Development of infants and toddlers exposed to cocaine

Cynthia Denson

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DEVELOPMENT OF INFANTS AND TODDLERS EXPOSED TO COCAINE

by

Cynthia Denson

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Sister Jeanne Marie Kuehler
(Advisor)
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To my husband, Ralph, and to my children Brittany, Carissa and Jed. You are the wind beneath my wings.
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CHAPTER I
Introduction

Infants of maternal cocaine abuse are at high risk for developmental problems. Most infants and children show symptoms of withdrawal after prenatal exposure to cocaine. Such withdrawal symptoms show direct physical effects on the infants. Due to their heightened irritability when they experience subacute withdrawal problems, infants exposed to cocaine are probably difficult to care for, and thus are also "at risk" for poor or suboptimal parenting. In addition, the capacities for caretaking by the parents are often in doubt, because of their difficulties in structuring their lives (e.g. keeping appointments for prenatal care or methadone maintenance programs) and other social problems regarding financial difficulties, housing or legal problems.

These biological as well as social risk factors make it very likely that children exposed to cocaine will show developmental problems. With the growing numbers of these unique children, people are wondering how to support and educate these children in different treatment programs.
Scientists are just beginning to explore how various drugs may affect the development of physical coordination, language, and emotional interactions. Health agencies through their clinical, epidemiological and basic research programs are increasing knowledge of immediate and long-term effects of drug use during pregnancy.

Purpose of the Study

Special education teachers are facing the challenge of educating children exposed to cocaine. The purpose of this study was threefold: (1) to appraise the ability of special educators to identify potential problem areas for children exposed to cocaine; (2) to research techniques for facilitating the educational development of these unique individuals; and (3) to furnish teachers with informational tools to assist in developing appropriate programs.

The research conducted in this study investigated, evaluated, and recommended sources of informational tools for special education teachers. By using this study as a guide, teachers will have a concise outline of practical and factual information about programming for cocaine exposed children.
Scope and Limitation

This study covered the medical, social, psychological and educational aspects of children exposed to cocaine. The current issues of educating, early intervention and programs now in use nationwide for these medically fragile infants and toddlers were discussed. Indicators of cocaine symptoms and effects were also addressed.

As maternal cocaine abuse is a relatively recent concern, the information was limited to the last five years.

Definitions

For ease of understanding, the following terms have been defined:

1. Abruptio-placentae: early separation of the placenta from the wall of the uterus which results in severe hemorrhage that causes maternal and fetal mortality.
2. Amniotic fluid: a liquid produced by the fetal membranes and the fetus; supplies a sort of water bath for the free movements of the fetus inside the womb.
3. Apnea: an absence of spontaneous respiration.
4. Cocaine: a tropane alkaloid that is derived from the leaves of Erythoxylan cocoa plant; a very
strong stimulant drug to the central nervous system, including the brain.

6. Crack: the street name given to one form of freebase cocaine that comes in the form of small lumps or shavings. The term "crack" refers to the crackling sound made when the mixture is heated.

7. Encephalocele: protrusion of the brain through a congenital defect in the skull; hernia of the brain.

8. First trimester: includes the time from the first day of the last menstrual period for the end of 12 weeks.

9. Freebase: a form of cocaine that is smoked.

10. Hypertonia: abnormally increased muscle tone or strength.

11. Hypoxemia: an abnormal deficiency of oxygen in the arterial blood.

12. Infarction: a portion of body tissue that is dying because blood supply to it has been cut off.

13. Intrauterine growth retardation: an abnormal process in which the development and maturation of the fetus is impeded or fetal malnutrition is caused by placental insufficiency.
15. Medically fragile babies: including babies born prematurely, drug or alcohol addicted or suffering any serious diseases, low birth weight babies with developmental delays.
16. Moro reaction: a normal mass reflex in a young infant elicited by a sudden loud noise, such as by striking the table next to the child resulting in flexion of the legs, an embracing posture of the arms, and usually a brief cry; also called startle reflex.
17. Neonate: a newborn or an infant less than a month old.
18. Norepinephrine: one of the chemicals in the central nervous system that mediate a host of physiologic and metabolic responses that follow the stimulation of the sympathetic nerve.
20. Placenta: a highly vascular fetal organ through which the fetus absorbs oxygen, nutrients, and other substances and excretes carbon dioxide and other wastes.
21. Postpartum: after childbirth typically from 3 days to 6 weeks.

22. Second trimester: closer to four months in length than 3, extends from the 12th to the 28th week of gestation.

Summary

With drug addiction and abuse on the rise in the United States, the incidence of its disturbing effects are also increased. Cocaine exposed children are of particular concern to health professionals, special educators, social workers, and policy makers as they are confronted with these problematic children without preparation to deal with the complexity of their difficulties. Due to the lack of readily accessible and organized information, a guide for teachers of cocaine exposed children is needed.

The purpose of this research was to identify the developmental program these children present; to investigate the techniques for educating them; and to provide a guide for teaching them.
CHAPTER 2
What is Cocaine?

Cocaine is a tropane alkaloid that is derived from the leaves of the erythoxylan cocoa plant found on the mountain slopes of Central and South America.

Research has shown that cocaine acts directly on what has been called the "pleasure centers" in the brain. These "pleasure centers" are brain structures that when stimulated, produce an intense desire to experience the pleasure effects again and again. Therefore, any use can lead to addiction (U.S. Department of Health & Human Services, 1988, p. 8).

"Freebase" is a form of cocaine that is smoked. Freebasing is extremely dangerous. The cocaine reaches the brain within seconds, resulting in a sudden and intense high. However, the euphoria quickly disappears leaving the user with an enormous craving to freebase again and again. The user usually increases the dose and the frequency to satisfy this craving, resulting in addiction and physical debilitation (National Institute on Drug Abuse, 1986, p. 4).

"Crack" is the street name given to one form of freebase cocaine that comes in the form of small lumps or shavings. The term "crack" refers to the crackling sound made when the mixture is smoked. Crack has
become a major problem in many American cities because it is cheap; selling for between five and ten dollars for one or two doses, and easily transportable, sold in small vials, folding paper or tinfoil (U.S. Department of Health & Human Services, 1988, p. 8).

Cocaine use by women is increasing, and many women receive cocaine as a gift from men. The extent of cocaine use during pregnancy is difficult to estimate. Cocaine use, especially crack, has recently escalated. A study conducted at Boston City Hospital between 1984 and 1988 showed that 18% of the women who delivered there had used cocaine at least once during their pregnancy (Zuckerman, Amaro, & Cabral, 1989).

It is hard to understand why women use harmful substances during their pregnancy and place their unborn children "at risk" for permanent damage.

National drug surveys project that 15% of women of child bearing age in the United States use illegal drugs including cocaine. Applying this to Wisconsin, it is estimated that 145,000 women of child-bearing age in Wisconsin, use illegal drugs including cocaine. National surveys estimate that as high as 11% of women use cocaine during pregnancy. It is estimated that 7,900 Wisconsin women use illegal drugs during pregnancy. Studies at Milwaukee's Sinai-Samaritan
Medical Center indicate that 15-18% of mothers delivering babies at that institution used drugs during pregnancy (Wisconsin Department of Health & Social Services, June 1991).

Uterine and Intrauterine Effects of Cocaine
Cocaine causes a generalized vasoconstriction because of norepinephrine build-up. Vasoconstriction also occurs in the placenta and the uterine bed resulting in decreased blood flow and diminished gas exchange. The higher norepinephrine levels increase uterine contractability. The increased maternal level of circulating norepinephrine crosses the placenta and causes vasoconstriction in the fetus, which results in fetal tachycardia.

Research studies indicate that cocaine use in pregnancy results in more frequent contractions, fetal activity, and frequency of spontaneous abortions, premature labor, and abruptio placentae. Many women who used cocaine during pregnancy in these studies reported feeling contractions and more fetal activity within minutes of using cocaine. Abruptio placentae may occur because of the hypertensive and vasoconstrictive effect of cocaine, which causes disruption in the placental adherence to the uterine wall. These published reports and the frequent
Clinical experience of cocaine-induced abruptio placentae have led some medical centers to routinely screen the uterine of women who have had an abruption and their fetuses for cocaine metabolites.

Two studies used a pregnant ewe and her fetus as a model for testing the effects of cocaine. Woods et al. (1987) found that cocaine given parenterally (not in or through the digestive system) produced a dose-dependent rise in maternal blood pressure with a dose-dependent fall in uterine blood flow. They also found that maternal cocaine administration affected the fetus in one or both of the following ways. First, the vasoconstriction caused by norepinephrine reduced oxygen delivery to the fetus. The resultant hypoxia stimulated the release of catecholamines. Elevated catecholamine levels increased oxygen demands of the tissue and led to a cycle of decreasing fetal oxygenation. Second, the drug affected the fetus by direct diffusion of cocaine across the placenta. The cocaine in the fetus also caused a rise in circulating norepinephrine, which led to fetal vasoconstriction and an exaggerated fetal cardiovascular response to hypoxemia.

A second study using the pregnant ewe and fetus showed similar responses. Moore et al. (1986)
demonstrated that the usual doses of cocaine exerted a negative effect on uterine blood flow, which lasted for about 20 minutes after parenteral administration. They also found that cocaine passed into the fetal circulation, reaching levels about one-eighth those seen in the mother.

In the intrapartum period, fetal monitoring showed that the fetus exposed to cocaine has multiple variable decelerations and a baseline heart rate of 180-200 beats per minutes. Fetal intolerance to labor and meconium staining of the amniotic fluid has been reported in the literature. Chasnoff et al. (1987) found that and also reported a greater frequency of precipitous labor.

In addition to these uterine effects, cocaine use in early pregnancy have teratogenic effects. Bingol et al. (1987) found that cocaine used early in gestation resulted in a greater incidence of fetal skull abnormalities e.g., encephalocele, exencephalia, and parietal bone defects. They also reported that fetuses exposed to cocaine had lower birth weights, shorter lengths, and smaller head circumferences than expected for their gestational ages. Chasnoff et al. (1988) reported the occurrence of prune-belly syndrome in an infant whose mother consumed a large dose of cocaine at
five weeks gestation. In another study, Chasnoff et al. (1989) reported a slightly increased incidence of genitourinary tract malformations in infants whose mothers consumed cocaine. This is consistent with the fact that the urogenital system forms in humans at five weeks gestation, and a large dose of a teratogenic substance could interfere with development. An excessive incidence of cryptorchidism, excencephaly, eye malformations, hydronephrosis, and skeletal defects occurred in the fetuses of gravid mice that were administered cocaine on any of days 7 to 11 of gestation. Many health centers and clinics now advocate the routine screening of neonates exposed to cocaine during pregnancy for genitourinary anomalies.

**Neonatal Manifestations of Maternal Cocaine Use**

It is very difficult to study the specific effects of maternal cocaine use on the neonate because other determinants such as socioeconomic factors and the concomitant use of other drugs, may play a role. Madden et al. (1986) revealed from their study maternal cocaine use and neonatal withdrawal symptoms. One of eight neonates exposed to cocaine in utero manifested symptoms of classic neonatal drug withdrawal. They also reported that one neonate was noted to be floppy, one neonate required gavage feedings, one neonate was
premature, and two neonates were considered small for their gestational ages. Although the study sample was small, the results showed that six of the eight neonates demonstrated problems after intrauterine cocaine exposure. These and subsequent researchers found that infants exposed to cocaine in utero did not display the withdrawal symptoms more commonly seen in infants exposed to narcotics or other street drugs.

Oro & Dixon (1987) reported that infants exposed to cocaine in utero exhibited significant neurologic and physiologic alterations associated with abnormal sleep patterns, tremors, poor feeding, hypertonia, poor visual processing of faces and objects, long periods of dull alert periods, and decreased spontaneous activity. Other researchers report that, despite discontinuation of cocaine in the first trimester of pregnancy, the newborn may exhibit impaired organizational ability, orientation and state control.

The neurobehavioral symptoms exhibited by cocaine-exposed neonates were confirmed by electroencephalographic (EEG) testing. The EEGs normalized by 3 to 12 months of age. The EEG abnormalities could not be predicted based on the clinical neurologic dysfunctions or the perinatal variables. The neurobehavioral symptoms of increased tremulousness,
more startle responses, and deficient interactive behavior and state control were found to be due to a direct neurotoxic effect rather than to withdrawal from cocaine. Currently, it is unknown whether these effects are permanent or transient. These results of study were based on the fact that the clinical signs disappeared as the cocaine metabolites disappeared from the neonates' urine. (Ostrea et al., 1989).

Cocaine exposure can also occur in neonates after delivery. A report of a two-week-old neonate who ingested cocaine via mother's breast milk was reported in 1987 (Chasnoff, 1987, p. 837). The neonate was brought to the hospital because of increasing irritability. On physical examination, the neonate demonstrated tachycardia, tachypnea, and neurobehavioral symptoms, such as high pitched cry, dilated pupils, an increased sucking reflex, a hyperactive Moro reaction, tremulous extremities, and a marked lability of mood. Twenty-four hours after discontinuation of the contaminated breast milk, the neonate began to show improvement. The irritability and tremulousness persisted for about 48 hours, and the cocaine metabolites persisted in the urine for at least 60 hours after ingestion. It was reasonable to assume that cocaine could pass into human milk because it is
highly lipid soluble. In this case cocaine metabolites remained in the breast milk for as long as 36 hours after maternal cocaine use.

Maternal cocaine use has been associated with a lower gestational age at delivery, an increase in pre-term labor and delivery of small for gestational age neonates. One study showed that a higher incidence of meconium staining occurred in cocaine-exposed infants. In the same study (Bauchner et al., 1988), 10 of 66 infants exposed to cocaine died of sudden infant death syndrome (SIDS), and five infants had episodes of prolonged apnea requiring resuscitation and hospitalization. Chasnoff et al. (1989) also found that intrauterine exposure to cocaine was associated with a 15% incidence of SIDS, as opposed to a 4% incidence of SIDS after prenatal exposure to opiates and a 0.27% incidence of SIDS in term infants.

