
POLICY INTERVENTIONS FOR PREVENTION

POLICY INTERVENTIONS FOR PRIMARY PREVENTION

Primary prevention focuses on informing women of childbearing age about the dangers of prenatal cocaine exposure and educating them to abstain from cocaine use during pregnancy or to avoid pregnancy during substance use. A cocaine-exposed infant may look normal at birth, but data from several preclinical and clinical studies indicate that he or she may have experienced neurological damage that will have adverse effects later in life.

Effects of Prenatal Cocaine Exposure

The effects of prenatal cocaine exposure are the subject of a number of ongoing studies; interim results from several such studies were presented at the NYAS conference. In the Maternal Health Practices and Child Development Project, Richardson (1998) found a subtle pattern of central-nervous-system effects related to cocaine in the children of a group of 271 women who used cocaine during pregnancy. Children at age 3 who had been exposed to cocaine during the first trimester of pregnancy had smaller head circumferences and lower scores on standardized IQ tests, were fussier, and exhibited more difficult behavior than children not exposed to cocaine. Such effects were more difficult to detect at ages younger than 3.

Similarly, Mayes et al. (1998) performed a longitudinal study of 377 infants prenatally exposed to cocaine. They examined the neurophysiological and emotional reactions of the children to a series of

“novel stimuli” at 12, 18, and 54 months and concluded that the prenatally exposed children demonstrated significantly greater behavioral/performance disruptions than did children who had not been exposed to cocaine. These responses were described as “overarousal” or “overstimulation” and were incongruent with the orientation-focused attention required by the novel stimuli; such abnormalities are thought to impede learning and memory formation.

In a longitudinal, prospective study, Chasnoff et al. (1998) examined outcomes for 95 4- to 6-year-old children who had experienced prenatal cocaine exposure and 75 matched, nonexposed children. The mothers of the exposed children were all heavy cocaine users who had received comprehensive prenatal care and voluntarily enrolled in an intensive treatment program; most of them also used other substances such as alcohol, tobacco, and marijuana. Prenatal cocaine exposure did not have a direct effect on the cognitive abilities of the children; however, the exposure affected their behavioral characteristics at 4 to 6 years of age. A significant number of the exposed children showed measurably elevated levels of aggression, delinquent behavior, attention problems, and social difficulties.

Educating Cocaine Users About the Dangers of Prenatal Cocaine Exposure

Although these studies are preliminary and ongoing, they strongly indicate that prenatal cocaine exposure can adversely affect the developing fetus. The effects of cocaine exposure appear to be persistent and to have an adverse impact on the child’s ability to acquire knowledge and to adapt. It is therefore important that women who are pregnant or at risk of pregnancy be educated about the potential danger to the fetus from all forms and levels of exposure to cocaine and other harmful substances, including alcohol and cigarettes.

POLICY INTERVENTIONS FOR SECONDARY PREVENTION

Secondary prevention focuses primarily on health-care providers and is concerned with identifying pregnant drug users and minimizing their use of drugs through educational, treatment, research, and regulatory interventions. Social science research, along with data

from preclinical and clinical investigations, supports such interventions.

Relatively little attention has been paid to early detection of substance use during pregnancy (Zellman et al., 1992, 1997). Many pregnant women receive little or inadequate prenatal care, and many physicians are ill prepared to identify substance abuse in pregnant women or to refer them to treatment. Consequently, the majority of prenatal substance exposure cases are identified only at the time of birth, when the mother or neonate presents with signs or symptoms consistent with drug use.

Response by health-care providers to identification of drug use during pregnancy varies considerably across the states and is affected by a number of factors, including whether specific legislation exists, whether exposure is covered under child-abuse-reporting mandates, whether a public-health model (e.g., education, treatment, counseling) or a punitive model (criminal sanctions against the mother) is followed, and the specific role played by physicians in addressing substance use by pregnant patients (Chavkin et al., 1998a, 1998b; Zellman et al., 1997). As of 1997, of the 50 states and the District of Columbia, 20 had taken no specific legal action regarding prenatal substance exposure; another 20 mandated or supported less-punitive responses such as counseling or toxicology screens during pregnancy by providers or facilities; and the remaining 11 mandated child-abuse reporting when a child-serving professional suspects exposure (Zellman et al., 1997).

