United States General Accounting Office

GAO

Report to the Chairman, Committee on Finance, U.S. Senate

June 1990

DRUG-EXPOSED INFANTS

A Generation at Risk

GAO/HRD-90-138

GAO

United States
General Accounting Office
Washington, D.C. 20548

Human Resources Division

B-238209

June 28, 1990

The Honorable Lloyd Bentsen
Chairman, Committee on
Finance
United States Senate

Dear Mr. Chairman:

This report responds to your request, in which you expressed concern over the growing number of infants born to mothers using drugs and the impact this is having on the nation's health and welfare systems. Specifically, you asked that we assess the (1) extent of the problem; (2) health effects and medical costs of infants born exposed to drugs compared with the costs of those who were not; (3) impact of these births on the social welfare system; and (4) availability of drug treatment and prenatal care to drug-addicted pregnant women.

Background

Unlike the drug epidemics of the 1960s and 1970s, which primarily involved men addicted to heroin, the current drug epidemic has affected many women of childbearing age. The National Institute on Drug Abuse (NIDA) estimated that in 1988, 5 million women of childbearing age used illicit drugs.[1] Experts attribute the increase in female drug users to the existence of crack or smokable cocaine, which is readily accessible, a relatively low cost drug, and easier to use than drugs that must be injected. Cocaine, other drugs and alcohol are often used in combination.

Use of cocaine and other drugs during pregnancy may affect both the mother and the developing fetus. Cocaine, for example, may cause constriction of blood vessels in the placenta and umbilical cord, which can result in a lack of oxygen and nutrients to the fetus, leading to poor fetal growth and development.

Although definitive information does not exist about the long-term effects of drug use during pregnancy, researchers have reported that some infants who were prenatally exposed to stimulant drugs like cocaine have suffered from a stroke or hemorrhage in the areas of the brain responsible for intellectual capacities.

[1] Frequently used illicit drugs include crack cocaine, heroin, PCP, marijuana, amphetamines, methamphetamines, and barbiturates.

In addition to the effects of prenatal drug exposure, drug-abusing pregnant women often imperil their health and that of their infants in other ways. These women do not receive the benefits of proper health care. The majority of women of childbearing age who abuse drugs suffer from many social, psychological, and economic problems.

The Office of National Drug Control Policy is responsible for developing an annual national anti-drug strategy.[2] The 1990 National Drug Control Strategy calls for spending $10.6 billion in fiscal year 1991, with 71 percent of the funds going to drug-supply-reduction activities and 29 percent to reduce the demand for drugs. Under this strategy, $1.5 billion would be spent on drug treatment with over one-half of the federal funds provided through the Department of Health and Human Services (HHS) block grants to the states administered by the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA). The states are required to set aside at least 10 percent of these funds to provide drug abuse prevention and treatment for women.

In addition, the Office for Substance Abuse Prevention within ADAMHA has a program that provides demonstration grants to public and private providers for model projects for substance-abusing pregnant and postpartum women and their infants.

Moreover, two federal-state health programs are potentially available to pregnant women who abuse drugs. First, the Maternal and Child Health Services Block Grant program (MCH), authorized by title V of the Social Security Act, provides grants to the states for health services to low-income persons. One of the purposes of MCH is to reduce infant mortality and the incidence of preventable diseases and handicapping conditions among children, frequent consequences of drug abuse by pregnant women. Second, the Medicaid program, authorized by title XIX of the Social Security Act, provides federal financial assistance to the states for a broad range of health services for low-income persons. One group of people that states are required to cover under Medicaid is low-income pregnant women. Those pregnant drug abusers who have low incomes could qualify for services under either of these programs.

Objectives, Scope, and Methodology

We interviewed leading neonatologists, drug treatment officials, researchers, hospital officials, social welfare authorities, and drug-addicted pregnant women to determine: (1) the number of drug-exposed

[2]The Office of National Drug Control Policy was established by the Anti-Drug Abuse Act of 1988.

infants, (2) their impact on the medical and social services systems, (3) their health costs, and (4) the availability of drug treatment and prenatal care. We also reviewed the current literature.

We obtained data on drug-exposed births from 1986 through 1988 from HHS to develop a nationwide estimate of the number of drug-exposed infants. The National Hospital Discharge Survey collects information on the diagnoses associated with hospitalization of adults and newborns in all nonfederal short-stay hospitals. Newborn discharge data from the survey for 1986 and 1988 were used to calculate nationwide estimates.

We also selected two hospitals in each of five cities—Boston, Chicago, Los Angeles, New York, and San Antonio—in which we reviewed medical records to determine the number of drug-exposed infants born and to assess differences in hospital charges between drug-exposed and nonexposed infants. These 10 hospitals, which accounted for 44,655 births in 1989, primarily served a high proportion of persons receiving Medicaid and other forms of public assistance. Births at these hospitals ranged from 5 percent of all infants in New York City to 42 percent of all births in San Antonio. We considered an infant to be drug-exposed if any of the following conditions were documented in the medical record of the infant or mother: (1) mother self-reported drug use during pregnancy, (2) urine toxicology results for mother or infant were positive for drug use, (3) infant diagnosed as having drug withdrawal symptoms, or (4) mother was diagnosed as drug dependent.[3] We also interviewed officials at 10 other hospitals in these cities that serve predominantly non-Medicaid patients, but we did not review patient medical records. Our methodology is discussed more fully in appendix VI.

Our work was performed from January through April 1990 in accordance with generally accepted government auditing standards. The results are summarized below and are discussed more fully in appendixes I through IV.

Many Drug-Exposed Infants Who Might Need Help Are Not Identified

Identifying infants who have been prenatally exposed to drugs is the key to providing them with effective medical and social interventions at birth and as they grow up. Such identification is also necessary to understand the nature and magnitude of the problem in order to target drug treatment and prenatal care services to drug-addicted pregnant women and other services to infants.

[3]Alcohol use during pregnancy was not included in our definition of maternal drug use.

There is no consensus on the number of infants prenatally exposed to drugs each year. The administration's 1989 National Drug Control Strategy reported that an estimated 100,000 infants were exposed to cocaine each year.[4] The president of the National Association for Perinatal Addiction Research and Education estimates as many as 375,000 infants may be drug exposed each year. Neither estimate, however, is based on a national representative sample of births.

Our analysis of the National Hospital Discharge Survey identified 9,202 infants nationwide with indications of maternal drug use during pregnancy in 1986.[5] By 1988, the latest year that data were available, the number had grown to 13,765 infants.[6,7] However, this represents a substantial undercount of the total problem because physicians and hospitals do not screen and test all women and their infants for drugs.

Research has found that when screening and testing is uniformly applied, a much higher number of drug-exposed infants are identified. For example, one recent study documented that hospitals that assess every pregnant woman or newborn infant through rigorous detection procedures, such as a review of the medical history and urine toxicology for drug exposure, had an incidence rate that was three to five times greater than hospitals that relied on less rigorous methods of detection.[8] The average incidence of drug-exposed infants born at hospitals with rigorous detection procedures was close to 16 percent of those hospitals' births, as compared with 3 percent at hospitals with no substance abuse assessment.

A study conducted at a large Detroit hospital accounting for over 7,000 births used meconium testing,[9] a more sensitive test for detecting drug use. The incidence of drug-exposed infants at this hospital was 42 percent or nearly 3,000 births in 1989. In contrast, when self-reported drug

[4]The strategy does not mention the number of infants exposed to other drugs.

[5]The estimate ranged from 7,178 to 11,226 at a 95-percent confidence interval.

[6]The estimate ranged from 8,259 to 19,271 at a 95-percent confidence interval.

[7]This survey identified drug-exposed infants based on discharge codes indicating that the infant was affected by maternal drug use or showed drug withdrawal symptoms. Discharge codes refer to the International Classification of Diseases, Ninth Revision, Clinical Modifications ICD-9-CM, 3rd edition: codes 760.70, 760.72, 760.73, and 779.5.

[8]Ira J. Chasnoff, "Drug Use and Women: Establishing a Standard of Care," Prenatal Use of Licit and Illicit Drugs, ed., Donald E. Hutchings, New York: New York Academy of Sciences, 1989.

