimic those of an adult's withdrawal from opiates.¹³ Withdrawal from other substances such as marijuana¹⁴ does not seem to be as severe. Increased research is needed to define the degree of permanent residual effects in these infants.

A major problem confronting pediatricians today arises from the consequences of maternal cocaine use during pregnancy. As in other substance-abusing populations, cocaine-dependent pregnant women have a high incidence of infectious diseases, especially hepatitis B, acquired immunodeficiency syndrome, and other sexually transmitted diseases.¹⁵ Although women who use cocaine may be at increased risk of abruptio placentae, preterm labor, and intrauterine growth retardation, they usually experience an uncomplicated labor and delivery.¹⁵⁻¹⁸

Cocaine-exposed infants have an increased incidence of premature birth, impaired fetal growth,¹⁶⁻¹⁸ and neonatal seizures.¹⁸ Although a specific cocaine withdrawal syndrome in neonates has not been defined, some show signs of irritability and tremulousness, lethargy, inability to respond appropriately to stimulation, and abnormal cry patterns.¹⁹

Perinatal cerebral infarctions have occurred in infants whose mothers have used cocaine during a few days before delivery.²⁰ These perinatal cerebral infarctions exemplify the severe morbidity that may be associated with intrauterine exposure to cocaine. Issues of increased risk of malformations¹⁷⁻²¹ have been raised but await analysis of data from large studies.²² Because most published studies of cocaine's effect on pregnancies and infants have focused on recognized substance-abusing populations, little information is available regarding the effects of low doses of cocaine. In addition, interpretation of clinical studies is complicated by the fact that abuse of multiple drugs often occurs.

Several long-term studies have demonstrated that substance-exposed infants are at risk for developmental and learning problems. In a group of 3- and 4-year-old children exposed prenatally to marijuana, Fried and Watkinson²³ found that, when controlling for alcohol and tobacco exposure, by 4 years of age marijuana exposure was associated with lower

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The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate.

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scores in the verbal and memory domains. The overall cognitive abilities of the children were normal.

In a study of a group of toddlers who had been exposed to cocaine and other drugs, developmental scores were lower than those of a group of infants from similar backgrounds who were not exposed. The drug-exposed toddlers also showed deficits in the context of free play.²⁴ In 2- and 3-year follow-up evaluations of a group of cocaine- and polydrug-exposed infants, their prenatal exposure played a part in determining the long-term risk for developmental outcome at 2 years and had a direct effect on cognitive ability at 3 years. Overall, these studies demonstrate the need for close follow-up and early intervention for children born to substance-abusing women.^{25,26}

Implications for the Pediatrician

Universal neonatal laboratory screening for illicit drugs is not recommended. The long-term consequences, ie, the harms as opposed to the benefits of "labeling" the infant and/or the mother, are not known. However, because there are well-documented and potential effects on children exposed to drugs in utero, it is essential that pediatricians recognize drug-exposed infants. Because many of these infants exhibit no specific signs or symptoms at birth, they may go unrecognized if pediatricians are not alert to the issue during or after the newborn period. Reliance on signs and symptoms is hampered by the increasing prevalence of short stays in the nursery.

Obtaining a thorough history from all women in a nonthreatening, organized manner is the key to diagnosis. Questionnaire screening may not be as reliable when compared with toxicologic screening.²⁷ Although the accuracy of an interview could be compromised by guilt, fear of legal repercussions, poor recall, lack of candor, lack of knowledge, and imprecision about dosages, urine testing provides only a narrow window on drug use.¹⁰

Testing the mother or neonate or both with informed consent may be useful in some clinical situations, even when drug use has not been suspected previously, such as in the presence of unexplained fetal growth retardation, unexpected prematurity, or abruptio placentae. However, some drug-exposed infants will be missed if physicians rely solely on urine toxicology testing for diagnosis. These tests are surely negative when drugs are only used early in pregnancy and can be negative even when women have taken drugs during the 48 hours before delivery. Because urine toxicology tests may vary among laboratories, pediatricians should be aware that marijuana, its metabolites, and metabolites of cocaine may not be included in the testing unless specifically requested. Newer testing methods that assess drugs deposited in the hair of the mother or newborn and in the meconium can provide long-lasting evidence of drug use; however, like urine testing, they do not reveal information about the pattern, frequency, and timing of drug use.¹⁰