Women may be particularly motivated to change their behavior during pregnancy, which makes public-health-oriented, prebirth interventions such as detection and education by health-care providers an attractive approach. The effectiveness of health-care providers in reducing substance abuse during pregnancy is supported by limited research indicating that, for example, physicians' advice regarding smoking cessation during pregnancy is often effective (Ockene, 1987; Pederson, 1982).

Training Health-Care Providers to Detect Substance Use

A fundamental component of prebirth intervention is substance-use detection by health-care providers. Zellman et al. have investigated

the health-care system's response to prenatal substance exposure in a legislative context (Zellman, 1997; Zellman and Bell, 1990; Zellman et al., 1992, 1993, 1997). In 1995, they mailed surveys nationwide to 3,200 practicing physicians whose primary specialty was identified as obstetrics or pediatrics in the AMA Masterfile of Physicians, which lists all physicians by primary practice specialty. Twenty-one percent of the sampled obstetricians and pediatricians indicated that they were not currently delivering infants or examining newborns less than 24 hours of age; these physicians were excluded from the study. The response rate among the remaining physicians was 63 percent. The results of the survey include the following:

- 27 percent of the respondents reported never suspecting prenatal substance exposure.
- More than 70 percent reported suspecting prenatal substance exposure at some time and taking action themselves or initiating an action through another person. Their actions included performing urine toxicology screens, taking a substance-abuse history, discussing treatment options with the mother, discussing their concern with the mother's primary-care physician, and reporting the mother to a social worker at the hospital.
- Among the physicians who reported having suspected prenatal substance exposure at some time, 82 percent said that they always responded to their suspicion in some way. The remainder did not consistently respond to their suspicion, giving a lack of sufficient evidence that substance abuse had occurred as the most common reason for not responding.
- 80 percent of the obstetricians reported that they had delivered at least one baby who turned out to have been exposed during pregnancy, although the physicians had not suspected exposure.

The obstetricians and pediatricians who suspected prenatal substance exposure at some time and those who never suspected it could be easily distinguished by the amount of formal training in prenatal exposure they had received and their confidence in their ability to manage substance-using women during pregnancy or substance-exposed infants (Zellman et al., 1997).

These findings suggest that levels of vigilance and response could be increased by providing more training to physicians; more training would also make physicians more confident in their ability to identify the problem and respond to it.

Educating Health-Care Providers About the Importance of Prenatal-Substance-Use Policies

In their survey of obstetricians and pediatricians, Zellman et al. (1997) also investigated the physicians' awareness of workplace protocols and state reporting requirements regarding prenatal substance exposure. They found that

- 51 percent of the eligible physicians in the survey reported that there is a protocol governing prenatal substance exposure in the hospital where they perform the most deliveries or see the most newborns.
- Just over one-fourth (27 percent) reported that there is no protocol at their hospital, and, notably, one-fifth (21 percent) did not know whether such a protocol exists in their hospital.

The investigators also provided the physicians with a list of maternal and neonatal signs and symptoms and asked them about their knowledge of state mandates: "Are MDs in your state legally obligated to make a child maltreatment report when their suspicions of prenatal substance exposure are based on [insert sign or symptom]?" They found that

- More than 40 percent of all respondents did not know whether a child-maltreatment report was necessary under their state's law in response to the given set of signs and symptoms.

This lack of knowledge among two-fifths of the physicians surveyed about institutional and legal requirements is important given the researchers' findings that physician awareness is associated with the propensity to report exposure. That is, knowledge of the existence of hospital protocols on maternal substance use or prenatal substance exposure was associated with a greater likelihood of physician response when they suspected exposure. Among physicians who reported some knowledge of their state's reporting requirements, those

residing in mandatory-reporting states were the most likely to believe that suspicion of exposure requires a report of child maltreatment (Zellman et al., 1997).

Frequently, the message that laws and policies governing prenatal substance exposure exist does not reach physicians, who are in the best position to detect and respond to exposure (Zellman et al., 1997). However, research indicates that laws and policies can influence physician behavior when the physicians receive the message and when the mandated response is clear (e.g., the requirement of a child-maltreatment report) (Zellman et al., 1997).