Newer studies link other neonatal effects with maternal cocaine use. For instance, one case study reported the presence of hyperplastic primary vitreous in one eye and retinopathy of prematurity-like changes in the other eye in a term neonate exposed to cocaine in utero. The vasoconstriction related to cocaine may have resulted in vasoconstriction of the developing retinal vessels.
Rare but serious congenital abnormalities such as urogenital anomalies (Chavez, Mulinare, & Cordero, 1989; Hoyme et al., 1990), have been reported. Decreased uterine blood flow may have disrupted existing structures or alter morphogenesis of developing structures. Structural abnormalities have also resulted from placental emboli that interrupt the blood flow to distal structures. The population based case control study (Chavez et al., 1989) was limited by the small number (three) of urinary tract abnormalities in the cocaine-exposed group. Furthermore, the findings may have been influenced by exposure recall bias, especially since the exposure was illegal. Zuckerman et al. (1989a) have reported on the significant number of missed exposures when relying only on self report. Misclassifying exposed infants without abnormalities into the nonexposed group falsely elevated the incidence in the exposed group. Infrequently occurring birth defects on the bowel, heart and skeletal systems were unlikely to be proven in epidemiologic studies unless a large number of subjects were being studied. While some studies (Zuckerman et al., 1989b), have not shown cocaine to be independently associated with congenital abnormalities, was strongly implicated because the defects detected
can be the result of vasoconstriction, an effect of cocaine. Thus, while not proven, these conclusions were biologically plausible.

In a study of cocaine-exposed infants, 16 were reported to have seizures in the neonatal period (Kramer, Locke, Ogunyemi, & Nelson, 1990). A local seizure was described in one infant with an infarct on CT scan. Six patients continued to have seizures after six months of age. Another study reported EEG changes at one month of age in a small group of cocaine-exposed infants, which returned to normal by six months of age (Doberczak, Shanzer, Sennie, & Kendall, 1988). Although seizures have not been commonly reported, cocaine exposure can certainly be considered a potential contributing factor for some infants who may have another predisposition to seizure.

While there has been one case report of a significant cerebral infarction associated with prenatal cocaine exposure, a more systematic study reported that 35% of stimulant cocaine, methamphetamine-exposed asymptomatic infants undergoing cranial ultrasound in the first three days of life showed either echodensities which were small hemorrhages, or echolucencies, which are cysts that was resolution of a hemorrhage, indicating evidence of a
central nervous system vascular injury (Dixon & Begar, 1989). This rate of EEG findings was comparable to that of ill term infants and much greater than in healthy term newborns.

The distribution of lesions (wounds or injuries) in cocaine-exposed newborns included the basal ganglia, frontal lobe and the posterior fossa, and were different than the lesion distribution seen among the ill infants. This suggested that a different mechanism and outcome. The distribution of these lesions were likely due to vessels that were muscularized early in gestation, thereby being more vulnerable to the vasoactive effects of cocaine. A possible mechanism included vasoconstriction, leading to anoxia causing small hemorrhages that resulted in cyst formation.

Potential impairments among cocaine-exposed newborns may be frontal lobe dysfunction such as higher level cognitive functions, perceptual motor functions and disturbance of affective states. Impairments may be different from those shown for premature or asphyxiated infants. However, it is more important to emphasize that the clinical significance of these lesions was not known even though their existence warranted further investigation and follow-up.
The presence of abnormal dilation of iris blood vessels in cocaine-exposed infants compared to nonexposed infant has been reported (Isenberg, Spierer, & Inkelis, 1987). Similar changes in iris blood vessels have been reported in infants of diabetic mothers (Ricci & Molle, 1987), and may be a marker of intrauterine stress perhaps vasomotor in origin. The vascular abnormalities regressed with time and had no long-term effect.

An ototoxic effect of prenatal cocaine exposure has been suggested (Shih, Cone-Wesson, & Reddix, 1988). Auditory Brainstem Responses (ABRs) in neonates exposed to cocaine showed prolonged interpeak latencies and prolonged absolute latencies which indicated neurologic impairment or dysfunction in the auditory system. Another study (Salamy, Eldredge, Anderson, & Bull, 1990) also showed delayed auditory brain stem transmission time in cocaine-exposed newborns, which reverted to normal three to six months postpartum.

Characteristics of Infants Exposed to Cocaine

Over the past five years it has been evident that children affected by maternal drug use prenatally show great individual variations in the extent and severity of malformations and impairments. Infants born to crack mothers exhibit an altered pattern of growth and
morphogenesis that includes prenatal and post-natal growth deficiencies (Hadeed & Siegel, 1989).

In some cases the diagnosis of "crack babies" can be made in the neonate. In others, one or two years will pass before post-natal growth retardation and developmental or intellectual deficits are recognized. The characteristic facial dysmorphology is more easily recognized after the newborn period. In severe cases, dysmorphic features in the newborn are sufficiently clear to be identified but diagnosis is not clear when cases are mild.

As shown in Table I, the characteristics that may be present in an infant exposed to drugs at birth go beyond facial features (See Table 1). These characteristics may include growth retardation, limb malformations, internal organ irregularities, as well as functional abnormalities.
Table 1

Abnormalities and Characteristics: Clinical Features of "Crack Babies"

<table>
<thead>
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<th>Infant Status at Birth</th>
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<tr>
<td>1. Apgar score, indicating possible asphyxia in utero</td>
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<tr>
<td>2. Infant small for gestational age (SGA)</td>
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<tr>
<td>3. Premature birth</td>
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<tr>
<td>4. Cardiovascular disorders</td>
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Gastrointestinal

1. Low birth weight, with difficulty gaining weight
2. Poor feeding resulting from uncoordinated sucking and swallowing
3. Vomiting or regurgitation after feeding caused by hyperactivity; overfeeding from constant need for sucking
4. Diarrhea caused by gastrointestinal hyperactivity

Integumentary

1. Redness; abration marks on knees, elbows or face caused by constant restlessness, kicking and hyperactive movements associates with rubbing against sheets or clothing
2. Slight to excessive sweating and flushed appearance.

Neurologic
1. Restlessness, irritability, hyperactivity from drug effect on central nervous system functioning
2. Hypertonicity, hyperactive reflexes, hyperflexic extremities, kicking at times when mother would be due for drugs.
3. Shrill, high-pitched cry; yawning; inability to sleep; reluctance to be cuddled or held
4. Seizures

Pulmonary
1. Excessive mucus, stuffy nose, sneezing
2. Tachynea, chest retractions
3. Periods of apnea

Cardiovascular
1. Tachycardia

Skull and Facial Deformities
1. Small head circumferences compared to rest of body (associated with mental retardation)
2. Eye abnormalities; an abnormal dilation of iris blood vessels
3. Cleft palate
Joint and Limb Malformations
1. Toe and finger irregularities
2. Dislocated hips
3. Abnormal creases of the arms, legs and abdomen

Urogenital Anomalies
1. Single kidney
2. Collection of urine in the kidney pelvis due to obstructed outflow
3. Defective development of kidneys
4. Abnormal external genitalia
5. Bowel and bladder incontinence


Functional Abnormalities of a Toddler
1. Delayed speech and language development
2. Mental retardation
3. Poor gross motor coordination
4. Poor fine motor coordination
5. Learning disabilities
6. Hyperactivity
7. Hypertonicity
8. Decreased attention span
9. Failure to thrive
10. Central nervous system vascular injury
11. Neural tube defects
Children exposed to cocaine and other drugs are also infected by sexually transmitted diseases, human immunodeficiency virus (HIV) and TORCH infections (Wong & Whaley, 1990).

Cocaine-exposed children may vary in degrees of mental retardation, behavioral problems (including hyperactivity, poor attention span, extreme nervous spams and irritability), growth retardation, and abnormalities in facial, physiological and anatomic features. These differences are found in almost half of the infants born to addicted mothers. Crack babies are short and lighter in weight then normal and didn't "catch up" after special post-natal care was provided (Department of Health and Human Services, 1989).

During the five years that researchers have been studying babies exposed to cocaine in the womb, they have described two types of behavior: the babies act very excitable and jittery, or very sluggish and depressed. Some babies act both ways. But until recently researchers have not understood the differences (Lester et al., 1991, p. 695).
Lester et al. (1991) have determined that cocaine can have two distinct effects and why. In his study, Lester looked at the crying patterns of 80 cocaine-exposed, full-term infants, and 80 controls. About one-fourth of the cocaine-exposed babies had low birth weights. The babies were part of a bigger study on cry analysis and sudden infant death syndrome conducted in nine city hospitals across the United States. Their cries were recorded for 30 seconds on the second day after they were born. He measured among other characteristics the time from stimulus to cry onset, the number and duration of cries, amplitude and different frequencies. They found that the excitable behavior, as reflected in the babies' crying patterns, results from indirect effects of cocaine on the fetus, while the depressed behavior results from indirect effects and is related to low birth weight (Lester et al., 1991, p. 695).

Whether a cocaine-exposed child is affected directly or indirectly, and to what degree, depends on the mother's usage patterns (Lester et. al., 1991, p. 696). The excitable behavior and crying may be a significant the mother hasn't had any cocaine for awhile prior to giving birth and the baby is suffering from withdrawal. If the baby has been exposed to a lot
of cocaine, it may suffer a type of seizure that causes
the excitability (Lester et al., 1991, p. 701).

Lester said his study is the only one to date to
examine the cry characteristics of cocaine-exposed
infants and the relationship between behavior and
growth retardation in this infants. He wrote that the
limitation of the study is the use of hospital records
to determine the substance abuse. The researchers did
not know the frequency and timing of the mother's
usage, which could help determine if growth retardation
was due to early and frequent cocaine use, and also the
affects of dose size (Lester et al., 1991, p. 702).

Heavy maternal cocaine use during the later months
of pregnancy can lead to an embolism, or clot, that
lodges in a fetal vessel and completely disrupts the
blood supply to an organ or limb. The result: a
shriveled arm or leg, a missing section for intestine
or kidney, or other deformities (Zuckerman et al.,

Cocaine exposure affects brain chemistry as well.
The drug alters the action of neurotransmitters, the
messengers that travel between nerve cells and help
control a person's mood and responsiveness. Such
changes may help explain the behavioral aberrations,
including impulsiveness and moodiness seen in some
cocaine-exposed children as they mature (MacGregor et al., 1987, p. 687).

Doctors at Harlem Hospital in New York studies 70 such toddlers just under age two and found that almost all were slow in learning to talk and that more than half had impaired motor and social skills. An inability to distinguish between mothers and strangers is another hallmark of crack-exposed youngsters (Tiofexis, 1991, p. 60).

As the children reach school age, it becomes more difficult to separate the impact of drugs from the effects of upbringing and other influences. Yet many teachers think they can see the lingering legacy of crack. Crack exposed youngsters have trouble retaining basic things. They are not sure of colors or shapes or their names. Some are passive and cry a lot. They can be very aggressive with the other children so that they are hard to stop (Tiofexis, 1991, p. 60).

Data is becoming available on what happens to some cocaine-exposed children at ages two and three. In a recent unpublished study comparing normal children with about 59, two and three-year-old cocaine-exposed children, Dan Griffith, a psychologist at Northwestern University Medical School and Ira Chasnoff, a pediatrician also at Northwestern found no difference
between the two groups as a whole on the Bayley Scales of Infant Development. Griffith said that about one-third of the cocaine-exposed two-year-olds had real difficulties on the items that measure beginning language development and the ability to sustain an activity in the face of distractions (p. 107). He is seeing similar results in the data for cocaine-exposed three-year-olds. The types of problems the children are having in these areas are quite varied according to him. He also said that in terms of intervention the cocaine-exposed children respond well to the same sort of help that other children would receive for similar developmental programs. In his study, the mothers of cocaine-exposed children volunteered for treatment and the infants received good pre- and post-natal care and nutrition (Griffith, 1988, p. 109).

Growth Retardation

The most common sign of children exposed to cocaine is retarded growth in weight, length and head circumference, both before birth and after (Zuckerman et al., 1989). Cocaine-exposed children are also smaller than premature non-cocaine children of the same age. Cocaine-exposed children continue to show retarded growth even if they have adequate nourishment and are placed in a stable environment. Many children
are characterized by spindly limbs and short stature besides having a disproportionately small head.

Cocaine inhibits the effective combination of protein and amino acids, and inhibits their production. There is a decrease in the amount of protein available, limiting the growth and development. Only smaller cells or fewer normal cells are produced. When the fetus is exposed to cocaine, growth retardation is caused by a lack of cells, not by cells limited in size. This reduced cells in quantity may explain why cocaine-exposed children show little gains toward normal growth standards or improvement intellectually.

In some cases, length has been observed to be more profoundly affected than weight, while others have observed that length and weight are equally diminished (Tarr & Macklin, 1987).

Low birth weight of infants born to drug dependent mothers is also an area of concern. In almost all studies of birth weight reduced weight at birth is related to the amount and dosage of cocaine consumed, and to the duration and time of exposure to cocaine. As the dosage of cocaine increases, the severity of low birth weight increases. If taking drugs continues into the third trimester, the effect of cocaine on the growth of the fetus is more likely to occur. The
effects of growth retardation may not be as severe when a reduction in the drug consumption later in pregnancy occurs. Pregnant women who are able to abstain using drug during the third trimester gave birth to infants with less growth retardation than women who did not attempt to eliminate any drug consumption during the third trimester (Miller, 1989, p. 22).

The timing and mechanism of the growth retardation can be inferred by anthropometric assessment of the newborn. The growth retardation pattern among cocaine-exposed infants is symmetrical, both the weight and length are relatively decreased, suggesting an early and/or chronic process starting early in gestation (Frank et al., 1990).

Newborns with symmetrical growth retardation from other study populations have poorer post-neonatal growth and development than infants with either asymmetrical intrauterine growth, particularly if head circumference is also depressed (Villar et al., 1984). Whether this will also be true for cocaine-exposed newborns is unknown.

Cocaine-exposed newborns have also shown both depressed fat stores and lean body mass, a pattern commonly associated with maternal malnutrition, even after nutritional markers such as maternal weight for
height at conception and pregnancy weight gain were statistically controlled (Frank et al., p. 891). This suggests that the transfer of nutrients to the fetus may be impaired due to vasoconstriction caused by cocaine. In addition, cocaine may also diminish birth weight by increasing fetal metabolism through its effect on the sympathetic nervous system.