Infants and children of substance-abusing parents and/or guardians are at increased risk for physical, sexual, and emotional abuse.²⁸ Although all states

require physicians to report suspected child abuse or neglect, some states also mandate reporting to Child Protective Services infants with neonatal drug tests positive for illicit drugs. Many of these agencies are overburdened and unprepared to deal appropriately with the potential flood of infants born to substance-abusing mothers. Pediatricians, therefore, need to work with their state social service agencies and state legislatures to extend the assistance now available through Child Protective Services. Until that is accomplished, pediatricians should consider recruiting the assistance of the local Child Protective Services and other agencies that provide multidisciplinary treatment and support for the affected mother, child, and family.

Chapters of the Academy and local pediatricians should discuss with all professionals and agencies involved how multifaceted problems resulting from drug exposure in utero might best be addressed in their communities. In general, a coordinated multidisciplinary approach in the development of a plan without criminal sanctions has the best chance of helping children and families.

Implications for Health Care Policy

It is imperative that efforts to alleviate serious problems include the evaluation of the efficacy of interventions and ongoing observation and evaluation of drug-exposed infants and children. The following discussion of policy is necessitated by the critical need for more information.

Health policy issues posed by drug-exposed infants can be divided into two components—the first is how to prevent infants from being exposed to potentially harmful drugs before birth, and the second is how to address the needs of drug-exposed infants and children and their families.

Prevention of exposure before birth is a vexing problem that has defied solution. At the threshold is a need to explore more effective ways to help people resist the initial and subsequent use of drugs.

Voluntary drug treatment programs, the most desirable means of approaching drug-using pregnant women, raise important policy concerns. The most basic problem is that treatment demands far exceed availability. Meeting this need for effective therapy must be a major national priority. Moreover, although there is anecdotal evidence that the few community-based, multidisciplinary treatment programs currently available may help pregnant women stop using drugs, there is a critical need to determine whether and which interventions within these programs actually work.

The Academy concurs that the most appropriate way to prevent intrauterine drug exposure is to educate women of childbearing age about the hazards of drugs to the fetus and to encourage drug avoidance.²⁹ For some populations, poverty and inequality of opportunity may limit the effectiveness of preventive education. Thus, when education fails, effective drug treatment programs should be made readily available to pregnant women and to women anticipating or at risk for pregnancy. Punitive measures taken toward pregnant women, such as criminal

prosecution and incarceration, have no proven benefits for infant health, although sanctions imposed by civil court involvement may be of benefit. The American Academy of Pediatrics is concerned that such involuntary measures may discourage mothers and their infants from receiving crucial medical care and social support.

Forced intervention after the birth of a drug-exposed infant can occur in two different divisions of the legal system. Within the civil justice system, family or juvenile courts explicitly focus on the impact of drug use on children and families and attempt to protect children by soliciting Child Protective Services support for the family, which sometimes entails placing children outside the home. There are few data about the effect of involvement in the civil justice system on child outcomes. One study, however, did demonstrate better outcomes for physically abused children whose parents were ordered into therapy by a juvenile court than for children whose parents only signed voluntary treatment contracts.³⁰

Intervention also can be enforced by criminal prosecution. Most states impose criminal sanctions against the perpetrators of child abuse and neglect, and recently a number of states have passed or are considering laws that impose criminal penalties on women who use drugs during pregnancy.^{31,32} There is no evidence that these latter sanctions prevent in utero drug exposure or help drug-exposed children. In one South Carolina study, the threat of exposure and arrest seemed in part to be a factor in the decrease of positive maternal cocaine tests; however, public education and the reduction in the availability of cocaine in the area were also presumed to play a role in the reduction of maternal cocaine use.³³ Without strong evidence that involvement with the criminal justice system serves to prevent prenatal drug exposure or to improve the health of children, such intervention is unjustifiable.