[9]Meconium is the first 2- to 3-days' stool of a newborn infant.

use by the mother was the basis for identifying drug-exposed infants, only 8 percent or nearly 600 infants were identified.[10]

Likewise, our work indicates that the National Hospital Discharge Survey undercounts the incidence of drug-exposed births. In our examination of medical records at 10 hospitals, we identified approximately 4,000 drug-exposed infants born in 1989. Our estimates ranged from 13 drug-exposed births per thousand births at one hospital to 181 per thousand births at another.

The wide range in the numbers of drug-exposed infants we found may be associated with differences in the hospitals' efforts to identify drug-exposed infants. One hospital, for example, did not have a protocol for assessing drug use during pregnancy. This hospital had the lowest incidence of drug-exposed infants. The other 9 hospitals' protocols required testing primarily if the mother reported her drug use or the infant manifested drug withdrawal signs. Hospital officials acknowledge that these screening criteria allow many drug-exposed infants to go undetected in the hospital. This is because many drug-exposed infants display few overt drug withdrawal signs and many women deny using drugs out of fear of being incarcerated or having their children taken from them.

We also found that in hospitals serving primarily non-Medicaid patients, screening for drug exposure was even less prevalent. In our interviews with hospital officials at these hospitals, one-half of the hospitals did not have a protocol for identifying drug use during pregnancy. Some hospital officials told us that the problem of prenatal drug exposure was not considered serious enough to warrant implementing a drug testing protocol.

However, one recent study has found that the problem of drug use during pregnancy is just as likely to occur among privately insured patients as among those relying on public assistance for their health care. This study anonymously tested for drug use among women entering private obstetric care and women entering public health clinics for prenatal care and found that the overall incidence of drug use was

[10]Enrique M. Ostrea, Jr., A Prospective Study of the Prevalence of Drug Abuse Among Pregnant Women. Its Impact on Perinatal Morbidity and Mortality and on the Infant Mortality Rate in Detroit. July 13, 1989, preliminary report.

similar between the two groups (16.3 percent for women seen at public clinics and 13.1 percent for those seen at private offices).[11] (See app. I.)

Drug-Exposed Infants Have More Health Problems and Are More Costly

Drug-exposed infants are more likely than infants not exposed to drugs to suffer from a greater range of medical problems and in some cases require costly medical care. We compared the medical problems and costs of infants prenatally exposed to drugs, with those who were not, at four hospitals. At these four, we determined that at least 10 percent of the infants were prenatally exposed to drugs.[12] The mothers of the drug-exposed infants were more likely to have had little or no prenatal care, and the infants had significantly lower birth weights, were often premature, and had longer and more complicated hospital stays than other infants.

Given these medical problems, hospital charges for drug-exposed infants were up to four times greater than those for infants with no indication of drug exposure. For example, at one hospital the median charge for drug-exposed infants was $5,500, while the median charge incurred by nonexposed infants was $1,400. Charges for drug-exposed infants at these hospitals ranged from $455 to $65,325. Because more than 50 percent of all patients received public medical assistance at 7 of the 10 hospitals in our study, much of these charges were covered by federal assistance programs.

Although the long-term physical effects of prenatal drug exposure are not well known, indications are that some of these infants will continue to need expensive medical care as they grow up. Because of the uncertainty of the long-term consequences of prenatal drug exposure, the future costs of caring for these children are unknown. (See app. II.)

[11] Ira J. Chasnoff, Harvey J. Landress, and Mark E. Barrett, "The Prevalence of Illicit-Drug or Alcohol Use During Pregnancy and Discrepancies in Mandatory Reporting in Pinellas County, Florida." The New England Journal of Medicine, Vol. 322, Apr. 26, 1990, pp. 1202-06.

[12] The other six hospitals did not have enough cases to enable us to analyze differences in hospital charges and other characteristics of drug-exposed infants and those not exposed to drugs.

Impact on Social Welfare and Educational Systems Could Be Profound

Drug-exposed infants often present immediate and long-term demands on the social welfare system. Officials at several of the hospitals in our review stated that they are experiencing a growing number of "boarder babies"—infants who stay in a hospital for nonmedical reasons often related to drug-abusing families. Boarder babies are reported to the social welfare system for foster care placement.

We also found that a substantial proportion of drug-exposed infants did not go home from the hospital with their parents. An estimated 1,200 of the 4,000 drug-exposed infants born in 1989 at the 10 hospitals in our review were placed in foster care. The cost of 1 year of foster care for these 1,200 infants is about $7.2 million.

Not all drug-exposed infants enter the social services system at birth; some are discharged from the hospital to drug-abusing parents. These infants may later enter the social services system because of the chaotic and often dangerous environment associated with parental drug abuse—an increasing source of child abuse and neglect. For example, cocaine use was found to be significantly associated with child neglect in a recent study of child-abuse investigations in Boston. Hospital officials told us that they are seeing more young children from drug-abusing families admitted to hospitals because they suffered physical neglect or maltreatment at the hands of someone on drugs.

City and state officials we contacted told us that prenatal drug exposure and drug-abusing families are placing increasing demands on their social welfare systems. Although they perceived the problem to be growing, most could not provide statistics on the numbers of drug-related foster care placements. Officials in New York, however, estimate that 57 percent of foster care children come from families that allegedly are abusing drugs.

Because the estimated demand for foster care nationwide has increased 29 percent from 1986 to 1989, there is concern as to whether the system can adequately respond to the needs of drug-abusing families. Specifically, problems have been identified regarding the availability of foster parents who are willing to accept children who have been exposed to drugs, the quality of foster care homes, and the lack of supportive health and social services to families who provide foster care to these children.

Although definitive information is not yet available, many drug-exposed infants may have long-term learning and developmental deficiencies

that could result in underachievement and excessive school dropout rates leading to adult illiteracy and unemployment. As increasing numbers of drug-exposed infants reach school age, the long-term detrimental effects of drug exposure will become more evident. The cost of minimizing the long-term effects of drug exposure will vary with the severity of disabilities. For example, at a pilot preschool program for mildly impaired prenatally drug-exposed children in Los Angeles, the per capita cost is estimated to be $17,000 per year. The Florida Department of Health and Rehabilitative Services estimates that for those drug-exposed children who show significant physiologic or neurologic impairment total service costs to age 18 could be as high as $750,000. (See app. III.)

Lack of Drug Treatment and Prenatal Care Is Contributing to the Number of Drug-Exposed Infants

To prevent the problem of drug-exposed infants, women of childbearing age must abstain from using drugs. To reduce the impact of drug-exposure, pregnant women who use drugs should be encouraged to stop and be given needed treatment.

Drug Treatment Services Do Not Meet the Need

Recent studies show that if women are able to stop drug use during pregnancy, there will be significant positive effects in the health of the infant. The risks of low birth weight and prematurity, which often require expensive neonatal intensive care, are minimized by drug treatment before the third trimester.

Many programs that provide services to women, including pregnant women, have long waiting lists. Treatment experts believe that unless women who have decided to seek treatment are admitted to a treatment facility the same day, they may not return. However, women are rarely admitted the day they seek treatment. One treatment center in Boston received 450 calls for detoxification services during a 1-month period. The callers were told that it usually took 1 to 2 weeks to be admitted. They were also instructed to call back every day to determine if a slot had become available. Of the 450 callers that month, about one-half never called back and about 150 were eventually admitted to treatment.

Nationwide, drug treatment services are insufficient. A 1990 survey conducted by the National Association of State Alcohol and Drug Abuse Directors, Inc. (NASADAD), estimates that 280,000 pregnant women nationwide were in need of drug treatment, yet less than 11 percent of them received care.[13] Hospital and social welfare officials in each of the five cities in our review also told us that drug treatment services were insufficient or inadequate to meet the demand for services of drug-addicted pregnant women.

In addition to insufficient treatment, some programs deny services to pregnant women. A survey of 78 drug treatment programs in New York City found that 54 percent of them denied treatment to pregnant women. One of the primary reasons treatment centers are reluctant to treat pregnant women relates to issues of legal liability. Drug treatment providers fear that certain treatments using medications and the lack of prenatal care or obstetrical services at the clinics may have adverse consequences on the fetus and thereby expose the providers to legal problems.