A full-term baby usually weighs between 2,500 and 3,800 grams, or 5 1/2 - 8 1/2 pounds. A birth weight of less than 2,500 grams is considered low (Blackman, 1984). A baby may have a low birth weight because of prematurity or intrauterine growth retardation, or both. A premature (preterm) baby whose period of gestation was less than 38 weeks, is small due to incomplete development. A baby who suffered intrauterine growth retardation, on the other hand, may be small because of genetic makeup or because of an unfavorable environment in the uterus.

Babies with gestational age of less than 37 weeks are considered premature regardless of birth weight (Blackman, 1984), while the exact cause of prematurity has been associated with varied factors as maternal trauma, teen pregnancies, poor prenatal care and drug abuse.
A preterm baby may be physically normal, though immature at birth, then develop serious problems during the post-natal period. These complications may, to varying degrees, damage the brain and other tissues affecting future health and development.

Some mothers especially single parents who abuse alcohol, cocaine and other drugs have personal and family problems and lack basic skills to adequately care for their children. Some mothers who use drugs live in unstable, sometimes dangerous environments, have been sexually abused, and have partners who are users and are unable to provide consistent care for their infants. These environmental factors, in combination with the mother's addiction and the possibility of neurological and biological impairments among drug-exposed children, pose severe risks to the healthy development of the children and to their productivity as an adult.

Although cocaine-exposed and other drug abuse cuts across all income and ethnic groups, low income women and their children are particularly "at risks" because of the stresses associated with low educational levels, few job skills, and housing and financial problems.

Any complication occurring before, during, or after birth becomes a risk factor that predicts a
greater probability of developmental delays. The greater the number of abnormal medical and environmental variables existing in an infant's family history, the more likelihood there is of long-term dysfunctions (Denhoff, 1981; Murphy, 1982; Honig, 1984). Honig (1984) noted that not all risk factors develop into conditions that affect later development. There are only a few problems that by themselves or when associated with other complications will predict a higher risk factor for the future outcome of the infant. Thus several terms are used to describe the infant's current condition, depending upon the occurrence of certain factors. The exact terminology (at risk, high risk, biological risk, environmental risk) used is inconsequential compared to the overwhelming effects any combination of factors may have on the infant's developmental progress (Rostetter and Hamilton, 1982).

Murphy et al. (1982) proposed identifying infants with abnormal development within three categories (delay, disorder and deficit) that would describe various problems according to the severity level and prognosis. A developmental delay is an indication that a skill has not been achieved or mastered within the normal age range but the infant has displayed evidence
of gradual progression outward the final task. For example, a child may not have mastered walking by 17 months but all other prerequisite developmental steps (crawling, creeping, kneeling, standing) have been achieved at an equally slow pace (Frankenberg & Dodds, 1969). In other words, the rate at which skills are achieved slower than normally expected.

A disorder differs from a delay in the quality of performance that is accomplished if the skill is left unattended. Murphy et al. (1982) explained that without corrective glasses, myopic vision will always remain blurred. Corrective lenses will help the child attain normal sight. Similarly, because of a neurological impairment, a toddler may not be able to pull to stand and walk independently. With the aid of a walker or braces a whole new vista presents itself to the child.

The third category Murphy and his colleagues advocated is the developmental deficit, which implies a more permanent disability such as blindness or a congenital hearing loss. The condition cannot be corrected but as the infant grows, he or she can be taught to adjust to the disability and become more independent with the use of adapted equipment (walkers, braces, canes, etc.).
Whatever category is preferred in describing the cause for developmental problems or the functional level of the infant, therapists and special education teachers must equip themselves with the necessary skills that are uniquely special to the infant population.

Central Nervous System Abnormalities

Injury to the central nervous system is a major characteristic of children who are exposed to cocaine. This is by infants and toddlers having mental retardation, poor attention span, delayed motor development, hypertonia, hypotonia, sleep disturbances, irritability and feeding problems (Fulroth et al., 1989).

Children who are severely exposed to cocaine show less improvement in functioning than children with milder cases. These children are able to make more gain with the help of specialized training programs and/or therapy in their central nervous system functioning.

There are relatively few forms of mental deficiency that can be diagnosed prior to birth, and the mental deficiency associated with neurobehavioral syndromes in cocaine-exposed children is one of them.
Facial Anomalies

Children exposed to cocaine and other drugs have facial malformations most often seen in the eyes (Nelson et al., 1987). It also may affect the ears.

Some facial features such as strabismus has been identified as quite typical in children exposed to drugs. It is important to remember that the combination of this facial characteristic is taken into account when diagnosed. Many of the eye abnormalities and other facial characteristics that are identified in these children also occur in others who are so called normal and may be a common trait to a particular family or race. Also, these features could be the result of a genetic disorder or fetal exposure to something other than drugs.

Only external differences have been recognized up to this point. Researchers are now beginning to discover internal damage to the eyes. There is an increase tortuosity of the blood vessels in the retina at the back of the eye, diminished or underdeveloped optic nerves have been observed. Children exposed to cocaine and other drugs are more likely than other children to be diagnosed as having severe nearsightedness. More investigation into vision problems may help to further diagnose types of damage.
that occurs to the brain (Isenberg et al., 1987 p. 212).

Neurobehavioral Abnormalities

Some studies show neurobehavioral abnormalities especially in state regulation and interaction ability measured by the Brazelton Neonatal Behavioral Assessment Scale (NBAS) in infants exposed to cocaine in utero (Chasnoff et al., 1989; Chasnoff, Bussey, Savich, & Stack, 1986; Chasnoff et al., 1989a; Chasnoff et al., 1989b; Fulroth et al., 1989). Findings from these studies and clinical experience indicated that cocaine-exposed newborns tend to be poorly responsive and sleepy. When alert, they were easily overstimulated and therefore became irritable or quickly returned to sleep. Women who used cocaine in these studies tended to use other drugs. So whether the findings were due solely to cocaine or to cocaine plus other drugs was unknown.

Neonatal neurobehavioral dysfunctions put these children "at risk" for developmental problems. Because there children may be easily overstimulated, interactions were difficult and often unfulfilling. The Neonatal Behavioral Assessment Scale (NBAS) was also used to provide a framework for parents and caregivers to observe an infant's self-regulatory and self-
organizing skills, enabling the baby's signals to be read more effectively. Helping parents recognize their children's neurobehavioral strengths and weaknesses may have lessened some of the frustration of caring for a disorganized infant. Whether this disorganization persist beyond the neonatal period was as yet unknown, but one may expect that if children grow up in a disorganized home environment, their subsequent behavioral disorganization may be as much related to the post-natal environment as to the prenatal environment.

Other studies using less sensitive measures of behavior such as scoring on the neonatal abstinence scale or clinical checklist have not shown significant dysfunction in cocaine-exposed infants (Ryan et al., 1987; Hadeed & Siegal, 1989). Since the NABS was a more sensitive measure of neonatal neurobehavioral functioning, it was likely that these other reports may have missed subtle dysfunctions.

Whether alterations in behavior were due to withdrawal, to a direct effect of cocaine, or to changes in the brain's neurotransmitters was unknown. A pilot study suggested that neurotransmitters alterations were responsible (Mirochnick, Meyer, Cole, Herren, & Zuckerman, in press). Results showed that
norepinephrine precursor dihydroxyphenylalanine blood levels were increased in cocaine-exposed compared to unexposed newborns. Among the cocaine-exposed newborns, high norepinephrine concentrations were associated with poorer responsivity to auditory and visual stimuli (orientation subscale) as measured by the NBAS. However, since measurements of norepinephrine were made on blood, they did not necessarily indicate changes in the central nervous system (CNS). It was possible that neurotransmitter changes shown in this preliminary study were due entirely to chronic stress associated with cocaine-induced vasoconstriction and hypoxia in utero.

Developmental and Behavioral Outcomes

Research during the past 20 years highlighted the importance of social environment in determining developmental outcomes of biologically-vulnerable newborns.

This effect of the social environment was consistent with the transactional model of development in predicting children's development (Sameroff & Chandler, 1975). For example, among an extensively studied group of premature infants, IQ scores at seven years of age were lower among those premature infants who at one month of age were neurologically immature as
indicated by a decreased amount of EEG pattern called "trace alterance." However, among those infants with low trace alterance, responsive caretaking (measured by direct observation) resulted in IQ similar to infants who were not neurologically immature (Beckwith & Parmalee, 1986). Thus responsive caretaking appeared to be a protective factor for those premature children with biologic vulnerability.

In another study, children with equivalent levels of perinatal stress had better outcomes if their families had a high level of stability. It was only the combination of high perinatal stress and low family stability that impaired children's developmental functioning (Werner, 1989).

The importance of environment in modifying perinatal events has also been shown in studies of narcotic-exposed infants. Hans found that only when prenatal methadone exposure was combined with low social class could impaired development be demonstrated compared to a control group (Hans, 1990). The study done by Lifschitz, Wilson, O'Brien, Smith, & Desmond (1985), also showed that the quality of the post-natal environment, and not the amount of maternal opiate use, appeared to be a more important determinant of outcome among opiate-exposed infants. The transactional model
of development predicted that the biologic vulnerability created by in utero cocaine exposure can be highly modified or exacerbated by social factors. Unfortunately, drug and alcohol abusing mothers were at high risk for dysfunctional caretaking. Due to the highly addictive nature of cocaine, it was likely that cocaine addiction caused significant disturbances in mothering behavior.

Developmental disabilities in cocaine-exposed children do not depend on independent causes but rather on interacting biologic, social and cultural factors. Even when biologic etiologies appear to be of central importance, these physical causes are set in a social and cultural context and are subject to the many determinants present there (Deren, 1986).

Bijou (1983) has estimated that 80-85% of the cases of developmental disability may be termed sociocultural. What is clear is that sociocultural factors contribute significantly to developmental delay.

1. Low Birth Weight. Low birth weight is associated with low socioeconomic status as measured by social class, income and education. The single most important predictor of infant survival continues to be birth weight (Hogue, Buehler, Strauss, & Smith, 1987,
Two-thirds of infant deaths in 1980 occurred during the neonatal period. Of those, more than half occurred to infants weighing less than 1,500 grams. Those infants who comprise less than 1% of all live births, account for almost 40% of all infant deaths (Hogue, Buehler, Strauss, and Smith, 1987, p. 102).

Infants who are the products of very low socioeconomic environments are certainly at increased risk for low birth weight and the resultant complications associated with it.

2. Maternal Education. Infant mortality declines with increasing maternal education across racial groups. The relationship between socioeconomic status and educational level is a strong one and certainly must be considered a contributing factor to developmental disability (Hogue, Buehler, Strauss, & Smith, 1987).

3. Prenatal Care. The link between socioeconomic status and securing adequate prenatal care is obvious. Infants born to cocaine abuser mothers who obtained prenatal care beginning in the first trimester experienced substantially fewer complications in the neonatal period. Women of lower socioeconomic status seek less medical attention in general and seek prenatal care at a lower rate and at
less optimal time (Walsh, 1987, p. 53). More than 5% of all pregnant women receive prenatal care only in the third trimester of pregnancy or not at all, and this percentage has been increasing, rather than diminishing since 1981. The percentage of black American women is more than double than for white women (National Center for Health Statistics, 1985, p. 6).

4. Adolescent Pregnancy. The offspring of teenage mothers have long been known to be at increased risk of infant mortality and developmental pathology, largely because many weigh less than 1,500 grams due to cocaine-exposed use. Disadvantages socioeconomic groups and racial minorities are over-represented in the population of teenage mothers (Friede et al., 1987, p. 182). Overall, children of teenage mothers are more likely to be abused or neglected, to suffer injuries and hospitalization and to be in poorer physical health. These problems are due less to the mother's biologic youth than to economic adversity that is a correlate of teenage pregnancy (Loman, 1986). Burden & Klerman (1984) and Sidel (1986) concluded that most teenage mothers are single and poor, with 60% receiving welfare at some time. Education is interrupted by the pregnancy and birth, and day care is unavailable. Thus, the teenage mother remains uneducated, unskilled,
unemployed, and often unemployable. The outcome is continuing poverty. The fundamental problem of teenage mothers if that as a group they remain poor and powerless (Sidel, 1986).

5. Miscellaneous Factors. Several additional factors must be considered when viewing socioeconomic correlates for developmental disability among cocaine-exposed children. Children who are poorer and who live in urban areas are more likely to be exposed to lead poisoning and other household chemicals. As Loman (1986) has stated, children from families earning less than $6,000 per year have dangerous blood lead levels with a prevalence of 18.6% as compared with 3.9% for the general population (Loman, 1986, p. 49). Nersesian (1985) indicated that children from low income families are 2.6% times as likely to die of accidental injury than are other children (Loman, 1986, p. 41). The relationship between low income families and serious accidents of children is easy to understand. Child neglect is very common to children whose mothers are hooked on drugs. Substandard and unsafe housing, unsafe appliances, poorer fire protection, increased number of children of poor families who are left alone in the home also contribute mortality and morbidity due to accident (Besharov, 1989).
6. Maternal Nutrition. Cocaine-exposed newborns have also shown both depressed fat stores and lean body mass, a pattern commonly associated with maternal malnutrition, even after nutritional markers such as maternal weight for height at conception and pregnancy weight gain were statistically controlled (Frank et al., 1990). This suggests that the transfer of nutrients to the fetus may be impaired due to vasoconstriction caused by cocaine. In addition, cocaine may also diminish birth weight by increasing fetal metabolism through its effect on the sympathetic nervous system.

Lack of adequate maternal nutrition has been known for a long time to contribute adversely to fetal health and development. Both maternal nutrition and malnutrition in early life are related to various aspects of developmental pathology. Maternal malnutrition is related to low birth weight, prematurity, stunted growth patterns, retardation of brain development, cognitive deficiencies, and behavioral problems. Many studies have described in great detail the connection between malnutrition and mental development as well as between learning and behavioral problems (Rush, 1984). Huber (1983) notes positive correlations between malnutrition and reduced
IQ scores, motor behavior deficits, behavior development, and school performance. Evidence indicates that children who were nutritionally deprived and who have been given nutritional supplementation show increased attention and alertness. One interesting finding of such studies has been that minimal recovery of malnourished children is noted, following nutritional supplementation in children who did not receive increased cognitive stimulation with near normal performance being present in malnourished children who received both increased cognitive stimulation and nutritional rehabilitation (Rush, 1984, p. 267).