Involving Health-Care Providers in Designing Hospital Protocols

Most legislative approaches that address prenatal substance exposure rely heavily on physicians to detect substance use and take action (Zellman et al., 1997). Physicians' ability to do so, however, is constrained by several factors. Many physicians surveyed by Zellman et al. described concerns about disruption in care as an important reason for deciding not to act on suspicion of prenatal substance exposure. The reporting systems also add to physicians' work and costs by requiring additional time. The child-abuse-reporting literature suggests that the costs are often perceived to outweigh the benefits, and consequently, compliance rates are low (Zellman and Bell, 1990).

Hospital protocols requiring reporting of suspected substance abuse can be made more effective by involving physicians in developing and implementing them and by ensuring that physicians' ethical and professional concerns are addressed. In addition, policies aimed at physician behavior can be complemented by the assignment of certain responsibilities to the hospital where care is administered. Finally, medical personnel other than physicians can also play an important role in detection and referral and should be included in the process of developing or implementing protocols. Nurses, in particular, are well positioned to alert physicians to a mother's or neonate's presenting symptoms.

Providing Incentives to Hospitals to Design Reporting Protocols

Zellman et al. (1997) showed that physicians are more likely to respond to their suspicions of maternal substance use when they believe that their hospital has a protocol for responding to prenatal substance exposure. State legislators should establish direct incentives for hospitals to implement protocols requiring substance-use screening of all women in a routine and nonstigmatizing fashion.

Avoiding Penalties for Mothers of Prenatally Exposed Children

Although the dilemma of balancing the welfare of the child with the rights and responsibilities of the mother is far from resolved, punitive legislation is a prominent component of the U.S. response to the public-health threat of prenatal substance exposure. The number of states in which cocaine-using mothers were criminally prosecuted increased from 22 to 34 between 1992 to 1995 (Chavkin et al., 1998a). Policies that punish substance-using women typically do not provide them with treatment options (Chavkin et al., 1998b). Citing a lack of evidence that punitive approaches are effective, a consensus panel on pregnant substance-using women, organized by the Center for Substance Abuse Treatment, advised against the criminal prosecution of these women (Center for Substance Abuse Treatment, 1993b). From a public-health perspective, criminal prosecution does not protect the health of the woman or that of the fetus and plays no role in secondary-prevention strategies. Substance-abuse detection and reporting policies should be aimed at providing counseling, education, and treatment, not punishment or stigmatization of the woman.

POLICY INTERVENTIONS FOR TERTIARY PREVENTION

Tertiary prevention consists of steps taken to reduce the adverse outcomes of cocaine exposure in infants and children. Ameliorating any damage and promoting a healthy home environment are critical for prenatally exposed infants. New insights gained through research into cocaine's action on the brain not only make it possible to intervene more effectively on behalf of at-risk children but can also be used to strengthen support for prevention strategies that, from a

public-health perspective, are in the best interests of both the child and society.

Neonatal outcomes associated with prenatal cocaine exposure include reduced fetal growth (e.g., low birth weight, intrauterine growth retardation, and small head size), decreases in IQ levels,¹ and the development of neurobehavioral symptoms, such as problems in regulating excitability and attention. Cocaine appears to alter fetal brain development and to be associated with lasting changes in brain structure and function that have subtle but important implications for learning and behavior in some exposed individuals. A pivotal conclusion emerging from the NYAS conference is that as some of the prenatally exposed children enter school, they experience difficulty in regulating behaviors (e.g., attention and impulsiveness) that are critical to their academic success, and this bodes poorly for adaptability and functioning in later life.

There are, however, many critical gaps in our knowledge of the effects of prenatal cocaine exposure. For example, the long-term effects of prenatal substance exposure are poorly understood. While some neurological and cognitive effects may be self-limiting and may resolve by childhood, there is strong evidence for a lasting problem of inattention (Chiriboga, 1998). However, some of the cognitive deficits may be associated with only the highest cocaine exposures, which result in a reduction in brain growth and smaller head size. More research is needed to develop greater understanding of the long-term effects (direct and indirect) of prenatal substance exposure; such research would provide the foundation for identification and intervention to help children who are at risk.

¹The implications of even small shifts in IQ scores are significant (Lester, 1998). A shift of five points, for example, results in very little change in the largest area under the bell curve depicting the normal distribution of IQ scores, where most of the population lies. However, in the tails, where extreme IQ scores lie, a five-point shift would result in a loss of two-thirds of the people who are in the highest IQ bracket and would triple the number of people with very low IQs.