Many other barriers to treatment exist. For example, pregnant addicts we interviewed told us that because they had other children, the lack of child care services made it difficult for them to seek treatment. Most treatment programs do not provide child care services.

Another barrier to treatment for women is the fear of criminal prosecution. Drug treatment and prenatal care providers told us that the increasing fear of incarceration and losing children to foster care is discouraging pregnant women from seeking care. Women are reluctant to seek treatment if there is a possibility of punishment. They also fear that if their children are placed in foster care, they will never get the children back.

Prenatal Care Is Needed

Prenatal care can help prevent or at least ameliorate many of the problems and costs associated with the births of drug-exposed infants. Through the three basic components of prenatal care: (1) early and continued risk assessment, (2) health promotion, and (3) medical and psychosocial interventions and follow-up, the chances of an unhealthy infant are greatly reduced. Hospital officials told us that in addition to not seeking prenatal care, some drug-using women are now delivering

[13]The report did not reveal the extent to which these women sought treatment.

their infants at home in order to prevent being reported to child welfare authorities.

Many health professionals believe comprehensive residential drug treatment that includes prenatal care services is the best approach to helping many women stop using drugs during pregnancy and providing the developing infant with the best chance of being born healthy. However, such programs are scarce.

Massachusetts officials told us that the lack of residential treatment slots was a major problem. Only 15 residential treatment slots are available to pregnant addicts statewide. California officials made similar comments. These officials also reported that when they are unable to place drug-addicted pregnant women in residential treatment, they try to place these women in battered women shelters or even in nursing homes. (See app. IV.)

Conclusions

Despite growing indications of a serious national problem, hospital procedures do not adequately identify drug use during pregnancy. Consequently, there are no reliable data on the number of drug-exposed infants born each year. However, based on our review at hospitals in five cities, we believe the number of drug-exposed infants born nationwide each year could be very high.

A drug-exposed infant has short- and long-term health, social, and cost implications for society. These infants are more likely to be born premature, have a lower birth weight, and have longer hospital stays requiring more expensive care. Some of them will need a lifetime of medical care; others will have considerable developmental problems, which may impair their schooling and employment.

Preventing drug use among women of childbearing age would reduce the number of infants born drug exposed. Providing drug treatment and prenatal care could significantly improve the health of infants born to women who use drugs and could reduce the risk of long-term problems. Yet in the five cities in our review, drug treatment was largely unavailable and many women giving birth to drug-exposed infants are not receiving adequate prenatal care.

Matters for Consideration by the Congress

Because the increasing number of drug-exposed infants has become a serious health and social problem, we believe an urgent national response is necessary. Specifically, outreach services should be provided so that pregnant women in need of prenatal care and drug treatment can be identified. For these women, comprehensive drug treatment, and prenatal care must be made available and accessible.

With additional federal funding, the large gap between the number of women who could benefit from drug treatment and the number of residential and outpatient slots currently available could be reduced. If the Congress should decide to expand the current federal resource commitment to treatment for drug-addicted pregnant women, there are several options that could be followed. These include:

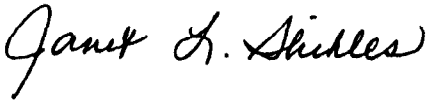
- Increasing the alcohol and drug abuse and mental health services (ADMS) block grant to the states in order to provide more federal support for drug treatment.
- Increasing the ADMS Women's Set-Aside from 10 percent to a higher percentage to assure that expanded treatment services under the block grant are targeted specifically to substance-abusing pregnant women.
- Creating a new categorical grant to provide comprehensive prenatal care and drug treatment services to substance-abusing pregnant women.
- Increasing funding of MCH specifically for substance-abuse treatment for pregnant women.
- Requiring states to include substance-abuse treatment as part of the package of services available to pregnant women under Medicaid.

Although these options would require more funds in the short term, we believe that this commitment could save money in the long term as well as improve the lives of a future generation of children.

Copies of this report will be sent to the appropriate congressional committees and subcommittees; the Secretary of Health and Human Services; and the Director, Office of Management and Budget, and we will make copies available to other interested parties upon request.

If you have any questions about this report, please call me on (202) 275-5451. Other major contributors to the report are listed in appendix VII.

Sincerely yours,



Janet L. Shikles
Director for Health Financing
and Policy Issues

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Abbreviations

ADAMHA	Alcohol, Drug Abuse and Mental Health Administration
ADMS	alcohol and drug abuse and mental health services
GAO	General Accounting Office
HHS	Department of Health and Human Services
MCH	Maternal and Child Health Services Block Grant program
NASADAD	National Association of State Alcohol and Drug Abuse Directors, Inc.
NIDA	National Institute on Drug Abuse

The Number of Drug-Exposed Infants May Be Seriously Underestimated

The identification of infants who have been prenatally exposed to drugs is key to understanding the magnitude of the problem and providing effective medical and social interventions for these infants. However, there is no consensus on the number of drug-exposed infants born in the United States each year. A comprehensive nationwide study to specifically determine the incidence of drug-exposed births has not been done. Additionally, hospitals' procedures allow many drug-exposed infants to go undetected.

The Number of Drug-Exposed Infants Could Be High

Based on data from the National Center for Health Statistics' National Hospital Discharge Survey, which includes a representative sample of all births, an estimated 9,202 drug-exposed infants were born in 1986 in the United States.[1] By 1988, the latest year that data were available, the number had grown to 13,765 infants.[2] However, this is likely to be a substantial undercount of the problem. At present, physicians and hospitals do not routinely screen and test all women and their infants for drugs. Recent studies have found that when screening and testing are uniformly applied, a much higher number of drug-exposed infants is identified.

One study found that hospitals that assess every pregnant woman or newborn infant through a medical history and urine toxicology had an incidence rate that was three to five times greater than hospitals that relied on less rigorous methods of detection.[3] The average incidence of drug-exposed infants born at hospitals with rigorous detection procedures was close to 16 percent of all births as compared with 3 percent of births at hospitals with no substance-abuse assessment.

Likewise, our work indicates that the National Hospital Discharge Survey underreports the incidence of drug-exposed births. Based on our review of the medical records for both the women and their infants at 10 hospitals, an estimated 3,904 drug-exposed infants were born at these hospitals in 1989. (See table I.1.)[4] Estimates of the number of these infants ranged from a low of 13 per 1,000 births at one hospital to a

[1]The estimate ranged from 7,178 to 11,226 at a 95-percent confidence interval.

[2]The estimate ranged from 8,259 to 19,271 at a 95-percent confidence interval.

[3]Ira J. Chasnoff, "Drug Use and Women: Establishing a Standard of Care," Prenatal Use of Licit and Illicit Drugs, ed. Donald E. Hutchings. New York: New York Academy of Sciences, 1989.

[4]Appendix V provides more detailed information on the degree of drug-exposed infants identified at the 10 hospitals.

high of 181 births per 1,000 at another. Maternal cocaine use was estimated to range from less than 1 percent to 12 percent among the hospitals.

Table I.1: Drug-Exposed Infants Born at 10 Hospitals, 1989

Location/hospital	Estimated no. of drug-exposed infants per 1,000 births	Total no. of births	Estimated no. of drug-exposed infants
Boston			
1	72	3,294	237
2	89	1,438[a]	128
Chicago			
1	181	3,604	652
2	47	4,250[a]	200
Los Angeles			
1	148	8,020	1,187
2	54	8,175	441
New York			
1	127	3,147	400
2	118	3,726	440
San Antonio			
1	31	5,688	176
2	13	3,312	43
Total		**44,655**	**3,904**

[a]The actual number of births is not available; therefore, the total number of births for the year is estimated.

Hospitals Lack Systematic Procedures to Identify Drug-Exposed Infants

We also found that the wide range in the number of drug-exposed infants we identified at the different hospitals in our review may be associated with the effort taken by hospitals to identify drug-exposed infants. For example, one of the 10 hospitals did not have a protocol for assessing drug use during pregnancy. This hospital had the lowest incidence of drug-exposed infants. Protocols at the remaining 9 hospitals did not require systematic screening and testing of every mother and infant for potential substance use or exposure. Instead, the protocols primarily required testing if the mother reported her drug use or if drug withdrawal signs became manifest in the infant.