In investigations concerned with nutrition, it is quite difficult to determine to what extent lower developmental performance and other developmental problems in later life are due to prenatal or neonatal nutritional deprivation or to a combination of other social and cultural variables. The social context in which a lack of sufficient nutritional support is likely to be noted also contributes to the areas of deficit previously noted.

The sucking activity of the infant is disorganized due to poor coordination with swallowing. Central Nervous System stimulation causes hyperactivity, which
leads to poor feeding, gastro-intestinal hypermotility and irritation which may result in inability to retain or absorb nutrients (Dicky, 1987).

Chemically dependent mothers have been characterized as egocentric parents with a narcissistic orientation toward their child (Lawson & Wilson, 1979). Researchers have also noted developmental problems with infants of drug addicted mothers as well as maternal dysfunction and dyadic deficits (Burns & Burns, 1988).

In a current study, a particular method of analyzing dyadic dysfunction was demonstrated with mothers who were abusing cocaine. The Parent-Child Early Relationship Assessment (PCERA) (Clark, Musick, Stott, Klehr, & Cohler, 1984), was designed as a video tape scoring system to code the affective and behavioral characteristics of mother and child during interaction, as well as the quality of the relationship.

Researchers found that these drug-abusing mothers showed a tendency toward rigidity and over control in their parenting, a lack of enjoyment and pleasure in relating to their infants, and limited emotional involvement and responsivity in their interaction between mother and infant. These drug-abusing mothers were not reaching out socially to their infants and
that, as a consequence, the infants were not showing
the happiness of a normal baby.

Specific interactional problems could be
identified by interventionists from observing video
tapes. Examples of specific behavioral needs observed
in these cases were: Maternal insensitivity and
intrusiveness in feeding. The mothers often continued
to force food on their infants long after clear signs
of resistance were expressed by their children. Lack
of enthusiasm and resourcefulness in feeding: Mothers
performed this behavior in a mechanical perfunctory
manner without seeking emotional reciprocity from their
infants in the task. During face-to-face interaction
with their infants, mothers appeared to be at a loss of
conversation. The addition of feeding or toy play as a
structure seemed to make a difference in improving
interaction over a situation in which no props were
available. Mothers frequently expected behavior from
their infants that were above their age, like for
example, verbal instruction and communication, rapid
sequence of interaction, and advanced fine motor
skills.

The clinical benefits of this approach to the
analysis of mother-child relationships include a more
precise definition of those deficits most in need of
remediation; a guide for education and direct intervention; and a baseline for judging the effectiveness of intervention (Burns & Burns, 1988, p. 162).

Intervention

P.L. 99-457 requires that each state develop its own definition of developmental disability. The writer feels that practitioners must be involved in formulating such definitions. The definitions must be comprehensive enough to cover all developmental domains including infants and toddlers exposed to crack/cocaine and thus represent sufficient input from all disciplines involved in service provisions to infants and toddlers and their families. The definition agreed on within each state will dictate who is eligible for services for years to come.

The writer believes that issues dealing with service eligibility for infants and toddlers exposed to crack/cocaine considered to be "at risk" for developmental disability should be included in the state-adopted definitions of developmental disability. The writer believes this represents an area in which practitioners can provide invaluable input to the interagency council in establishing a service delivery system that ensures appropriate early assessment and
intervention services for as broad a constituency of eligible children as possible.

Because each state will develop and define their own programs, some of the requirements of P.L. 99-457 will vary from state to state. How this will affect the daily operation of the local centers may depend on the involvement of the parents and professionals with their state lead agency. Toole (1987) mentioned that "some programs will have to report to a state agency with which they have had no previous contact" (medical instead of education, p. 1). This may mean major changes in areas ranging from the way services are delivered to how the infant's progress is reported.

Professionals and parents should be aware of the direction the state agency chooses and support that directional emphasis. It seems that the impact of P.L. 99-457 upon existing infant programs and the ease of developing future programs will have to wait until each state's regulations have been designed and implemented for several years.

According to P.L. 99-457 it is mandated that each state is required to compile a statewide directory of service delivery institutions and practitioners who meet minimum requirements to provide services. The writer feels that practitioners are encouraged to
ensure that their name or agency is included on the central directory listing. As the references on the central directory grow, practitioners should avail themselves of the list. It will assist in making referrals and in gaining access to other professionals who share similar interests in providing services to infants and toddlers.

It is required by the law (P.L. 99-457) that each state has to designate a lead agency. The lead agency is charged with overseeing all activities provided under this law. The lead agency may not be within the state department of education. Lead agencies that have already been designated in states include departments of social services, education, health and human services, developmental disabilities, mental health, and welfare. In some instances the interagency council will serve as the lead agency. The writer believes that practitioners should be aware of the lead agency in their respective state and also to be aware of the contact person. Effective input must be directed toward the appropriate individuals within the lead agency. The practitioners should be familiar with appropriate persons within the lead agency. Table 2 identifies lead agency designates by state.
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<td>Alabama</td>
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Sources: Adapted from the National Association of State Directors of Special Education (1987), Washington, D.C. Unpublished manuscript.

Types of Infant Intervention Programs

There are basically three types of infant intervention programs (home-based, center-based, and a combination of home- and center-based), with variations
added (such as parents group sessions) depending on the needs of the parents and infant and the expertise of the staff (Heward & Orlansky, 1984). A home-based program requires the staff to travel to the parents' home, providing services using a transdisciplinary model. One or two staff members are responsible for coordinating multi-disciplinary activities on a one-to-one basis. The key person in this type of intervention is the parent. Any skill needing to be learned by the infant is trained by a parent who was taught by the staff member. Cost-effectiveness in terms of time and finances is very poor with this type of system, and only a limited number of infants can be scheduled during the day. However, this type of program allows the infant to remain within the home environment while making it more convenient for other family members to actively participate during the session. Other advantages are that there is less tension between parent and infant in their own home, so that everyone will perform at a higher level. Since the health of the infant is better controlled within the home atmosphere, the number of attended sessions is greater. The materials and equipment available in the home may be more functional and financially efficient for a family's needs. Numerous toys can be made from throw-
away materials (orange juice cans, paper plates, strings, ribbons, etc.) usually used in the home.

A measurement used to evaluate the effectiveness of a home-based intervention is the Home Observation for Measurement of the Environment (HOME) for infants ages birth to 3 years (Caldwell & Bradley, 1978). Behavioral test items in five areas (parent verbal and physical contact with the child, acceptance of the child's behavior, opportunities for daily stimulation with adequate play materials, and organization of physical environment) provide information for teachers/therapists to help lessen those factors within the home setting that could delay developmental progress.

The center-based program has been housed within a multipurpose facility such as a hospital, public school, university building, or day care center. This program style allows more staff members to be directly involved on a regular basis both in interacting directly with the infant and in providing consulting services to the parents. The total operating cost for a center-based program is less since more families are being serviced at any one given time. Care must be taken that there is not an overload of sensory stimuli to the infant and an overabundance of requests for the
parents to perform. There must be a built-in monitoring system to ensure a well-balanced curriculum that generally emphasizes cognitive, social and language skills (Filler, 1983, p. 18). A center-based program offers informal and formal social exchanges among parents who have children with similar problems. Even at a very young age, infants have a chance in a group setting to develop social skills. In the center-based program therapists and parents often find themselves exchanging roles as teacher/student. The therapist can teach proper positioning and handling. Parents can help therapists understand the infant's personality.

The third type of infant intervention program combines the contact with clients in both settings, home and center. Bryant & Ramey (1985) reviewed 12 studies dealing with preventive education for disadvantaged "at risk" infants. The authors' conclusion suggests that the increased contact made with both parents and infant in a combination-based program resulted in more positive and effective data being obtained on the infants and an improvement in parent behavior and attitudes.

Bryant & Ramey (1985) discuss the type of service model available to parents has usually been determined
by the center's philosophy toward intervention education, the boundaries of a federal/state grant, or a decision made by the staff. Final selection should be based on obtaining the maximum individual end results plus being able to serve the community effectively. Serving a larger population may be accomplished through outreach dissemination packets, workshops or seminars.

Each state is required by P.L. 99-457 to institute specific procedures for finding infants and toddlers in need of early assessment and intervention services. The writer believes that medical professionals can assist states to develop child find systems effectively. There is some latitude on how individual states will develop and implement child find systems. It is important that all disciplines provide input regarding the policies implemented in each state to find infants and toddlers in need of services. This includes assisting in identifying assessment procedures and materials used to determine if a developmental delay is present or in identifying procedures and criteria for determining risk status. The writer feels that the entire service delivery system in a given state will only be as effective as the state's procedures in identifying and finding children in need
of services. A broad representation of disciplines is encouraged to guarantee an accurate and reliable child find system in each state.

Hanson (1984) concluded that early services for children from birth through preschool years, particularly those services actively involving parents, are an effective way to facilitate child development and remediate the effects of early environmental risks.

Table 3 summarizes several findings regarding the effectiveness of early intervention. Specific risk populations have been studied to determine the effectiveness of early intervention. Children with Down syndrome, children who are physically and neurologically or sensory impaired, and children with multiple and severe handicaps have all been shown to benefit from early detection and intervention.
### Table 3

**Summary Statements Regarding the Effectiveness of Early Intervention**

1. Programs for young children at environmental risk produced long-lasting positive effects on child-school competence and abilities, children’s attitudes, and family attitudes.

2. The infant born "at risk" for biological damage may benefit from early physical and educational therapies.

3. Early intervention services provided to infants born with established risks and their families have been shown to be effective at remediating the effects of the disability and at accelerating the child’s development.

4. Family members are affected by the birth of a disabled or "at risk" infant and often seek out and benefit from early intervention services.

5. Early intervention services produce a variety of effects on the child, family and community.

6. Initial studies of early intervention's cost-effectiveness suggest that significant savings may be derived from the provision of these services.

7. The following components are present in those intervention services that produce the greatest
change in children:
A. Active parent involvement
B. Systematic early educational services
C. Developmentally based curricula
D. Individualized goal setting
E. Frequent updating of child programs
F. Intervention beginning at as early an age as possible
G. Follow-up study when children leave the program.


In 1987 an interdisciplinary team at the University of Tennessee, Memphis, Boling Center for Developmental Disabilities, undertook the development of a new early intervention program (EIP) to serve infants and toddlers with prenatal drug exposure and their families (Russell & Free, 1991). The program was initiated in response to the growing number of children born to drug-abusing women in Memphis. The child-care support and addiction-recovery service required by the families of these substance-exposed children were
overwhelming existing health and social service delivery systems.

Two major national trends guided the philosophical direction and approach: Public Law 99-457, the Education for the Handicapped Law Amendments of 1986, authorizing early intervention services for the handicapped infants and toddlers and their families, and the national upsurge in alcohol and drug use, particularly cocaine, in pregnant women. The team believed that an effective early intervention program for the children and their caregivers should incorporate four criteria:

1. an interdisciplinary approach from the field for developmental disabilities for services with families of young children;
2. case management based on Individualized Family Service Plans (IFSPs);
3. health and social services that address the needs of substance-exposed children and dysfunctional families; and
Strategies for Intervention

The early planning team consisted of professionals interested in drug-exposed children and included representatives from nursing, pediatrics, genetics, social work, speech pathology and audiology, nutrition, physical therapy, and psychology. The program was initiated by a team comprising nurses, social workers, a nutritionist, a physical therapist, a speech pathologist, and an audiologist. A clinical nursing specialist experienced in early intervention directed the project.

High priority was given to training the team in treating the disease of alcohol and drug addiction. Training required three four-hour sessions and was provided by a specialist in alcohol and drug counseling. Content included the addiction disease process, the roles family members assume, codependency, and support for families in recovery. Although team members did not intend to provide direct rehabilitation services, they needed to know when to direct families to recovery programs and how to support the recovery process. Armed with experiences from a previous successful early intervention program, and the alcohol and drug training, the EIP team began the planning phase. Activities were planned for a family program.
composed of ten four-hour weekly sessions. Time for family assessment, developmental assessment, interventions, evaluations, and follow-up were included. Incentives for participation were built into the program and included transportation for the families to the center a major expense, nutritious snack and lunch for parents or caregivers and children, and a gift such as a developmental toy or safety product. Before beginning the center-based program, each family received a home visit by an EIP team nurse. This visit was used for developmental screening and to complete the Home Observation of the Environment (HOME) scale, the Nursing Child Assessment Teaching Scales (NCATS) and the Nursing Child Assessment Feeding Scales (NCAFS). The HOME scale was used to measure the stimulation potential of the child's immediate environment. Both the NCATS and NCAFS test the ability of the infant to produce clear cues and to respond to his or her caregiver. The abilities of the parent or caregiver to respond to the infant's cues, to alleviate distress, and to create growth-fostering situations was assessed using the nursing child assessment scales. The home visit also helped prepare the families for the early intervention experiences (Russell & Free, 1991, p. 81).
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-8:45</td>
<td>Preconference</td>
<td>Interdisciplinary team</td>
</tr>
<tr>
<td>8:45-9:00</td>
<td>Families Arrive</td>
<td>Case managers</td>
</tr>
<tr>
<td></td>
<td>Name tags for everyone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Label all belongings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coffee for parents/caregivers</td>
<td></td>
</tr>
<tr>
<td>9:00-10:15</td>
<td>Parent/caregiver group</td>
<td>Parents/caretakers</td>
</tr>
<tr>
<td></td>
<td>training</td>
<td>Assigned team member</td>
</tr>
<tr>
<td></td>
<td>Planned developmental</td>
<td>Infants/toddlers</td>
</tr>
<tr>
<td></td>
<td>activities; group</td>
<td>Team members</td>
</tr>
<tr>
<td></td>
<td>and individuals</td>
<td>Trainees/volunteers</td>
</tr>
<tr>
<td></td>
<td>Complete speech/language</td>
<td>Speech pathologist</td>
</tr>
<tr>
<td></td>
<td>screening</td>
<td></td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>Break</td>
<td>Parents/caregivers</td>
</tr>
<tr>
<td></td>
<td>Potty/snacks</td>
<td>Children</td>
</tr>
<tr>
<td>10:30-10:40</td>
<td>Music</td>
<td>Parents/caregivers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infants/toddlers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Team members</td>
</tr>
<tr>
<td>10:30-12:00</td>
<td>Support group</td>
<td>Parents/caregivers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group leaders</td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Participants</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>10:40-1:00</td>
<td>Developmental activities/lunch</td>
<td>Children Assigned team members;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00-12:30</td>
<td>Lunch</td>
<td>Parents/caregivers Group leaders</td>
</tr>
<tr>
<td>12:30-1:00</td>
<td>Case Management</td>
<td>Case managers meet with families</td>
</tr>
<tr>
<td>1:00</td>
<td>Families depart</td>
<td></td>
</tr>
<tr>
<td>1:00-2:00</td>
<td>Postconference</td>
<td>Interdisciplinary team</td>
</tr>
</tbody>
</table>

**Figure 1.** Sample early intervention schedule.
Table 4
Ten-week schedule of activities for early intervention program.