Until the issue of how to prevent drug exposure appropriately and effectively is resolved, we are left to deal with the second major health policy issue, which is how to address the needs of drug-exposed infants and children. Although some data exist about the potential for illicit drugs to cause congenital malformations and other health problems in the infant and young child, little is known about subsequent problems confronting drug-exposed infants as they enter their school years and adolescence. Longitudinal studies of these children are critically needed.

Prevention and/or treatment of women using illicit drugs during pregnancy is necessary to help ensure the health of newborn infants. Learning more about the problems of drug-exposed infants and children requires extensive research, and addressing the issues of prevention and remediation requires a societal commitment. Funds for research, prevention, and treatment must be made available, not only for the sake of these children, but for the benefit of society.

RECOMMENDATIONS

1. Pediatricians are encouraged to be involved in organizing community-based social service and child protection service systems designed to provide essential services for drug-abusing women and their children.
2. A comprehensive medical and psychosocial history that includes specific information regarding maternal drug use needs to be part of every newborn evaluation.
3. Maternal and newborn urine toxicologic analyses and newer drug tests of hair and meconium should be regarded only as potential adjuncts to a thorough maternal drug history. Universal toxicologic screening is not recommended.
4. The pediatrician should include maternal drug use in the differential diagnosis of any neonate with suggestive or otherwise unexplained symptomatology.
5. The pediatrician should be knowledgeable about state and local child protection reporting requirements.
6. In most circumstances, when a drug-exposed infant or drug-abusing mother is identified, the pediatrician should consider recruiting the assistance of local child protective services to provide multidisciplinary treatment and support for the affected mother, child, and family.
7. The pediatrician should evaluate the drug-exposed infant for other medical conditions associated with maternal drug use, including the possibility of concurrent sexually transmitted diseases in the mother and infant.
8. Because adverse effects of drug exposure may not be evident at birth, the pediatrician should be alert to potential long-term consequences that may become apparent during ongoing care.
9. The American Academy of Pediatrics supports the development and evaluation of models of coordinated multidisciplinary prevention, intervention, and treatment services that improve access to early comprehensive care for all substance-abusing pregnant women and their children. Evaluation of current and new treatment modalities is imperative to determine their effectiveness.
10. Funds for education, research, prevention, and treatment should be made available to address issues of drug-exposed infants.
11. The public must be assured of nonpunitive access to comprehensive care that meet the needs of the substance-abusing pregnant woman and her infant.
12. Pediatricians are encouraged to become actively involved in policy issues related to drug-exposed infants and children at the federal, state, and local levels.