Hospital officials acknowledge that these screening criteria allow many drug-exposed infants to remain unidentified in the hospital. For example, women often deny using drugs because they do not want to be

reported to the authorities for fear of being incarcerated or having their children taken from them.

In addition, many cocaine-exposed infants display few overt drug withdrawal signs. Some will show no signs of drug withdrawal, while for others withdrawal signs may be mild or will not appear until several days after hospital discharge. The visual signs of drug exposure vary from severe symptoms to milder symptoms of irritability and restlessness, poor feeding, and crying. Since these milder symptoms are nonspecific, maternal drug use may not be suspected unless urine testing is conducted.

Even when hospitals do conduct urinalysis, drug use may go undetected if drug concentrations within the body are too low. Urinalysis can only detect drugs used within the past 24 to 72 hours. According to recent studies, hair analysis and meconium analysis, two testing methods for detecting drug use, have advantages over urinalysis because they are more accurate or can detect drug use over a longer period of time after drug use has occurred.[5,6,7] One of the studies, conducted at a large urban hospital in Detroit accounting for over 7,000 births annually, used meconium analysis to detect drug use during pregnancy.[8] Preliminary results revealed that 42 percent of infants were found to be drug-exposed in 1989.[9] However, the hospitals in our review that conducted testing for drug exposure relied exclusively on urinalysis.

When an infant does not show signs of drug withdrawal or the mother does not self-report drug use, a physician may consider other factors as presumptive of drug exposure during pregnancy and recommend that drug testing be conducted. Such factors or characteristics have been found to occur more often among drug-exposed infants than infants not exposed to drugs and include (1) inadequate prenatal care (defined as four or fewer prenatal care visits for a pregnancy of 34 or more

[5]Meconium is the first 2- to 3-days' stool of a newborn infant.

[6]Karen Graham and others, "Determination of Gestational Cocaine Exposure by Hair Analysis," Journal of the American Medical Association, Vol. 262 (Dec. 15, 1989), pp. 3328-30.

[7]Enrique M. Ostrea, Jr., A Prospective Study of the Prevalence of Drug Abuse Among Pregnant Women, Its Impact on Perinatal Morbidity and Mortality and on the Infant Mortality Rate in Detroit. (July 13, 1989, preliminary report.)

[8]Ostrea, A Prospective Study of the Prevalence of Drug Abuse Among Pregnant Women.

[9]The 42 percent of births identified as drug exposed using meconium testing compares with 8 percent identified based on the mother's self-reporting drug use.

weeks),[10] (2) low birth weight (defined as less than 5.5 pounds), and (3) low gestational age or prematurity (defined as less than 38 weeks).[11,12] (See table I.2.)

We were able to obtain data from 9 of the 10 hospitals in our review on the degree to which infants had these characteristics. We identified an estimated 4,391 infants with two or more characteristics of possible drug exposure. The last column of table I.2 shows the number of infants with two or more drug-exposure indicators who were not tested for drug exposure at the 9 hospitals where we obtained data. We estimate that at these hospitals during 1989, there were 2,791 potentially drug-exposed infants who were not tested, based on our review of hospital medical records.

[10]Institute of Medicine, Infant Death: An Analysis by Maternal Risk and Health Care. Contrasts in Health Status, ed. D.M. Kessner, Vol. 1 (Washington, D.C.: National Academy of Sciences, 1973), pp. 58-59.

[11]Gestational age refers to the period of time, normally 40 weeks, from conception to an infant's birth.

[12]Maternal demographic characteristics and socioeconomic status effect birth outcomes. Infant mortality and low birth weight rates are higher for young, uneducated, unmarried, non-white women with limited financial resources.

Table I.2: Estimated Number of Infants With Indicators of Possible Drug Exposure Not Tested in Nine Hospitals, 1989

	No. of infants with			
Location/hospital	Less than 5 prenatal visits[a]	Birth weight less than 5.5 lbs	Gestational age less than 38 weeks	Two or more risk factors
Boston				
1	69	563	682	478
2	[b]	[b]	[b]	[b]
Chicago				
1	342	299	620	267
2	72	136	574	123
Los Angeles				
1	513	176	401	176
2	1,120	335	801	441
New York				
1	126	283	469	242
2	414	197	514	209
San Antonio				
1	842	574	910	580
2	116	335	643	275
Total	**3,614**	**2,898**	**5,614**	**2,791**

[a]We included women with pregnancies of 33 or fewer weeks; however, they comprised a small portion of the sampled births ranging from 3 to 11 percent of the samples at the 9 hospitals.

[b]Data were not available for this hospital to make the analysis.

We also found that some hospitals where we identified low percentages of drug-exposed infants tended to have high percentages of infants with two or more indicators of possible drug exposure who were not tested. (See table I.3.) For example, one hospital tested no infants with these indicators of possible drug exposure; this hospital also had the fewest (1.3 percent) estimated drug-exposed infants.

Table I.3: Percentage of Infants With Two or More Indicators of Possible Drug Exposure Who Were or Were Not Tested and the Percentage of Drug-Exposed Infants at Nine Hospitals

Figures are percentages

City/hospital	Infants tested	Infants not tested	Drug-exposed infants
Boston			
1	11	89	7.2
Chicago			
1	31	69	18.1
2	61	39	4.7
Los Angeles			
1	78	22	14.8
2	30	70	5.4
New York			
1	40	60	12.7
2	46	54	11.8
San Antonio			
1	9	91	3.1
2	0	100	1.3

In our interviews with hospital officials at 10 additional hospitals that predominantly serve privately insured patients in these five cities, we found that one-half of the hospitals did not have a protocol for identifying drug use during pregnancy. Some hospital officials estimated drug-exposed infants represented less than 1 to 3 percent of births at their hospitals. Therefore, they did not consider prenatal drug exposure to be serious enough to warrant implementing a drug testing protocol.

One recent study found, however, that illicit drug use is common among women regardless of race and socioeconomic status. This study anonymously tested for drug use among women entering private obstetric care and women entering public health clinics for prenatal care and found that the overall incidence of drug use was similar among both groups of women (14.8 percent overall, 16.3 percent for women seen at public clinics, and 13.1 percent for those seen at private offices).[13]

[13]Ira J. Chasnoff, Harvey J. Landress, and Mark E. Barrett, "The Prevalence of Illicit Drug Use or Alcohol Use During Pregnancy and Discrepancies in Mandatory Reporting in Pinellas County, Florida," The New England Journal of Medicine, Vol. 322 (Apr. 26, 1990), pp. 1202-06.

Drug-Exposed Infants Are Likely to Have Costly Health Problems

Infants prenatally exposed to drugs are more likely to need more medical services than infants whose mothers did not use drugs during pregnancy. It is more common for drug-exposed infants to be born prematurely and have low birth weights. They are more likely to have medical complications and longer hospitalizations resulting in higher hospital charges. Median hospital charges for drug-exposed infants were up to four times greater than for nonexposed infants.

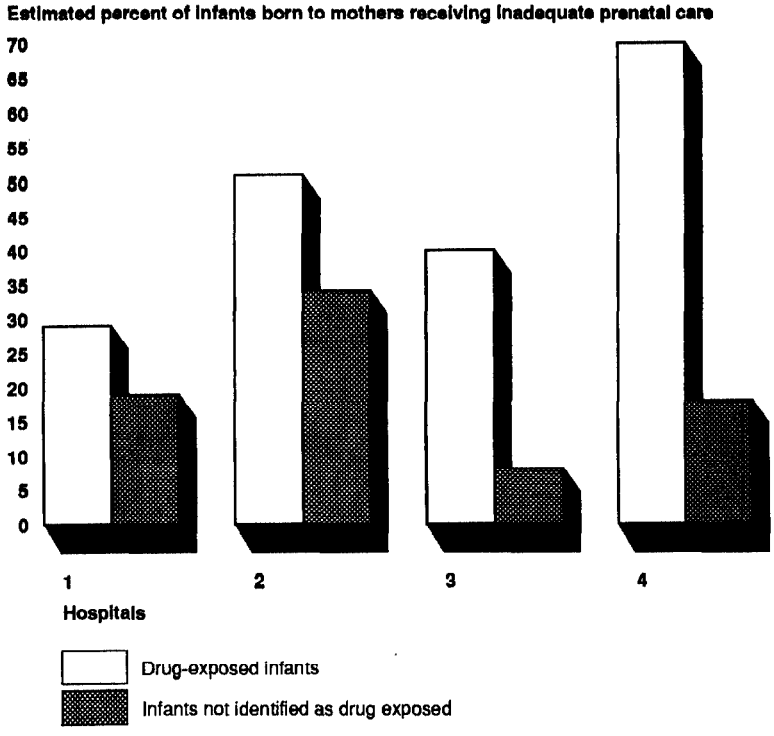
Drug-Exposed Infants Are More Vulnerable at Birth

Because drug-exposed infants are born with significantly more medical problems, they experience more expensive hospitalizations. The most frequent effects of drug exposure on infants are low birth weight and prematurity. Comparing drug-exposed infants with those with no indication of drug exposure at 4 hospitals, we found differences in prenatal care received, birth weight, gestational age, intensity of care, and hospital length of stay.[1]

The proportion of infants born to drug-using women receiving inadequate prenatal care ranged from 29 to 70 percent of births compared with 8 to 34 percent of births to women who did not use drugs and received inadequate prenatal care. (See fig. II.1.)