<table>
<thead>
<tr>
<th>Parent/Caregiver Session</th>
<th>Training</th>
<th>Incentive</th>
<th>Support Group Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introductions</td>
<td>Gift pack of product samples</td>
<td>Forms completed and signed</td>
</tr>
<tr>
<td></td>
<td>Overview of</td>
<td>booklets and personal items.</td>
<td>Child development knowledge pretest</td>
</tr>
<tr>
<td></td>
<td>program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Preventive</td>
<td>Thermometer</td>
<td>Chemical dependency. The disease concept.</td>
</tr>
<tr>
<td></td>
<td>health care</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Safety at home</td>
<td>Electrical outlet cover</td>
<td>The family disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coloring book</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Child-growth</td>
<td>Blocks/rattle</td>
<td>Codependency</td>
</tr>
<tr>
<td></td>
<td>and motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Learning</td>
<td>Book made by parent/caregiver</td>
<td>Recovery</td>
</tr>
<tr>
<td></td>
<td>through play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Child speech-</td>
<td>Mirror or toy</td>
<td>Self-esteem</td>
</tr>
<tr>
<td></td>
<td>language and</td>
<td>telephone</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Program Assumptions

This early intervention program (EIP) was based on the following assumptions:

- Children identified as having prenatal drug exposure are at high risk for physical, intellectual, emotional, or social delays capable of interfering with normal growth, development, and learning capacity.

- An enriching home environment improves the child's development and social adjustment.
Parenting skills of parents or caregivers are enhanced through knowledge in all areas of normal development and childrearing and nurturing. (Russell & Free, 1991, p. 81).

**Program Goals**

The goals of this early intervention program were fourfold:

- Enrolled children would benefit by their family's enhanced ability to provide an environment that nurtured physical, social, emotional and cognitive development.

- The substance abuser's motivation to seek treatment and rehabilitation would be strengthened, decreasing the probability that subsequent children will be exposed prenatally to drugs.

- Families would gain a better understanding of addiction and its effects on individuals and families.

- Team members working with this population would acquire a specialized body of knowledge and skills and would disseminate this information to students and other professionals.

Early in the sessions, assessments were completed on the children that included history and physical
examination, audiological assessment, speech-language screening, and nutrition and feeding assessments. For children who scored below age level on the developmental screening performed in the home, further developmental assessment was done. Following assessments, infants and toddlers were assigned planned developmental and learning activities. For infants, most activities were individually implemented. For toddlers, groups of two or three children provided the best approach for the learning or developmental activity.

The case manager and family collaborated to develop the IFSP which helps the family identify their strengths and needs and those of their child, sets appropriate goals, priorities and time frames, and identifies the best available resources to meet the goals (Russell & Free, 1991, p. 81).

The individualized family service plan (IFSP) process culminates in a written document of child and family assessment, established goals, and strategies for goal achievement. In this (EIP) early intervention program, weekly conferences with the family and case manager included discussion of progress toward the goals (Russell & Free, 1991, p. 84).
To measure the first goal of the early intervention program, developmental progress and family need are monitored annually. Attendance incentives acquired through participated in the EIP, have given the children added learning opportunities. Participation in the EIP support groups resulted in client reports of having a new understanding of addiction and its effects on families. Parents and caregivers were able to identify the problems of their children more realistically. The families identified the emotional and social support of the case managers as the major strength of the early intervention program (Russell & Free, 1991, p. 84).

An important outcome for the interdisciplinary early intervention program (EIP) team has been the acquisition of unique knowledge and skills for working with substance exposed children and families with addiction which have become the basis of an early intervention training project (Russell & Free, 1991, p. 84).

Transition plans for each family were developed by the case manager in collaboration with the family and the EIP team. Children with developmental delays were referred to other early intervention programs, preschools or Head Start. Identified health problems
were referred to the child's primary care clinic or to a specialty clinic. Family members were referred for assistance to community service agencies. When readiness for recovery was determined, family members were helped to identify community treatment services (i.e. Alcoholics Anonymous, Narcotics Anonymous, Al-Anon). Most parents or caregivers know of available primary care health services but used them inappropriately. For example, some children with upper respiratory infections were taken to an emergency room for treatment rather than a clinic, and many children were not adequately immunized. A frequent goal on the IFSPs was that the child receive schedule wellness and intermittent illness care from consistent primary health care provider (Russell & Free, 1991, p. 85).

Families who participated in the ten-week early intervention program are seen annually for a family needs assessment. At this time, children have a physical examination and developmental assessment. These annual assessments, conducted in one of the center's clinics, are scheduled during the month of the child's birth until their fifth birthday. The majority of the families keep these appointments. Those who fail to attend the clinic are referred to public health nurses for follow-up care (Russell & Free, 1991, p. 85).
Medical Practitioners

Laney (1985) described strategy designed to alert physicians and others to the benefits of early identification of developmental pathology. The strategy contains two basic parts with several steps under each. The first major step is gaining access to decision makers and facilitating their awareness of the unique needs of handicapped infants and their families. Gaining access is geared toward both individuals and service delivery systems already in operation. Practitioners in a medical setting should be alert to opportunities to gain access for this nature. Gaining access to service delivery systems that currently do not serve infants and toddlers may involve efforts directed toward well baby clinics, state institutions that serve developmentally delayed persons, and any format in which the parent is asking the health care system for assistance regarding children's development issues.

Once needed access is gained, the goal is to facilitate overall awareness of the unique needs of handicapped infants and toddlers and the benefits of early identification. Visits to physicians' offices, lecturing to medical students participating in pediatric rounds, involvement in staffings in the
intensive care nursery, and providing printed material all prove helpful. Shonkoff et al. (1979) explained that up to 75% of pediatricians do not systematically evaluate the developmental performance of their patients. Time constraints and lack of awareness and training contribute to this (Shonkoff et al., 1979, p. 507). The practitioner may suggest that a regular schedule of developmental assessments be established for patients for whom skill acquisition is in doubt. Consistent efforts reap long-range benefits from persons in a position to influence the initiation of services to infants and toddlers.

One additional activity is suggested for practitioners interested in creating momentum for initiating infant-toddler assessment activity. Each state is mandated to have in operation a state developmental disabilities council. The overall mission of state councils is to plan, advocate for, and advise on the needs of the developmentally delayed population within the state. Practitioners would be wise to alert themselves to the workings of the councils in their states. Although councils use their allocated funds differently, many councils award grants to persons or agencies geared toward initiating new
venues of service to the developmentally delayed in that state (Shonkoff, et al., 1975, p. 508).

Chronically missed appointments, mistrust, lying about ongoing drug use and family crises characterize most cocaine-dependent mothers' relationships with health care providers, making monitoring a challenge.

Specific efforts are required by a community nurse to establish trust with cocaine-using mothers. Referral to child protective services in cases of known maternal drug use can help develop the basis for an honest therapeutic relationship between the nurse and drug-dependent mother. When the nurse and parent can openly acknowledge the drug addition, the barrier of denial is at least partly overcome. Helping an addicted mother to meet her own needs may give her the ability to meet the needs of her children better. This includes referral for concrete services such as day care, housing health care, financial assistance, and transportation to clinic visits (Walsh, 1991). Most importantly, cocaine-dependent mothers need greater access to drug treatment programs (Kelly, 1990).

The lack of prenatal care and high incidence of premature, low birth weight and small-for gestational age infants have implications for nurses in all maternal child health settings. Nurses frequently have
the most intimate contact with cocaine addicts whenever addicted mothers enter the health care system. The fact that many mothers who used cocaine were also polysubstance abusers indicates that a community nurse should routinely obtain detailed histories of maternal drug use both during and after pregnancy. Use of intravenous drugs is particularly significant because of the increased risk of maternal and fetal exposure to the human immunodeficiency virus (HIV). General women's health care and information on pregnancy prevention and AIDS prevention are essential.

Hopkins (1987) reports that some 54% of all AIDS cases under 13 years at the time of diagnosis are black, and 24% are Hispanic; thus 78% of all children with AIDS are minorities. National Health Policy Forum (1987) reports the dissimilarities between children and adults with AIDS go far beyond the obvious one of age. For instance, the clinical picture, transmission and treatment of the disease are markedly different. Children with AIDS do not often succumb to rare, "opportunistic" infections, such as pneumonia, meningitis, and rare cancers. They are more likely to suffer from recurrent bacterial infections, persistent or recurrent oral thrush (a common mouth or throat infection), and chronic or recurrent diarrhea (Pepin,
et al., 1989, p. 5). Infected children may also demonstrate generalized enlargement of lymph nodes, failure to thrive, neurologic abnormalities, and developmental delays (Pepin, et al., 1989, p. 6). Testing for HIV antibodies is extremely important in the pediatric population when there is suspicion of HIV infection. The majority of infected children acquire the virus in utero from their infected mothers who are drug users themselves or whose partners have HIV infection. More recent evidence also suggests possible transmission by HIV infection to infants by breastfeeding when the mother is infected. The majority of pediatric cases come from low-income families who lack the financial and social resources needed to provide even minimal care. The problem is magnified if one or both parents use drugs, for they frequently have limited and undependable resources, use health care services sporadically, and do not comply well with medical treatment. In many communities, the support services necessary for home care of children whose families cannot or will not care for them are lacking, so the hospital must serve as the home and primary caretaker of children who could otherwise be cared for in the community.
AIDS is a family tragedy. The pain and stress experienced by families when they learn that a family member is suffering from AIDS is great. It is a disease that also "emotionally" and psychologically affects the victim and the individuals who care for, love and in many cases must literally nurse an emaciated body and confused, frightened mind until death" (Blackwell, 1985, p. 54).

Community nurses should use every opportunity to encourage the drug-dependent pregnant women to obtain prenatal care. Drug-dependent parents respond best when services are concrete and immediate.

Given the incidence of hopelessness and lack of permanent residences of cocaine-addicted mothers, innovative service delivery models and community-based health programs in motels, shelters, and drug treatment agencies are needed. Nurses can be advocates for these services for drug-affected families.

With the high incidence of hypertonia that the cocaine-exposed infants demonstrate, the nurse should discourage the use of infant walkers. Walkers frequently exacerbate hypertonia in infants. Nurses could also use anticipatory guidance to counsel parents about the possibility of hypertonia in cocaine-exposed infants. Hypertonic infants are often stiff and
difficult to cuddle and handle. Clearly this has implications for maternal-child interactions, especially in a group of mothers with tendencies toward low self-esteem and lack of confidence in parenting skills. Because these children are environmentally "at risk" for developmental delays, referrals should be routinely made to early intervention programs (Kelly, 1990).

Medical practitioners, especially obstetric gynecologic physicians, are becoming increasingly aware of the importance of the risk of drug abuse during pregnancy (U.S. Department of Health and Human Services, 1990). Few are experts, and often they are not comfortable addressing the problems of drug abuse among child-bearing women. The following interventions are recommended:

1. Suggest health and physical examination; and
2. Refer patient to a specific drug treatment program and, if necessary, maintain contact with the patient for documentation (U.S. Department of Health and Human Services, 1990, p. 1656).

For evaluation, community health nurses are a valuable resource. In families with drug related problems, the visiting nurse has opportunities to make observations. Paraphernalia may be seen in the living
room are indicative of potential drug abuse. Aluminum tin foil and small plastic bags sitting on top of the table are also evidence of drug use. The visiting nurse may also observe her client's physical features such as nasal damage, the skin in the arms has puncture wounds and tremendous inflammation and damage to the veins and tissues. The client's persistent coughing and bad breath is also evidence of drug abuse. Such behaviors, observed over time and within the context of the family environment, will develop the evaluation as well as identify the conditions contributing to the problem. Identifying drug addiction may be a long process. It is critical that the visiting nurse identifies and assesses the needs of drug-involved clients. The nurse needs to acquire the knowledge and skills through continuing home visit programs. Just as important is a commitment to advocate for comprehensive treatment services that address the causes and effects contributing to drug abuse. Health professionals need to maintain nonjudgmental attitudes of concern, and be optimistic in working with the client.

Many children exposed to cocaine and other drugs are being mis-diagnosed early in life. The staff in early intervention programs, neonatal nurseries, pediatric units, health centers, and family
practitioners should be familiar with common symptoms of infants and toddlers exposed to cocaine. They should be aware of congenital malformations, developmental delays, failure to thrive, hypertonia, poor feeding patterns, hyperactivity and other neurobehavioral syndromes as signs of cocaine-exposed children (Little, et al., 1989, p. 158).

Neurobehavioral syndromes in cocaine-exposed children bring to parents/guardians a totally new set of crises and reactions not usually associated with the births of healthy children. Parents/guardians may like to participate in family counseling. Acceptance of the reality of the condition can only come with the education and family involvement of the parents about their children's developmental problems and knowing the long- and short-term prognoses (Hans, 1990).

Learning difficulties in this situation, may be the result of cocaine exposure or may be related to home environment problems such as drug addiction.

Supportive Counseling

Programs Built on Collaboration between Medicine and Education

Supportive counseling, directed at attaining and sustaining abstinence from illegal drugs should be initiated as soon as addiction to cocaine has been
identified. Local affiliations of the National Council of Alcoholism and Drug Dependence can offer assistance, as well as the Alcoholic Anonymous Chapter, Cocaine Anonymous, Families of drug abusers can benefit from supportive networks such as Al-Anon and Alateen. Additional information on support groups is obtainable from community mental health agencies. Most of these sources of support are listed in the telephone directory.