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REFERENCES

1. Office of Applied Studies. *National Household Survey on Drug Abuse 1992*. Rockville, MD: Substance Abuse and Mental Health Service Administration; 1994. US Dept of Health and Human Services publication SMA 93-2053
2. Statewide prevalence of illicit drug use by pregnant women—Rhode Island. *MMWR*. 1990;39:225-227
3. Chasnoff IJ. *Epidemiological Study of the Prevalence of Alcohol and Other Drug Use Among Pregnant and Parturient Women in Illinois*. Chicago, IL: National Association for Perinatal Addiction Research and Education; 1992
4. Madry KG, Fredlund EV, Wallisch LS, et al. *1990 Texas Survey of Postpartum Women and Drug-Exposed Infants*. Austin, TX: Texas Commission on Alcohol and Drug Abuse; 1991
5. Vega WA, Kolody B, Hwang J, Noble A. Prevalence and magnitude of perinatal substance exposures in California. *N Engl J Med*. 1993;329:850-854
6. Chasnoff IJ, Landress HJ, Barrett ME. The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. *N Engl J Med*. 1990;322:1202-1206
7. Mathias R. NIDA survey provides first national data on drug use during pregnancy. *NIDA Notes*. 1995;10:6-7
8. Nalty DF. *1991 South Carolina Prevalence Study of Drug Use Among Women Giving Birth*. Columbia, SC: South Carolina Commission on Alcohol and Drug Abuse; 1991
9. American Academy of Pediatrics, Committee on Substance Abuse and Committee on Children With Disabilities. Fetal alcohol syndrome and fetal alcohol effects. *Pediatrics*. 1993;91:1004-1006
10. Robins L, Mills J, eds. Effects of in utero exposure to street drugs. *Am J Public Health*. 1993;83(suppl):2-32
11. American Academy of Pediatrics, Committee on Drugs. The transfer of drugs and other chemicals into human milk. *Pediatrics*. 1994;93:137-150
12. Chasnoff IJ, Hatcher R, Burns WJ. Early growth patterns of methadone-addicted infants. *Am J Dis Child*. 1980;134:1049-1051
13. Finnegan LP. Neonatal abstinence syndrome: assessment and pharmacotherapy. In: Rubaltelli FF, Granati B, eds. *Neonatal Therapy: An Update*. New York: Excerpta Medica; 1986:122-146
14. Fried PA. Marijuana use by pregnant women: neurobehavioral effects in neonates. *Drug Alcohol Depend*. 1980;6:415-424
15. MacGregor SN, Keith LG, Chasnoff IJ, et al. Cocaine use during pregnancy: adverse perinatal outcome. *Am J Obstet Gynecol*. 1987;157:686-690
16. Chasnoff IJ, Burns WJ, Schnoll SH, Burns KA. Cocaine use in pregnancy. *N Engl J Med*. 1985;313:666-669
17. Chasnoff IJ, Griffith DR, MacGregor S, et al. Temporal patterns of cocaine use in pregnancy: perinatal outcome. *JAMA*. 1989;261:1741-1744
18. Bingol N, Fuchs M, Diaz V, Stone RK, Gromisch DS. Teratogenicity of cocaine in humans. *J Pediatr*. 1987;110:93-96
19. Lester BM, Corwin MJ, Sepkoski C, et al. Neurobehavioral syndromes in cocaine-exposed newborn infants. *Child Dev*. 1991;62:694-705
20. Chasnoff IJ, Bussey ME, Savich R, Stack CM. Perinatal cerebral infarction and maternal cocaine use. *J Pediatr*. 1986;108:456-459
21. Chasnoff IJ, Chisum GM, Kaplan WE. Maternal cocaine use and genitourinary tract malformations. *Teratology*. 1988;37:201-204
22. Hoyme HE, Jones KL, Dixon SD, et al. Prenatal cocaine exposure and fetal vascular disruption. *Pediatrics*. 1990;85:743-747
23. Fried P, Watkinson B. 36- and 48-month neurobehavioral follow-up of children prenatally exposed to marijuana, cigarettes, and alcohol. *J Dev Behav Pediatr*. 1990;11:49-58
24. Howard J, Beckwith L, Rodning C, Kropenske V. The development of young children of substance-abusing parents: insights from seven years of intervention and research. *Zero Three*. 1989;9:8-12
25. Chasnoff IJ, Griffith DR, Freier C, Murray J. Cocaine/polydrug use in pregnancy: two-year follow-up. *Pediatrics*. 1992;89:284-289
26. Azuma SD, Chasnoff IJ. Outcome of children prenatally exposed to cocaine and other drugs: a path analysis of three-year data. *Pediatrics*. 1993;92:396-402
27. Christmas JT, Knisely JS, Dawson KS, et al. Comparison of questionnaire screening and urine toxicology for detection of pregnancy complicated by substance abuse. *Obstet Gynecol*. 1992;80:750-754
28. Regan DO, Ehrlich SM, Finnegan LP. Infants of drug addicts: at risk for child abuse, neglect, and placement in foster care. *Neurotoxicol Teratol*. 1987;9:315-319
29. Committee on Obstetrics, Maternal and Fetal Medicine. Cocaine in pregnancy. *ACOG Committee Opin*. 1992;114
30. Wolfe DA, Aragona J, Kaufman K, Sandler J. The importance of adjudication in the treatment of child abusers: some preliminary findings. *Child Abuse Neglect*. 1980;4:127-135
31. Moore KG. Substance abuse and pregnancy: state lawmakers respond with punitive and public health measures. *ACOG Legis Lett* 1990;9:1-7
32. American Academy of Pediatrics. *Drug-Exposed Infants. Status of State Laws and Legislative Initiatives*. Elk Grove Village, IL: American Academy of Pediatrics, Division of State Government Affairs; March 1994
33. Horger EO, Brown SB, Condon CM. Cocaine in pregnancy: confronting the problem. *J SC Med Assoc*. 1990;86:527-531

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