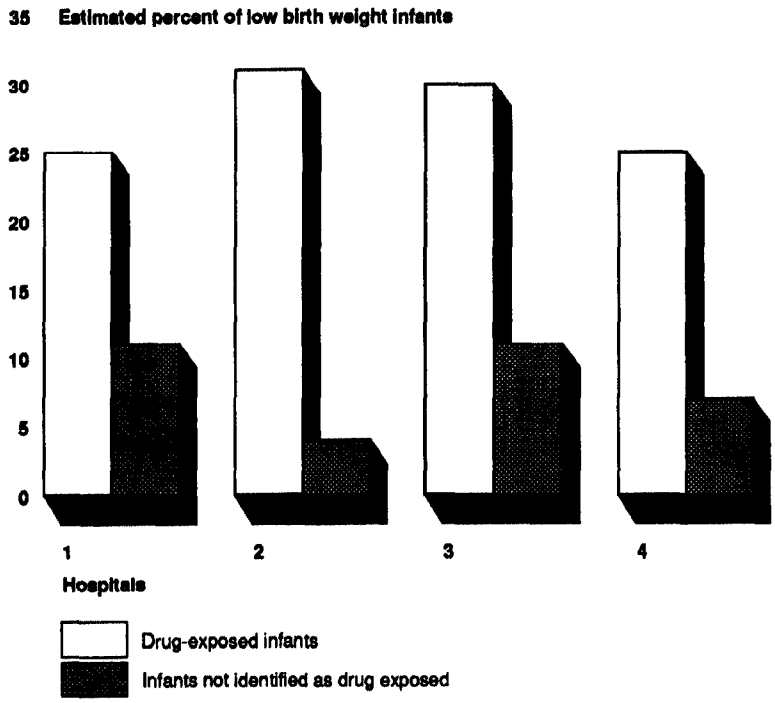
[1]Of the 10 hospitals we reviewed, 4 had a 10-percent or higher incidence of infants born drug exposed. At these hospitals we had a sufficient number of cases with which to conduct more detailed analysis of the differences between hospital charges and other characteristics of drug-exposed infants and those not exposed to drugs.

Figure II.1: Mothers of Drug-Exposed Infants Are More Likely to Obtain Inadequate Prenatal Care
(Comparison at 4 Hospitals)



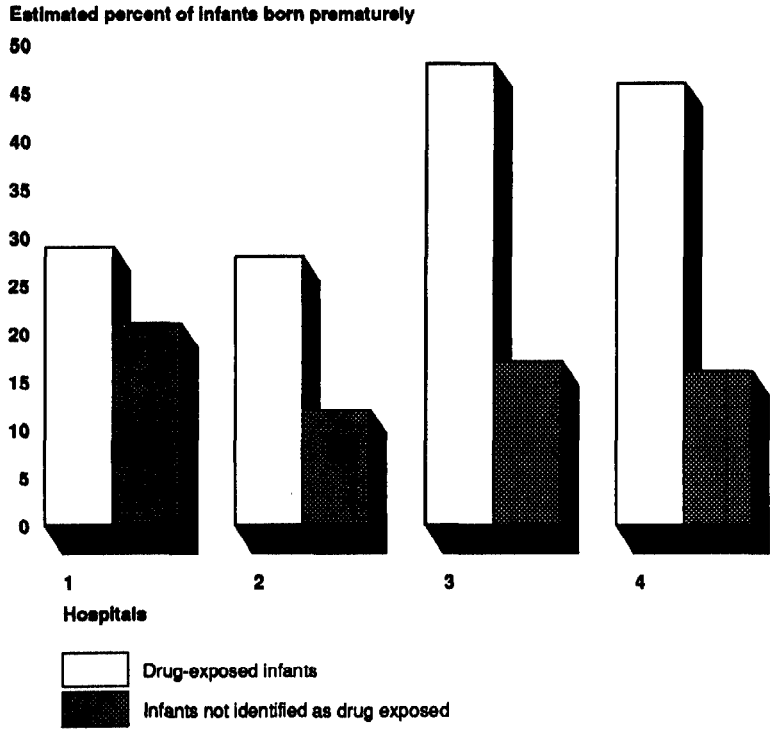
Low birth weight, defined as weighing less than 5.5 pounds, is a major determinant of infant mortality and places the survivors at increased risk of serious illness and lifelong handicaps. We found significantly higher percentages of drug-exposed infants weighing less than 5.5 pounds than those born to women not identified as using drugs during their pregnancy. In fact, the proportion of drug-exposed infants of low birth weight was at least twice as great as infants not identified as drug exposed. The rate of low-birth-weight infants ranged from 25 to 31 percent among drug-using women and 4 to 11 percent for women not identified as using drugs. (See fig. II.2.)

Figure II.2: Drug-Exposed Infants More Often Have a Low Birth Weight as Compared With Nonexposed Infants
(Comparison at 4 Hospitals)



Infants are typically born 40 weeks after conception. Those born before 38 weeks are considered premature. Premature infants are frequently handicapped by physical limitations, which vary depending on the degree of prematurity. These handicaps may lead to increased mortality and morbidity. Generally, we found that drug-exposed infants were about twice as likely to be premature as infants not exposed to drugs. (See fig. II.3.)

Figure II.3: Drug-Exposed Infants Are More Likely to Be Born Prematurely Than Nonexposed Infants
(Comparison at 4 Hospitals)



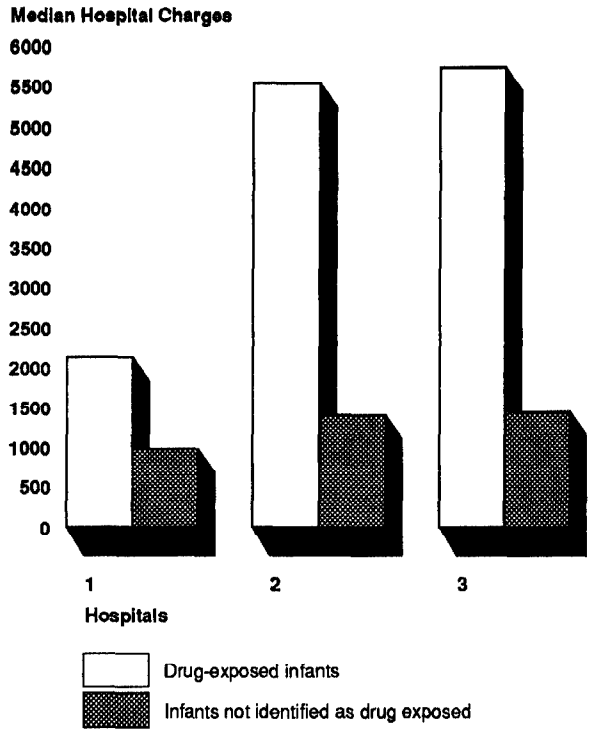
Finally, at two of the four hospitals, a significantly greater percentage of drug-exposed infants needed intensive care services during their hospital stay. Drug-exposed infants were also more likely than those not identified as drug exposed to remain in the hospital for 5 or more days.