At Boston City Hospital, physicians and educators are collaborating on a number of medical/educational projects.

Child Development Project. The Child Development Project (CDP) is a collaboration between early childhood educators and developmental pediatricians designed to conduct developmental assessments, coordinate referrals, and provide intervention services for children from birth through age five. The CDP operates at Boston City Hospital, an inner-city municipal hospital. After years of unsuccessfully attempting to address developmental problems by traditional physician consultation services, this collaborative approach was implemented. The goals of the project are (1) to identify children with developmental delays and disturbances in life; (2) to
ensure treatment for these children by referral to appropriate services; and (3) to serve as a model of medical/education collaboration for other municipal hospitals.

Rather than risk losing patients by establishing a new clinic, with its own procedures and locations, the Child Development Project (CDP) operates at the site where children already receive their health care. In other words, the CDP has reaggregated resources, placing educators within medical sites, in order to provide "one-stop shopping" for families. All children admitted to the inpatient wards or attending the Lead Poisoning Clinic, Neurology Clinic, Failure to Thrive Clinic, and Adolescent Parent/Child Clinic are seen by CDP staff, in addition to the regular hospital personnel, because of the assumed high incidence of developmental disturbance among these patients (Kaplan-Sanoff et al. 1991, p. 73).

A year after the project's initiation at the hospital, it was expanded to community sites; staff now conduct assessments and case manage children who have been preselected because of concern by staff in neighborhood health centers, Head Start programs, and shelters for the homeless. The assessments are based on developmental tests, clinical health evaluation,
history of behavioral and family functioning, and observation of the child's behavior and parent-child interaction. The CDP staff has evaluated over 1,450 children, of whom 28% were referred for services. Another 28% were identified as "at risk" and were monitored for developmental problems. In making referrals, the CDP staff discovered that available community resources were often inadequate or inappropriate. In response, new models of service delivery were developed.

Project Visit. Project Visit, a federally funded training project, was designed to increase the capacity of child-care programs to provide critical intervention services for children frequently exposed to risks for achieving optimal development, such as medical illness, family stress, inadequate social support, parental depression and poverty. Increasingly, child-care centers are serving children with lead poisoning, asthma, failure to thrive, and cocaine exposure. Project Visit provides in-depth, on-site inservice training in assessment and therapeutic intervention strategies to the child-care providers, while also providing direct intervention to identified children at their child-care center. Project Visit not only provides direct services but, more importantly, it
increases the community's ability to provide intervention services for children who are not eligible for early intervention due to age, low severity of developmental problems, or need for full-time child care. Through a weekly call-in hour, child-care providers have direct access to pediatricians who can provide consultation related to the medical and psychosocial risks affecting the children in their programs (Kaplan-Sanoff et al., 1991, p. 73).

The Comprehensive Child Development Centers Act of 1989 (CCDCA) seeks to demonstrate that educational failure can be prevented by addressing the social, emotional and health needs of infants, toddlers and their families (Kaplan-Sanoff, et al., 1991, p. 74).

Twenty-four projects have recently been funded to develop models of early (starting with prenatal care), continuous (until children enter kindergarten), and comprehensive (health care, parent support education, child care, early intervention, nutrition, and assistance with parents' formal education, employment, income and housing) services.

The CCDCA (1989) illustrates features that are essential to all prevention programs. Prevention programs should be comprehensive and be delivered in the context of a unified family support model.
Individual health, education and social service programs alone do little to prevent problems that are caused by a complex transactional interaction of biological and environmental stresses.

A child receiving nutritional supplements but no educational benefits from Head Start may be better off than one who receives neither, but certainly will not be as well off as a child who receives both (Kaplan-Sanoff, et al., 1991, p. 74).

Similarly, a child who has medical care to treat lead poisoning and nutritional supplementation to treat malnutrition will not do as well as a child who receives developmental enrichment in conjunction with these medical benefits (Dietrich, et al., 1987, p. 723).

Even comprehensive services cannot be helpful unless their accessibility is ensured (Kaplan-Sanoff, et al., 1991, p. 74).

Reaggregation of resources (one-stop shopping) not only improves access, but may even lower administrative costs (Dixon, et al., 1990, p. 83).

Prevention programs must also start early, even before the birth of a child. The prevention of low birth weight through adequate prenatal care and good maternal nutrition improves the mothers' health and
avoids the biologic vulnerability that can lead to a child's failure in school. Finally, prevention programs must be continuous, meeting the needs of children, from prenatal care until they enter school-based systems of services (Kaplan-Sanoff, et al., 1991, p. 75).

**Women and Infants Program.** The Women and Infants Program is targeted at cocaine-addicted mothers and their newborns. Past experience demonstrates that the mothers would bring their infants for pediatric care but would not go to drug treatment, even on referral. Apparently, drug treatment was both stigmatizing and overwhelming, since it placed an additional demand on mothers trying to care for their infants. Services were again reaggregated; the Women and Infants Program incorporates a drug treatment component with a substance abuse counselor and child development service into the pediatric primary care visit. This represents a "two for one" program, providing care for both mother and infant at one site for relatively low incremental cost.

**Policy Implications.** Each of these programs shares several key components that have important policy implications. First, professionals provide needed services in places where children and families
with problems are already being seen, thus greatly reducing the number of places where families must go for care. Second, the organizational responsibility for directing the program lies with an individual with appropriate authority and resources to help the family develop a flexible service plan, one that might not always correspond to the rigid criteria set by individual program referral systems. For example, when the Women and Infants Program realized that the mothers needed help with time management, flexible operating policies and budget priorities allowed for the immediate purchase of calendars, daily planners, and in some cases, alarm clocks to help the women get their infants to scheduled appointments. A need was identified and a timely solution was implemented.

Third, each of these programs is a "two for one" model, serving the health and educational needs of children and the support and training needs of the mothers and child-care providers. Finally, each of these programs seeks to reach the mother or provider through the child, forming a therapeutic alliance that focuses on the whole child within a family context rather than dealing with a single problem (Kaplan-Sanoff et al., 1991, p. 72).
Social Services

Community resources are not always easy to pinpoint for patients exposed to cocaine and other drugs and their families. Due to the variety and kinds of problems, cocaine-exposed children require more specialized services than are generally available. A social service professional or a case manager may advocate for, or gain access to, services from all sectors, and monitor their service delivery (MacDonald, 1986; Bailey, 1989).

Planning for patients may include exploration of available state developmental disability funds, support for subsidized adoptions available, community resources and support groups. There may be state support which would include services such as medical assistance, infant stimulation programs and respite care. The strong advocacy on the part of the case managers or others involved can help families negotiate such hindrances and identify choice of resources (McPherson, 1991; Giunta, 1988).

In recent years, the family has been increasingly recognized as a major influence on a child's health and development. Families are the most important support system for children with special health needs, as for other children. Increased family participation at all
levels of health care is a major goal of family-centered service systems (Hutchins & McPherson, 1991, p. 141).

Key elements of family-centered care include:

1. recognition that the family is the constant in most children's lives;
2. facilitation of parent-professional partnerships at all levels of health care such as program development, and policy formulation;
3. sharing of unbiased information with parents about their child's care;
4. implementation of policies and programs that provide emotional and financial support for families;
5. recognition of family strengths, diversity, and different cultural values and customs;
6. incorporation of developmental needs of infants, children and their families into health care delivery systems;
7. encouragement and facilitation of parent-to-parent support; and
8. assurance that service systems are flexible, accessible, and responsive to family needs (Hutchins & McPherson, 1991, p. 141)

For a number of years the trend has been to care for children with chronic illnesses and severe
disabilities in their own communities, and in their own homes, whenever possible. These children usually require long-term multidisciplinary services, such as health care, social services, nutrition, and mental health services. It is often difficult for children and their families to obtain these and other day-to-day services like education, day care in their own town or communities (Lima & Seliger, 1990, p. 29).

The shift toward community-based care requires an organized network of coordinated services by private and voluntary agencies, federal, state and local governments and professional groups and associations. Comprehensive services centered on the child, family and home community allow children with special health needs to live more independently. Children experience a more normal lifestyle generally at lower cost than that of institutional care (Lima & Seliger, 1990, p. 30).

The same programmatic and technological advances in health care that have improved survival rates have increased the complexity of health care and human service delivery systems. Many families find that having access to and using necessary services can be a complicated process.
Families generally have to work with many different agencies and professionals to obtain adequate services. Unfortunately, service systems are often fragmented and gaps or duplication in service are frequently encountered. Differing agency eligibility requirements and regulations and lack of common definitions and forms among agencies can be major obstacles. Families often need assistance in negotiating the system. They frequently need help in learning how to coordinate services to control quality and costs to ensure that services support their needs (Lima & Seliger, 1990, p. 28).

Case management is a way of integrating and coordinating the delivery of services needed by children with special health needs and their families, and is increasingly being viewed as an essential component of service delivery systems that are coordinated, family-centered, and community-based. Case managers work with families and local providers to help ensure comprehensive, responsive accessible services. Case management is used to control quality, costs, and resources, and may help ensure continuity in service provision. It also may reduce service gap and duplicated services (Hutchins & McPherson, 1991, p. 142).
All children and their families should have access to adequate health insurance. A substantial number of Americans have no private or public health insurance, and the number is growing. Children constitute a large proportion of the uninsured population. Even when insured, many families face high out-of-pocket expenses for health care services that are not covered by their benefit packages.

There have been some recent improvements in coverage of community-based services, especially care at home, after recognition of cost savings. Although there are many potential sources of health care financing, they are often fragmented and confusing to parents.

Inadequate insurance, limitations on benefits, deductibles, copayments, lack of coverage of certain types of services, and limits on maximum lifetime benefits all place significant hardships on families caring for children with special health needs. Health insurance should be available to all and adequately cover chronic care and care in the community (Guendelman et al., 1990, p. 63).

Different options have been considered to improve public and private insurance, including expanding Medicaid waivers, state risk pools, affordable long-
term care, catastrophic illness insurance, and tax
policy changes such as expanding deductions (Wisconsin
Department of Health and Social Services, 1990, p. 44).

Neither punishment nor treatment, therefore, is
likely to help the children of drug addicts, but the
controversy threatens to divert attention from what can
be done to protect these children. Immediate action is
needed on four fronts (Besharov, 1989, p. 9).

1. Government and community leaders must make it
clear that drugs and pregnancy do not mix.

Some young mothers do not believe that "crack" is
bad for their babies. They see other addicts giving
birth to healthy babies and they convince themselves
that they will to (Besharov, 1989).

Public health authorities must launch an effort to
educate and change attitudes about drug use during
pregnancy. Despite all we know about the harmful
effects of cocaine, no concerted government effort has
been undertaken to educate young women about the
dangers of using drugs while pregnant. Continued
silence is inexcusable. Whether it is in sex and
health education classes or in public affairs
television spots, the message must be blunt. Using
drugs while pregnant cripples and sometimes kills
babies.
2. Hospitals should be given the legal power and financial resources to care for drug babies until they are medically and socially ready for discharge (Besharov, 1989, p. 9).

In August, 1989, the Greater Southeast Community Hospital of Washington, D.C. released a seven-week-old baby to her homeless, drug-addicted mother even though the child was at severe risk of pulmonary arrest. The hospital’s explanation: the mother “demanded that the baby be released.” The hospital provided the mother with an apnea monitor to warn her if the baby stopped breathing while asleep and trained her in cardiopulmonary resuscitation. But on the very first night, the mother went out drinking and left the baby at a friend’s house without the monitor. Within seven hours, the baby was dead (Clement, 1989, p. 48).

About half the states have laws that allow hospitals to hold endangered children against parental wishes. These laws protect children when there is no time to get a court order or obtain police assistance. All states should have them (Besharov, 1989).

Recent amendments to the federal Medicaid program guarantee that most hospitals will be reimbursed for the added and sometimes extraordinary costs of caring for these children. But the word has been slow to get
out, and many cost-conscious hospital administrators have been releasing children before they are medically ready for discharge. Again, an educational effort is needed.

After a drug-exposed child is born, hospital and child protective agency decision making should focus on the mother's ability to care for the child and past instances of physical violence especially by men in the household. They should also make a realistic assessment of the mother's ability to meet the special needs of a fragile, drug-weakened newborn. Some "crack" babies die because their mothers cannot provide them with intensive care they need just to survive (Abramowitz, 1989, Col. B1).

An estimated 25% of drug-exposed newborns have siblings who were also exposed fetally. Medical and social service agencies should provide follow-up counseling and instruction to discourage these women from having another drug-affected baby.

More medical knowledge about how to treat these children is also needed. This includes research on the treatment of immediate problems and remediation of long-term deficits and new hospital protocols that address both their medical and social conditions to improve diagnosis and case planning.
3. Children should not be left with drug-addicted parents who cannot or will not care for them (Besharov, 1989, p. 10).

Most communities with a serious "crack" problem have experienced a concomitant increase in foster care placements. Ventura (1989) found that in New York City, the foster care population rose almost 50% between 1986 and 1989. The increase was almost 100% if placements with relatives are included (Ventura, 1989, p. 1). But, although practices vary widely, in most communities the majority of drug children are left at home, in the care of their drug-addicted parents. In the summer of 1989, Washingtonians were shocked at the plight of Dooney Waters, a six-year-old living in his mother's drug den and all but abandoned by the authorities. The tragic facts are that there are thousands of other Dooneys.

Even in New York City, where foster care levels have doubled, 59% of babies who were held in hospitals usually because of their parents' drug use are later discharged to their parents or relatives. Only about a third of the approximately 456 cocaine-exposed babies born at Harlem Hospital in 1988, for example, were placed in foster homes. Older children are even more likely to be left at home (Ventura, 1989, p. 1).
Some drug-using parents are able to care for their children at least with social service support. But most of their children remain at great risk while they stay at home. In 1989 of New York's child-abuse fatalities involving children previously known to the authorities, about three-quarters were alcohol or drug related. Hundreds of others children suffer injuries short of death (Farber, 1989, p. A1, Col.3).