Hospital Charges Are Higher for Drug-Exposed Infants

The health problems of drug-exposed infants and their longer and more complicated hospitalizations are often reflected in higher hospital charges. We were able to compare hospital charges between drug-exposed infants and infants with no indication of drug exposure in their medical records at three hospitals.[2] As shown in figure II.4, hospital charges for drug-exposed infants were up to four times greater than those for infants with no indication of drug exposure. For example, at one hospital the median charge for drug-exposed infants was $5,500, while the median charge incurred by nonexposed infants was $1,400.

[2]At 1 of the 4 hospitals, however, separate hospital charges for mothers and infants were not available.

Figure II.4: Drug-Exposed Infants Incur Higher Hospital Charges Than Nonexposed Infants
(Comparison at 3 Hospitals)



Over $14 million was spent on the care of drug-exposed infants at 3 hospitals where we were able to obtain data. (See table II.1.) Hospital charges for drug-exposed infants at these hospitals ranged from $455 to $65,325.

Because more than 50 percent of patients received public medical assistance in 7 of the hospitals in our study, a large part of these costs was covered by federal assistance programs.

Table II.1: Estimated Hospital Charges for Drug-Exposed Infants at Three Hospitals in 1989

Hospital	Estimated no. of drug-exposed infants	Mean charge	Estimated total hospital charges
1	1,187	$6,914[a]	$8,206,918
2	400	8,939	3,575,600
3	440	6,520	2,868,800
Total	**2,027**		**$14,651,318**

[a]The charges at this hospital are based on a flat per diem rate and, therefore, may be underestimated.

Although the long-term physical effects of prenatal drug exposure are not well known, indications are that some of these infants will continue to need expensive medical care as they grow up. Because of the uncertainty of the long-term consequences of prenatal drug exposure, future medical costs of caring for these children are unknown.

Prenatal Drug Abuse Has Increased Demand for Social Services

State, city, and hospital social services officials unanimously reported to us that parental drug abuse has created additional demands on the social services system. These demands include the need for foster placements for the infant upon discharge from the hospital. They also include investigations of drug-related neglect and abuse that in some cases result in the child's removal from the home. Additionally, studies have shown that some drug-exposed infants will suffer long-term medical and psychological effects from drug exposure. These problems may lead to learning disabilities, causing higher school drop-out rates and eventual unemployment.

Many Drug-Exposed Infants Enter Foster Care

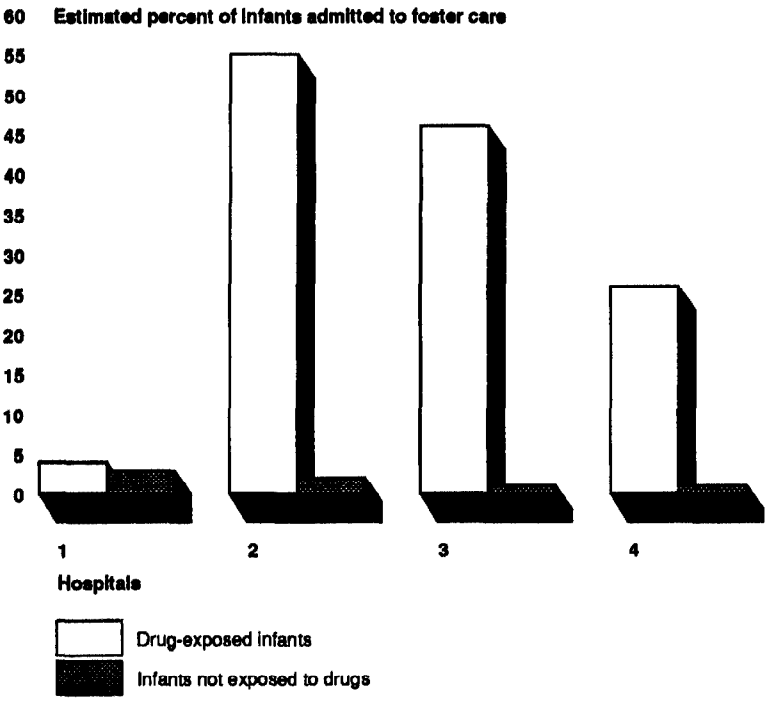
We found that drug-exposed infants were significantly more likely, compared with infants not identified as drug-exposed, to stay in the hospital after their mother was discharged. While these longer stays were primarily attributed to medical reasons, some hospital officials stated they are experiencing a growing number of infants staying in the hospital for nonmedical reasons. Commonly called "boarder babies," the parents or relatives of these infants are often not willing to accept the baby or, in other cases, social service workers have determined that the home environment is not acceptable for the infant because of parental drug abuse. Officials from 5 of the 10 surveyed hospitals stated that their hospitals were experiencing increased demands for services for boarder babies.

In addition to providing services to boarder babies, social service agencies must also provide services to drug-exposed infants referred by hospitals. In three cities that are required by state law to refer drug-exposed infants to child welfare authorities the number of infants referred during recent years has increased dramatically. In New York, referrals increased by 268 percent over the 4-year period 1986 to 1989. For approximately the same period, referrals in Los Angeles increased by 342 percent and in Chicago, by 1,735 percent.[1]

For infants who do not leave the hospital with their mother, additional costs are incurred in foster care services. At 3 of the 4 hospitals, 26 to 58 percent of drug-exposed infants were in need of foster care. In contrast, only 1 to 2 percent of infants born to a mother with no indication of drug use required foster placement. At the fourth hospital few infants were placed in foster care. (See fig. III.1.)

[1]Texas officials told us that their state does not have a legal requirement that drug-exposed infants be reported, and in Massachusetts officials said that until 1990 cocaine-exposed infants did not have to be reported.

Figure III.1: Drug-Exposed Infants Are More Likely to Be Admitted to Foster Care Than Nonexposed Infants
(Comparison at 4 Hospitals)



Although we could compare drug-exposed infants to infants not identified as drug exposed at only 4 hospitals, we were able to estimate the number of drug-exposed infants entering foster care at 9 hospitals. At these 9 hospitals, the cost of providing basic foster care for 1 year to 1,194 infants, would be over $7.2 million. Basic per capita foster care costs in the cities in our survey ranged from $3,600 to $5,000 annually; specialized foster care, which includes homes that provide some medical monitoring or group residential facilities, may cost between $4,800 and $36,000.

Number of Child Abuse and Neglect Cases Increasing

Because drug-exposed infants are often born with special problems, they may be more difficult to care for even under the best circumstances. Some of these children are placed directly from the hospital into foster homes where the foster parents are often unaware of the children's problems and are not trained to care for their specialized needs. Others return home to families that have trouble providing adequate care because, in many instances, drug abuse continues to dominate family life.

A drug-exposed, low-birth-weight infant may be irritable, cry excessively, have difficulty bonding with the mother, and have problems feeding. Many drug-using mothers may be compromised in their ability to interact with their infant or to understand and respond to their infants' basic needs. Many of these women also have health and emotional problems. The combination of the infant's and the mother's problems place the infant at high risk for child abuse and neglect.

An indicator of a chaotic and dangerous home environment is the extent to which the social services system is called on to intervene to protect children from the drug-abusing lifestyles of their parents. Child welfare services officials from the five cities we visited stated that they are investigating more drug-related cases of child abuse and neglect each year. Many of these investigations result in foster care placement specifically for children under the age of 2. Child welfare officials in San Antonio told us that 40 percent of all referrals made to child protective services involve drug or alcohol abuse in the family. In Los Angeles, up to 90 percent of referrals involved substance-abusing families.

The Massachusetts Department of Social Services reports a higher incidence of severe injuries to young children and more families where the use of drugs and alcohol is being identified as a precipitating factor in family violence. In 1989, the department conducted a study to determine the association of drug and alcohol use with child abuse and neglect.[2] The study found that illicit drug or excessive alcohol use was a factor in 64 percent of case investigations. Cocaine use was found to be significantly associated with child neglect. Neglect was defined as a lack of supervision, food, clothing, medical care, and other necessities. In the most severe cases there were reports of no food, milk, or diapers in the house; medical neglect to the extent of nontreatment of serious and acute injuries and illnesses; extremely dirty living quarters; and an absence of care and supervision for children under the age of 5.[3]

Hospital officials also told us that they are seeing an increasing number of young children from drug-abusing families admitted to the hospital because they suffered neglect or maltreatment at the hands of someone on drugs. Officials described various incidents of children dying due to

[2]Julia Herskowitz and others, "Substance Abuse and Family Violence, Part I, Identification of Drug and Alcohol Usage During Child Abuse Investigations in Boston." (Massachusetts Department of Social Services, June, 1989).