Foster care for drug-exposed children, who often need special treatment is expensive, depending on the child's condition, from $5,000 to $20,000 a year. The District of Columbia for example, seems unable to find money in its budget to help these children. Earlier this year, nurses at D.C. Children's Hospital notified the district's child protective agency each of the two times that a one-year-old child was sent home after testing positive for PCP and both times he was returned to the hospital with a high level of drugs (Washington Post, p. A8, Col.1). Normally, the district's child protective services will not become involved unless a mother abandons her newborn.

The other part concerns attitudes. Permeating all child welfare decisions are deeply felt but overly simplistic attitudes about the importance of preserving families. In recent years, much has been learned about
diagnosing and treating abusive and neglectful parents; programs across the nation are helping parents take better care of their children thus avoiding the need for foster care placement. It is only natural to believe that these addicted mothers can be helped. But "crack" and other drugs drastically reduce the ability of existing programs to treat parents successfully (Clement, 1989).

Reflecting attitudes of society at large, judges and caseworkers are unable to accept the realities of cocaine "crack" addiction. Instead, they convince themselves, that somehow this parent will make it. Any sign of improvement in the mother's functioning is seen as an indication that the child can be left at home or returned, even though there is no reason to think that her drug problem has been licked.

Society is unable to break the mother's addiction habit, despite being enrolled in a drug treatment program. If parents cannot care for their children, the children should be removed from their care and placed in foster care (Besharov, 1989). This may require overhauling state and federal foster care and adoption laws that have been wrongly interpreted to preclude early removal of these children.
4. Adoption should be a real option for children whose parents show little prospect for improvement, even though this means terminating parental rights (Besharov, 1989, p. 11).

Unfortunately, legal rules and social attitudes make it exceedingly difficult and time-consuming to terminate parental rights. In New York City, 60% of the babies discharged from hospitals to foster care, mostly "crack" babies, were still in foster homes three years later. Another 30% had been returned to parents or relatives. Only 7% had been adopted. Even in the most threatening cases, few children are quickly freed for adoption (Daley, 1989, p. B1, Col. 2).

In March 1989, a Washington, D.C. Superior Court judge ordered the district to set up a $100,000 trust for each of two boys who are addicted to cocaine, ages four and two, who had been known to the agency since 1986 and who had been free for adoption for three years (Green, M.S., March 1989, p. B1, Col. 1).

Drug children should not be allowed to get lost in a foster care limbo. In New York City, for example, after three years, 56% of the babies discharged from hospitals to foster care had been in two or more foster homes; 20% had been in three or more homes. One child had been in eight homes. Drug children should be given
a permanent and nurturing home, even if its means terminating parental rights and finding them adoptive parents. Most are adoptable; there are even waiting lists to adopt babies with spina bifida and Down’s syndrome. Those who are not adoptable should also have permanent arrangements made for their upbringing. Each day that we fail to take decisive protective action means suffering, even death, for thousands of children.

Education /Prevention

Consider the following scenario: At the Milwaukee County Hospital lies a baby girl who was born before her time—three months early, weighing less than three pounds. Her tiny body is entangled in a maze of wires and tubes that monitor her vital signs and bring her food and medicine. Every-so-often she shakes uncontrollably for a few moments—a legacy of the nerve system damage that occurred when she suffered a shortfall of blood and oxygen just before birth. Between these seizures, she is unusually quiet and lethargic, lying on her side with one arm draped across her chest and the other bent to touch her face, sleeping day and night in the comfort of her cushioned warming table. At best, it will be three or four months before she is well enough to leave the hospital,
and even then she may continue to shake from time to
time.

A task force to combat alcohol and other drug use
by pregnant women and mothers of young children was
created and conducted public awareness campaigns in
1990 and 1991. Wisconsin was one of the states to take
an initiative in combating crack cocaine and other
illicit drugs. The former First Lady Nancy Reagan,
joined the campaign and other mass media for preventing
alcohol and other drug problems. Television networks
created programs to educate people, especially
youngsters to say "No" to drugs in "Hang Tough"
Milwaukee. Packets of materials were distributed to
health professionals. Milwaukee Public Schools
provided workshops and seminars for parents of
Milwaukee whose children are attending public schools.

Other agencies in the state are also taking active
roles in the prevention and early intervention of
cocaine and other drug-addicted children. A United Way
agency is funding Demmer-Kiwanis Children's Center and
Curative Rehabilitation Center. These agencies provide
specialized treatment for children with disabilities.
They provide a full range of pediatric habilitation and
rehabilitation services to help children develop to
their fullest potential and support for parents so that they can better cope with their child's special needs.

Studies conducted by van Baar (1990) found that infants of drug dependent mothers seem to have specific difficulties in early language development. This presents results on the development that are manifested more clearly after the first two and one-half years. This outcome adds up to an enormous public burden, not to mention widespread personal pain and tragedy. According to Senator Lloyd Bentson (D-Texas), Chair of the Senate Finance Committee, government at all levels may soon be spending $15 billion annually to prepare drug affected babies to enter kindergarten (p. 7).

Special education teachers need training to alert them to problems children are having, particularly injury to the central nervous system and congenital abnormalities.

St. Francis Children's Center provides a wide range of learning activities for 0-3-year-old children, early childhood, and elementary school children with physical, cognitive, communication, and learning problems; social and behavioral delays and emotional disturbances. Special education personnel are well-trained interventionists.
Education and drug awareness is also promoted by NEWCAP, the Racine Council on alcohol and other drug abuse, the Oconto County Unified Health Services and the Ozaukee Council, Inc. The TRAILS project for the American Indians also include drug awareness as a part of their education program.

The Wisconsin Department of Health and Human Services provides help for low income populations such as African Americans, Hispanics and Hmong who need drug and alcohol treatment.

The number of institutions and service providers involved in alcohol and drug prevention continues to grow annually, as more and more hospitals, schools, and counseling agencies join in the endeavor (Wisconsin Clearinghouse, 1986, p. 54).

At a therapy center at Curative in Milwaukee, the saddest child brought in one morning is three-year-old David, a small bundle of bones in a blue sailor suit whose plastic hearing aids keep falling off. He is deaf, and doctors are not sure how much he can see. He functions at the capacity of a four-month-old. Like a rag doll, he can neither sit nor stand by himself: his trunk is too weak and his legs are too stiff. A therapist massages and bends the little boy's legs,
trying to make him relax. Next year his foster mother will put David in a special school full time in hopes that the child can at least learn how to feed himself.

At a special kindergarten class in the Milwaukee area, a five-year-old named John seems the picture of perfect health and disposition. As a tape recorder plays soothing music in the background, he and the teacher read alphabet cards. Suddenly John's face clouds over, for no apparent reason, he throws the cards down on the floor and shuts off the tape recorder. He sits in the chair, stony-faced. "Was the music going too fast?" the teacher asks. John starts to say something, but then looks away, frowning. The teacher tries to get the lesson back on track, but John is quickly distracted by another child's antics. Within seconds, he is off his chair and running around.

These children have very different problems and prospects, but they will all have one thing in common: they were exposed to crack cocaine while they were in their mothers' wombs. As the children reach school age, it becomes more difficult to separate the impact of drugs from the effects of upbringing and other influences. Yet many teachers think they can see the lingering legacy of crack cocaine.
"Stable, structured environments help drug-exposed kids maintain emotional balance," explains school psychologist Valerie Wallace at Salvin Special Education Center in Los Angeles, California (Cronin et al., 1991, p. 60). Many children exposed to crack cocaine have cognitive limitations and behavioral problems which require appropriate identification and intervention for their specific delays. This gives the child a chance of maximizing development. Many need to be recommended for special services when they enter school (Gold, 1984, p. 58). Other interventions can be implemented sooner. Severely affected infants and toddlers could benefit from early mental and motor stimulation. Early stimulation may help offset some developmental delays.

Developmental delays and delays in acquisition of language skills are often noted among toddlers exposed to cocaine. Early identification of crack children along with appropriate testing, can facilitate individualized educational planning. Appropriate placement in special education classes beginning in early childhood education is often necessary.

Although extensive remedial education has not been shown to increase the intellectual capabilities of children exposed to crack cocaine, it may prevent
further deterioration. A small classroom with simple and clear guidelines with a great deal of individual attention to children will maximize their abilities. Periodical testing is recommended to help teachers tailor educational services to the individual child's needs.

Teachers at all levels should have training and information about children exposed to cocaine in order to help them recognize and understand the problems facing these children. Being familiar with children exposed to cocaine can help teachers set realistic performance expectations and adapt or modify teaching methods to the special needs of these children.

Professional Training. Data on the status of graduate and undergraduate training programs that provide practicum and classroom exposure to issues related to infant-toddler assessment are not abundant. One investigation collected data on the degree of undergraduate and graduate training provided for speech-language pathology students (Crais and Leonard, 1990, p. 57). Crais & Leonard (1990) conducted a telephone and a mail survey designed to determine the current status of effort to prepare speech-language pathology students to work with handicapped infants and toddlers and their families and to identify needs for
training materials and curricula associated with that effort. The telephone survey involved a detailed interview of 48 speech-language pathology training programs nationally. The program surveys reported that the bulk of the classroom hours offered covered issues related to normal and abnormal development and case management. The least amount of classroom exposure was afforded to issues regarding infant developmental assessment, infant intervention, family assessment and intervention and interdisciplinary team functioning.

Forty percent of the graduate programs that participated in the telephone survey reported that clinical experience with handicapped or "at risk" infants was required as part of the training program. Thirteen percent of the undergraduate programs surveyed and 33% of the graduate programs indicated that clinical experience with the families of handicapped infants was required.

A related question asked during the telephone survey dealt with whether the programs allowed for specialization in the area of infancy. Two percent of the undergraduate and 35% of the graduate programs surveyed indicated that this option was available. In those programs that afforded students the opportunity to specialize, the course work was optional and was
taken in addition to regular program requirements. Thirty-nine percent of the undergraduate programs indicated that they did not plan to offer infant specialization opportunities within the next five years. Thirty-one percent of the graduate programs indicated that an infant specialty option would not be offered within the next five years. Overall, the results of this survey point to the need for additional coursework and practicum for speech-language pathology students to meet the need for properly trained personnel to work with infants and toddlers.

In 1987, the Frank Porter Graham Child Development Center at the University of North Carolina at Chapel Hill was awarded a grant from the United States Department of Education to establish an early childhood research institute: the Carolina Institute for Research on Infant Personnel Preparation. The institute focuses on the unique issues associated with preparing professionals from multiple disciplines to work with handicapped infants and toddlers and their families. Several important outcomes have emerged as a result of the data collected during the institute's first year.

The first major activity undertaken by the institute was to determine the current status of infant
and family academic content in eight disciplines: nursing, nutrition, occupational therapy, physical therapy, psychology, social work, special education, and speech-language pathology. Information was gathered by survey from selected training institutions representing each discipline. The primary purpose of the survey was to determine, within each discipline, the extent to which all students received direct classroom instruction in key areas related to P.L. 99-457. These areas were (1) normal and atypical infant development; (2) infant assessment and intervention; (3) family assessment and intervention; (4) the interdisciplinary team process; (5) case management, and (6) professional values and ethics (Carolina Institute for Research on Infant Personnel Preparation, 1988).

In May 1988, the Carolina Institute sponsored a three-day conference in Washington, D.C. to address key issues in infant personnel preparation. Nine leaders in each of ten disciplines participated. The ten disciplines represented in the conference included audiology, medicine, nursing, nutrition, occupational therapy, physical therapy, psychology, social work, special education, and speech-language pathology. Each discipline was asked to define its mission and the
major roles it perceived relative to P.L. 99-457.

The following are the mission statements from the Carolina conference:

Audiology:
To provide and coordinate services to children with auditory handicaps, including detecting the problem and managing any existing communication handicaps.

Early Childhood Special Education:
To ensure that environments for handicapped infants and preschoolers facilitate children's development of social, motor, communication, self-help, cognitive, and behavioral skills and enhance children's self-concept, sense of competence and control, and independence.

Medicine:
To assist families in promoting optimal health, growth and development for their infants and young children by providing health services.

Nursing:
To diagnose and treat actual and potential human responses to illness; for handicapped infants and preschoolers, this means (1)
promoting the highest health and
developmental status possible; and (2)
helping families cope with changes in their
lives resulting from child's handicap.

Nutrition:

To maximize the health and nutritional status
of infants and preschoolers through
developmentally appropriate nutrition
services within family and community
environment.

Occupational Therapy:

To promote children's independence, mastery,
and sense of self-worth in their physical,
emotional and psychosocial development;
purposeful activity is used to expand the
child's functional abilities, such as self-
help skills, adaptive behavior and play
skills, and sensory, motor, and postural
development; these services are designed to
help families and other caregivers improve
children's functioning in their environment.

Physical Therapy:

To enhance the sensory motor development,
neurobehavioral organization, and
cardiopulmonary status of handicapped or "at
risk infants and preschool children within a family and community context.

Psychology:
To derive a comprehensive picture of child and family functioning and to identify, implement or evaluate psychological interventions.

Social Work:
To improve the quality of life for infants and toddlers and their families who are served by P.L. 99-457 through the provision of social work services.

Speech-Language Pathology:
To promote children's communication skills in the context of social interactions with peers and family members, in school, and in the community (Carolina Institute for Research on Infant Personnel Preparation, 1988, p. 215).

A final product of the conference, and one that should prove most valuable as efforts are undertaken to enhance interdisciplinary functioning was the identification by each discipline of key concepts they could offer other disciplines, as well as what each discipline would like from the others. The following information represents a discipline-by-discipline
indication of what each can offer and what each would like from other disciplines.

Audiology

What it can offer other disciplines:

1. Knowledge and skills on identification and assessment of hearing function in infants.
2. Selecting and fitting of appropriate sensory prosthetic devices.
3. Information on the relationship between auditory functioning and communication development through multiple modalities.

What it needs from other disciplines:

1. Knowledge of overall infant developmental disorders.
2. Family systems theory.

Early Childhood Special Education

What it can offer other disciplines:

1. Ability to integrate goals from multiple domains, activity-based intervention.

Specific attitudes regarding disabilities.

What it needs from other disciplines:

1. Knowledge of specialized intervention related to specific disciplines.
2. Detailed information on early development process within specific disciplines.
3. Interagency collaboration.

**Medicine**

*What it can offer other disciplines:*
1. Sharing medical information regarding conditions, treatment, recognition of abnormal development, when to refer to physicians, medical terminology.
2. Technical skills.
3. A healthy skepticism.