[3]Herskowitz, pp. 4-8.

physical abuse or a drug overdose from inhalation or ingestion of crack cocaine.

Foster Care Placements Increasing

A high proportion of child protective service investigations of abuse or neglect involving drug abuse results in foster care placement. In fact, the estimated nationwide demand for foster care has increased by 29 percent from 1986 to 1989. In 1989, 360,000 children were estimated to be in foster care across the country. Much of this increase is attributed to substance abuse in families.

According to social service officials in the five cities we visited, family drug-abuse problems are a contributing factor in the placement of children in foster care. In New York, a review of a statewide random sample of foster care children found that 57 percent of these children came from families allegedly abusing drugs.

Foster care placements have increased substantially for children under the age of 1 and 2 in the states we visited. Social service officials attribute this increase to drug-abusing families. In Massachusetts, the number of children under age 2 admitted to foster care increased by 73 percent over the past 2 years. In New York City, children under age 2 accounted for 36 percent of foster care admissions in 1989. In Illinois, infants younger than 1 year old in foster care increased 284 percent from 1985 to 1989.

Because the demand for foster care has increased nationwide, concerns have been raised about the social services system's ability to respond to the needs of drug-abusing families. Specifically, problems have been identified regarding the availability of foster parents who are willing to accept children who have been exposed to drugs, the quality of foster care homes, and the lack of supportive health and social services for families who provide foster care to these children.

Drug-Exposed Infants Are Vulnerable to Developmental Problems That May Affect Learning

Definitive information about the future of drug-exposed infants does not exist. The oldest of drug-exposed infants in strict clinical trials designed to examine the long-term physical effects of prenatal drug exposure, such as developmental deficiencies, are under the age of 3. In addition, long-term studies of drug-exposed children have not adequately controlled for the amount of drug use, the intensity or frequency of use, or the type of drug used. Nor have studies indicated when drugs were used during the pregnancy.

Results from studies to date indicate that the symptoms will vary among drug-exposed children. Some children show few symptoms after the drugs leave their system and others are expected to show neurological symptoms throughout their lives. Consequently, the needs of these infants will vary—from greater assistance and intervention for some, to lesser assistance for others.[4]

Recent studies and surveys of neonatal programs suggest that some infants will suffer from central nervous system effects, including neurobehavioral deficiencies.[5] Researchers have reported that some infants identified through urine screens as positive for cocaine had suffered hemorrhages in the areas of the brain responsible for intellectual capacities.[6,7]

Observations of toddlers born to drug-using mothers imply future educational problems based on these children's difficulties with concentration and learning. Research at the University of California at San Diego showed that

- 25 percent of drug-exposed children had developmental delays, and
- 40 percent experienced neurologic abnormalities that might affect their ability to socialize and function within a school environment.

The study also found that as these children grew older their abilities did not develop normally in the dimensions of language, adaptive behavior, and fine motor and cognitive skills.[8]

A school environment that is poorly prepared to respond to the developmental disabilities of these children may allow them to go unresolved. As an increasing number of drug-exposed children reach school age, this problem should become more evident. One test of this may occur next

[4]Richard P. Barth, "Educational Implications of Prenatally Drug Exposed Children," Social Work in Education, in press.

[5]Hallum Hurt, "Medical Controversies in Evaluation and Management of Cocaine-Exposed Infants" (1989), pp. 3-4.

[6]Deborah A. Frank, Briefing for the Comptroller General of the United States, Boston City Hospital, February 24, 1990.

[7]Suzanne D. Dixon, "Effects of Transplacental Exposure to Cocaine and Methamphetamine on the Neonate" The Western Journal of Medicine (Apr. 1989), pp. 436-42.

[8]Interview with Suzanne D. Dixon, Director of Well Baby Clinic, University Medical Center, University of California at San Diego, February 14, 1990.

year when a large number of children born to the early wave of crack cocaine users will reach kindergarten age.

One researcher has estimated that 42 to 52 percent of children exposed to drugs and alcohol will require special educational services.[9] The degree of services needed and their cost will vary depending on the severity of impairment. For example, the Los Angeles Unified School District began a pilot program in 1987 for mildly impaired preschool children prenatally exposed to drugs. The cost of providing the enriched school environment provided in the pilot program is approximately $17,000 a year per child. At least one comprehensive estimate, developed by the Florida Department of Health and Rehabilitative Services, indicates that total service costs for each drug-exposed child that shows significant physiologic or neurologic impairment, to the age of 18 years, will be $750,000.

[9]Judy Howard, "Developmental Patterns for Infants Prenatally Exposed to Drugs", Fact sheet presented to the California Legislative Ways and Means Committee, Perinatal Substance Abuse Educational Forum, February 23, 1989.

Lack of Drug Treatment and Prenatal Care Contributing to the Number of Drug-Exposed Infants

Many women are unaware of the effects of drugs on the health of their infant. Other women are aware of the consequences of drug use and would like to stop their addictive behavior. However, their efforts to get help may be unsuccessful due to insufficient drug treatment capacity. In addition, there are many barriers blocking access to basic health services and drug treatment for drug-abusing pregnant women. One major barrier is the fear women have that if they seek treatment they may be incarcerated or their children will be taken from them.

Lack of Treatment for Drug-Addicted Pregnant Women

The best way to prevent the problem of drug-exposed infants is to prevent drug use among women of childbearing age. Pregnant woman who use drugs should be encouraged to stop in order to reduce the potential problems associated with prenatal drug exposure. According to one researcher, if women stop using cocaine before the third trimester the risks of low birth weight and prematurity, which often require expensive neonatal intensive care, are greatly reduced.[1]

Nationwide, however, drug treatment services are insufficient. A 1990 survey by the National Association of State Alcohol and Drug Abuse Directors, Inc. (NASADAD), found that an estimated 280,000 pregnant women nationwide were in need of drug treatment, yet less than 11 percent of them received care.[2] Hospital and social welfare officials in each of the five cities in our study also told us that drug treatment services were insufficient or inadequate to meet the demand for services for drug-addicted pregnant women.

In addition to insufficient treatment, some treatment programs deny services to drug-addicted pregnant women. A survey of 78 drug treatment programs in New York City found that 54 percent of them denied treatment to women who were pregnant. One of the primary reasons that programs are reluctant to treat pregnant women relates to issues of legal liability. Drug treatment providers fear that certain treatment medications and the lack of prenatal care or obstetrical services at the clinics may have adverse consequences on the fetus and thereby expose the providers to legal problems.

Many programs that provide services for women, including pregnant women, have long waiting lists. Treatment experts believe that unless

[1]Deborah A. Frank, Briefing for the Comptroller General of the United States, Boston City Hospital, February 24, 1990.

[2]The report did not reveal the extent to which these women sought treatment.

women who have decided to seek treatment are admitted to a treatment facility the same day, they may not return. However, women are rarely admitted on the day that they seek treatment. One treatment center in Boston received 450 calls for detoxification services during a 1-month period. The callers were told that no slots were available and that it usually took 1 to 2 weeks to be admitted. They were also instructed to call back every day to determine if a slot had become available. Of the 450 callers that month, about one-half never called back and about 150 were eventually admitted to treatment.

Many other barriers to treatment exist. Historically, treatment programs were designed to treat the addiction problems of men. Thus, many programs are not tailored to meet the needs of pregnant women. For example, pregnant addicts we interviewed told us that because they had other children the lack of child care services made it difficult for them to seek treatment. Pregnant addicts may have additional needs, such as prenatal care and parenting, educational, and nutritional guidance, that are not provided in most treatment programs.

Another barrier to treatment for women is their fear of criminal prosecution. Drug treatment and prenatal care providers told us that the increasing fear of incarceration and loss of children to foster care is discouraging pregnant women from seeking care. Women are reluctant to seek treatment if there is a possibility of punishment. They also fear that if their children are placed in foster care, they will never get the children back.

Many health professionals believe that comprehensive residential drug treatment, including prenatal care, is the best approach to helping many women abstain from using drugs during pregnancy and assuring that the developing fetus has the best chance of being born healthy. Residential treatment allows for several needs to be addressed at the same time, thus reducing problems of fragmentation and inaccessibility of services. For example, the interconnected problems of homelessness, substance abuse, maternal and child health, and parenting are addressed in the few residential programs that exist. In addition, these programs limit access to drugs and remove women from the environments in which they became dependent.

However, residential treatment programs for women are scarce. In Massachusetts, residents have access to only 15 residential treatment slots for pregnant women in the entire state. Social service officials at one

California hospital expressed their frustration with the lack of residential drug treatment programs and other programs that could provide a stable environment to a pregnant addict. When they are unable to place drug-addicted pregnant women in residential treatment they try alternatives, including battered women shelters or even nursing homes.

Prenatal Care Improves Birth Outcomes

When both drug treatment and prenatal care services are provided for drug-addicted pregnant women, the results are dramatic. The three basic components of prenatal care are: (1) early and continued risk assessment, (2) health promotion, and (3) medical and psychosocial interventions and follow-up. One intervention program reported a significant drop in low-birth-weight babies born to drug-abusing mothers who had been provided with drug treatment and prenatal care.[3] The incidence of low birth weight among infants born to drug-abusing mothers receiving such care dropped from 50 to 18 percent.

Early and comprehensive prenatal care is associated with lower rates of infants born with low birth weight. Our work and that of others showed that the incidence of low birth weight among drug-exposed infants is high. Low birth weight is the most significant factor in determining infant death and disability as well as higher health costs. Prenatal care increases the chances that healthier infants will be born.

Prenatal care is a cost-effective program. The Office of Technology Assessment estimates that for every low-birth-weight birth averted by earlier or more frequent prenatal care, the U.S. health care system saves between $14,000 and $30,000 in short- and long-term health care costs associated with low birth weight. These savings are great compared with the average cost for professional services associated with prenatal care that can run as low as $500.

According to the National Commission to Prevent Infant Mortality, the barriers to accessing prenatal care are formidable, including financial, policy, system, provider, and patient barriers. In addition, others report that drug-addicted pregnant women refrain from seeking prenatal care because they fear that punitive actions will be taken if they are found to have used or abused drugs during pregnancy. Several hospital and

[3]Loretta P. Finnegan, M.D., Executive Director of Family Center, Professor of Pediatrics and Professor of Psychiatry and Human Behavior, Jefferson Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania, Testimony before the Subcommittee on Children, Family, Drugs, and Alcoholism, Committee on Labor and Human Resources, United States Senate, February 5, 1990.

public health officials believe that punitive actions, such as incarceration of drug-abusing pregnant mothers, have a negative impact on the lives of these women and their children.

Hospital officials told us that in addition to not seeking prenatal care, some women are now delivering their infants at home in order to prevent the state from discovering their drug use. An example was given of one mother who delivered her baby at home and subsequently called the hospital for medical advice because the infant had become very sick. The mother was finally persuaded to bring the infant into the hospital. The consequent care of this baby was very costly.

Percentage Distribution of Infants Exposed to Drugs, Including Cocaine

Figures are percentages

Hospital	Drug-exposed infants	Sampling error[b]	Cocaine-exposed infants	Sampling error[b]
1	1.3	1.0	0.3	0.4
2	3.1	1.6	0.8	0.8
3	4.7	2.0	2.7	1.5
4	5.4	2.3	3.9	1.9
5	7.2	2.4	4.5	1.9
6a	8.9	•	•	•
7	11.8	2.9	11.0	2.8
8	12.7	2.9	8.5	2.4
9	14.8	3.8	11.6	3.4
10	18.1	4.2	8.6	2.9

[a]From this hospital we identified drug-exposed infants from the universe of births and, therefore, there is no sampling error. We were unable to distinguish the type of drugs used.

[b]Sampling errors are at the 95-percent confidence level.

Objectives, Scope, and Methodology

To develop a national estimate of drug-exposed infants we obtained data from the National Hospital Discharge Survey conducted by HHS's National Center for Health Statistics for the years 1980 to 1988. The National Hospital Discharge Survey is based on an annual survey of a representative sample of U.S hospitals. The survey collects information on the diagnoses associated with hospitalization of adults and newborns in all nonfederal short-stay hospitals. Newborn discharge data for 1986 and 1988 were used to calculate national estimates. Data before 1986 were considered nonreportable due to a small number of sample cases of newborns with a drug-related discharge diagnosis.

To determine the extent of drug-exposed infants we reviewed medical records at 2 hospitals in each of five cities—Boston, Chicago, Los Angeles, New York, and San Antonio. Mostly located in the inner city, 8 of these hospitals serve a high proportion of low-income patients likely to need federal assistance and supportive services. The remaining 2 hospitals did not serve a high proportion of low-income patients, but received referrals from other hospitals in their respective cities of potentially complicated births, including drug-using pregnant women. Our review of medical records at the 10 hospitals (2 hospitals in each of these cities) covered a representative sample of 44,655 births in 1989.

Hospital Selection Criteria

Our hospital selections were based on a high incidence of births per year and the availability of a neonatal intensive care unit in addition to location and numbers of Medicaid patients. Table VI.1 compares the number of births at the hospitals we selected with other hospitals in the five cities, and table VI.2 provides patient profile information for the selected hospitals.

Table VI.1: Comparison of Births at Hospitals in GAO Study With Total Births in the Respective Cities, 1988

	All hospitals		Hospitals in GAO study	
City	No. of hospitals with bassinets	No. of births	No. of births	Percent of all births in city
Boston	5	19,500	4,969	25.5
Chicago	30	49,168	7,200	15.7
Los Angeles	27	81,379	15,231	19.9
New York	41	119,320	6,432	5.4
San Antonio	10	22,061	9,331	42.3

Table VI.2: Profile of Patients at Selected Hospitals

	Race			Insurance status	
City/Hospital	Black	Hispanic	White	Medicaid	Private
Boston					
1	20.9	5.5	67.3	34.0	59.9
2	64.6	18.7	12.1	51.4	13.0
Chicago					
1	57.0	34.1	7.8	75.0	15.9
2	18.7	4.7	70.7	15.8	83.3
Los Angeles					
1	19.8	79.1	0.5	74.9	1.8
2	4.3	83.2	9.0	88.6	1.3
New York					
1	31.8	56.7	8.4	63.9	29.3
2	30.8	59.9	5.0	70.8	12.9
San Antonio					
1	5.5	80.2	13.6	46.1	8.7
2	7.5	84.5	7.7	64.2	32.0

At these hospitals we conducted a detailed review of a random sample of medical records of mothers and their infants who were born between January 1 and June 30, 1989, to estimate the number of drug-exposed infants.[1] We considered an infant to be drug-exposed if any of the following conditions were documented in the medical record of the infant or mother: (1) mother self-reported drug use during pregnancy, (2) urine toxicology results for mother or infant were positive for drug use, (3) infant diagnosed as having drug withdrawal symptoms, or (4) mother was diagnosed as drug dependent. We also interviewed hospital personnel to obtain their procedures for identifying drug-exposed infants.

To assess the medical and social impact of these births, we interviewed hospital, state, and local social services representatives regarding the impact of drug-exposed infants on the medical and social services systems. In our discussions with these officials we also determined the extent to which drug-addicted pregnant women are receiving drug treatment.

[1]At each of 9 hospitals, we randomly selected 400 mothers' medical records and the corresponding medical records for their infants. At the 9 hospitals the percentage of medical records unavailable for review ranged from less than 1 to 7 percent. At the tenth hospital, we did not review medical records but received a data tape with information on all births occurring during the first 5 months of 1989.

We also interviewed officials at 10 additional hospitals in these cities to determine the extent of drug-exposed infants at these hospitals. These hospitals serve predominantly private-pay clientele. We did not review medical records to determine the extent of drug-exposed infants at these hospitals.

To gain further insight as to the consequences of maternal drug use, we interviewed leading drug treatment experts, neonatologists, researchers, social welfare officials, and drug-addicted pregnant women. We also reviewed research conducted to determine the incidence of drug-exposed infants and the effects of drugs on the health of mothers and infants.

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