*What it needs from other disciplines:*
1. Family functioning information and assessment of family strengths and needs.
2. Working knowledge of functional skills of other disciplines.
3. Vocabulary of other disciplines.

**Nursing**

*What it can offer other disciplines:*
1. Knowledge regarding family and child responses to health care or developmental problems and treatment.
2. Assessment of the child's physical and emotional environment.
3. Coordination of care and services.

*What it needs from other disciplines:*
1. Knowledge of findings from all other disciplines.

2. Exploration of legal and ethical issues from an interdisciplinary standpoint.

Nutrition
What it can offer other disciplines:
1. Nutritional concepts, understanding and skills keyed to the needs of all disciplines.

What it needs from other disciplines:
1. Unique contributions of each discipline in understanding the child and the family.

2. Referral criteria for each discipline.

3. Priorities and methods of integrating care into a total intervention plan.

Occupational Therapy
What it can offer other disciplines:
1. Knowledge of scope of occupational therapy services. When to refer and to seek consultation.

2. Awareness of the impact of sensory training on adaptive functioning.

3. Availability and use of devices and methods to adapt environments.

What it needs form other disciplines:
1. Knowledge and awareness of scope of services provided by other disciplines.
2. Knowledge of family systems and dynamics.
3. Service coordination and case management.

Physical Therapy
What it can offer other disciplines:
2. Knowledge of positioning and handling infants.

What it needs from other disciplines:
1. Greater understanding of family systems therapy.
2. Effective means of communicating with other disciplines.

Psychology
What it can offer other disciplines:
1. Use of empirical approach to practice.
2. Grounding in developmental theory.
3. Appreciation of ecologic framework.

What it needs from other disciplines:
1. Knowledge of impact of specific conditions on developmental needs.
2. Increased knowledge of more effective collaboration with other disciplines.

Social Work
What it can offer other disciplines:
1. Understanding of impact on families of handicapped children.
2. Knowledge of engaging and working with families from a family system's perspective.
3. Knowledge regarding impact of multicultural diversity and socioeconomic factors on family functioning.

What it needs from other disciplines:
2. Knowledge of impact of specific conditions on developmental needs.
3. Knowledge of specific criteria for referral and to develop more effective collaboration with other disciplines.

Speech-Language Pathology
What it can offer other disciplines:
1. Detailed knowledge of early communication development.
2. Knowledge of relationship between communication and other developmental domains.
3. Knowledge of family interactions supporting communication of infants.

What it needs from other disciplines:
2. Strategic for working effectively with families and community agencies.

3. Strategies to develop more effective collaboration with other disciplines, including referral criteria and terminology used within each discipline (Carolina Institute for Research on Infant Personnel Preparation, 1988, p. 217).

Kirk (1987) states that the term developmental learning disabilities with regard to preschool children if they have a perceptual problem an orientation problem, a language disorder or other disability that are associated with development.

Developmental learning disabilities affect the prerequisite skills that a child needs to learn academic subjects. Learning to write, for example, requires many motor skills, eye-hand coordination, memory sequencing, and so forth. Reading requires language abilities and visual and auditory perceptual skills. In general, developmental learning disabilities include deficits or disorders in attention, visual auditory perception, memory, thinking and language. These disorders are identified at the preschool level. If not remediated at an early age, they will contribute, singly or in combination, to disabilities in learning the academic subjects later on.
The National Joint Committee on Learning Disabilities (1985) stated that preschool children demonstrated specific developmental delays or deficit patterns that are early manifestations of learning disabilities. These include atypical patterns of development in communication, perceptual motor abilities, cognitive abilities, and/or social and personal behaviors that adversely affect later academic learning.

The developmental learning disabilities in young children are attention, memory, perceptual and perceptual-motor, thinking and language disorders. They are defined as follows:

- **Attention disorders** include hyperactivity, hypoaactivity, fixation, attention, distractibility and impulsivity.
- **Language disorders** include deficits in receptive, integrative and expressive language as well as delays in development of adequate semantics, phonology, morphology, syntax and pragmatics.
- **Memory disorders** include deficits in visual, auditory, and haptic memory as well as short- and long-term memory.
Perceptual and perceptual-motor disorders include deficits in auditory and visual figure-ground and haptic discrimination, visual and auditory closure; visual and motor integration; perceptual speed; visual auditory or haptic perceptual modality preferences; and preservation.

Thinking disorders include deficits in problem solving ability, concept formation, and other related cognitive functions.

Social perception disorders are reflected in an inability to recognize the meaning of the other behavior of others (body language, verbal communication, distance, clothing, make-up) (Kirk, 1987, p. 79).

Some of the many and diverse developmental disabilities found in young children exposed to cocaine and other drugs are quite unique. Many of these aberrations in development are ascribed to neurological or biochemical abnormalities. A neurologically handicapped child with a neuro-motor problem will tend to avoid tasks that require visual motor activities. Many developmental disabilities are prolonged or exacerbated by the environment that allows the affected child to withdraw or avoid uncomfortable activities. Remedial intervention in this case provides an
alteration of the environment to give a child practice in the areas previously avoided. By correcting and ameliorating these disabilities, we can help prevent children from becoming learning disabled when they enter elementary school (Kirk, 1987, p. 80).

As the children exposed to crack/cocaine enter school they will be placed in different special education programs in mental retardation, learning disabilities or emotionally disturbances. As in all educational situations, the goal of the curriculum for these children is to move each individual to higher levels in developmental sequence. The major differences related to the range of the developmental functioning levels of concern.

In the education of mildly handicapped the major focus is on readiness for an achievement in reading, writing, arithmetic and social skills (Mental Retardation, 1979, p. 173).

With the severely profound handicapped the curriculum emphasis is on response to environmental stimulation, head and trunk balance, sucking, swallowing and chewing, grasping, movement of body parts, vocalization, and at higher levels, imitation, language acquisition, self-feeding, ambulation, dressing skills, toilet training, social/recreational
behavior, and functional academic skills (Mental Retardation, 1979, p. 171).

Presently, educators are finding that the behavior modification methodology is very effective with the moderately and severely handicapped (Kerr & Nelson, p. 84).

When classroom teachers have used behavior modification, the stress has been on the manipulation of stimuli that occur after the response to increase or decrease the intensity, duration, or frequency of responses. With severely and profoundly handicapped, teachers must continue to apply reinforcement principles (Kerr & Nelson, 1983, p. 81). Kerr & Nelson (1983) state that the concepts of reinforcement sampling, disorientation training, generalization, stimulus control, shaping, backward chaining, contingent aversive stimulation, prompting, fading, modeling, etc. will have to not only be understood, but also incorporated into daily teaching sessions.

Brown (1973) said that the most important skill that teachers must have is the ability to task analyze behavior. It has been found that breaking down tasks into small sequential steps enhances the speed and quality of response acquisition in the severely and profoundly handicapped.
Receiving medications is a frequent occurrence with severely and profoundly handicapped. Teachers will need to be aware of the reasons certain drugs are administered and their side effects.

These and other aspects will have a bearing on how the teacher works with such individuals. The teacher will be required to design an educational program (IEP), but not be the sole contributor. The element of the interdisciplinary teamwork is mandatory.

In order to successfully deal with the handicapped children, teachers must be well versed in the use of modification tools such as prosthetic aids. A prosthetic aid is a device used to modify an individual or environment a previously handicapping condition can be bypassed or eliminated in a given set of situations. New devices are being designed to help modify the results of the handicaps of blindness, paralysis, deafness, voice and muscular and bone aberrations. As research development, and use of these devices continues, the need for teachers to become familiar with them will increase.

In the case of mildly handicapped children, regular educators have generally looked to special educators for convenient solutions to the problem of educating the nonachieving, non-conforming child and
have made commitments to participate or cooperate in programs designed for this population.

Special education teachers should include play in program handicapped children exposed to drugs and other developmental disabilities.

Play is such an all-encompassing activity for young children that virtually all areas of behavior and development--cognitive motor, social, emotional, language--can be observed in a child's play. Children use play to master skills in all these areas, and thus all areas of a child's development are enhanced by the child's opportunities and experiences in play (Ulrey & Rogers, 1982, p. 65).

Play thus appears to provide the major learning medium for young children's development (p. 66). Attempts to help children develop more elaborate play have been successful for children who are economically deprived, mentally retarded, or autistic (p. 67). Professionals who direct intervention programs for young children should assess the curricula, scheduling and content of the programs to determine the support offered for children's play and the strategies that can be incorporated to help children develop their play skills (Ulrey & Rogers, 1982, p. 82).
Through effective testing techniques, though the services of interdisciplinary teams through the
tireless efforts of a warm-hearted, dedicated, well-
trained teacher, the children with special needs can be
helped immeasurably (Special Learning Corporation,
1979, p. 272).

Ysleta Pre-Kinder Center Program provides an
excellent example of how such a program can be
developed to meet the special needs of the
disadvantaged community it serves. As a part of an
educational reform package passed in Texas in 1984, the
legislature provided for all four-year-olds, who were
either non-English speaking or from a low income
family. The Ysleta Program emphasizes five essential
areas of development:

- Awareness of language as a means of
  communication
- The use of five senses to observe the
  environment
- Development of motor skills, including physical
  coordination, balance and five motor skills
- Expression of creativity through art, music and
  drama
- Social emotional development by building self
  confidence and self-esteem
The program makes extensive use of field trips, special programs in health, safety and entertainment, and computers for learning (Committee for Economic Development, 1987, p. 35).

The Beethoven Project in Chicago, sponsored by Chicago businessman Irving B. Harris and funded by a combination of public and private resources, is an example of such a parent-child approach. It operates in a high poverty public housing project that is home to a large number of teen mothers. The Beethoven Project provides prenatal care to expectant mothers so that their children will have a better start and a better chance to success when they enter Beethoven Elementary School (Harris, 1986). The project also teaches young mothers basic parenting skills and emphasizes their own and their children's need for basic education. Developmental programs for infants and toddlers will be available to all children born in the Beethoven Elementary School enrollment area. Head Start programs will also be made available to all children, when they reach three years of age. In addition, fulfilling health care and nutritional needs for the children will have a high priority.

The project, operated by the Ounce of Prevention Fund and sponsored by the Chicago Urban League, is
unusual because it provides comprehensive care for a large group of children over a five-year period. Thus, it has demonstrated success in its ability to mobilize human resources; it works within a circumscribed community using community people for whom intensive training is provided. Trained home visitors inform expectant mothers of available health care, family counseling, and other services.

The Beethoven Project takes time to ascertain whether this program dramatically improves teaching and learning in the Beethoven School. It is expected to improve health, reduce delinquency, and curb the growing problem of teenage pregnancies in inner city poverty areas. Governor James R. Thompson of Illinois has already announced plans to develop several similar projects in other localities (The Committee for Economic Development, 1987, p. 67).

Child care needs to be of good quality if it is to have value. It should not be strictly custodial; rather, it should provide intellectual stimulation and opportunities to learn and reinforce language and socialization skills. A good program should provide high staff-to-child ratios, an appropriate developmental curriculum, and expertise to address developmental problems. In order to encourage parents
at the low end of the socioeconomic ladder to work, child care facilities should provide a physically safe environment and flexible hours to accommodate parents who work either part time or full time. Day care programs can be located either in the neighborhoods where families reside or near work sites. In either case, they should be accessible by public transportation.

Funding for child care for preschool age children of the poor is of necessity a public responsibility, whether at the federal, state or local level. Business can assist, however, by contributing its expertise in the field of referral services, which many corporations are now providing to their own employees. Beyond that, business in collaboration with civic organizations can reach out to poor parents in the community to increase their access to information on the availability and quality of day care.

Federal Legislation

Perhaps the two most significant pieces of federal legislation to affect service provision to handicapped children are Public Law 94-142, the Education for All Handicapped Children Act, passed in 1975, and P.L. 99-457, the Education of the Handicapped Amendments of 1986. Each of these federal mandates promotes and
expands the federal role in identifying and providing appropriate educational services to handicapped children the right to educational intervention from an early age.

An important piece of federal legislation affecting special education was signed into law in October 1986. This act is known as P.L. 99-457, the Education of Handicapped Amendments of 1986. This legislation has an enormous impact on service delivery for handicapped infants and toddlers. This legislation requires commitment, effort, expertise, long hours, and money (Williams, **Liaison Bulletin**, 1986). Weicker (**Liaison Bulletin**, 1986) indicated that this legislation represents an important step forward in fulfilling a federal commitment to those most vulnerable in our society who require special care. Legislators who were instrumental in the passage of P.L. 99-457, point out the substantial impact that this legislation has on handicapped infants and toddlers.

There are three important words in P.L. 99-457 Title I: Handicapped Infants and Toddlers.

Title I established a new discretionary program designed to address the needs of handicapped infants and toddlers and their families. The authors of the legislation felt that an urgent need existed to:
1. enhance the development of handicapped infants and toddlers and to minimize their potential for developmental delay;
2. to reduce the costs of such delay to society, including schools;
3. to minimize the likelihood of institutionalization;
4. and to enhance families' ability to meet their handicapped children's need.

The law provides states financial assistance to develop and implement a statewide, comprehensive, coordinated, interdisciplinary program of early intervention services for handicapped infants and toddlers and their families; facilitates coordination of payment for early intervention services from various public and private sources; and enhances the capacity to provide quality early intervention services and expand and improve existing services (P.L. 99-457, Education of the Handicapped Amendments of 1986).

Handicapped infants and toddlers are defined as individuals from birth through age two who require early intervention services because they are experiencing developmental delays as measured by appropriate diagnostic instruments and procedures in one or more areas: cognitive development, physical
development, language and speech development, psychosocial development, or self-help skills; a diagnosed physical or mental condition that has a high probability of resulting in developmental delay and also infants and toddlers who are "at risk" of having substantial developmental delays if early intervention services are not provided.

As stated in the legislation, the term "early intervention" means developmental services that are provided under public supervision; are provided at no cost, except where federal or state law requires system of payments by families; are designed to meet a handicapped infant's or toddler's developmental needs such as physical development, cognitive development and self-help skills; meet state standards; are provided by qualified personnel, including special educators, speech-language pathologists and audiologists; occupational therapists, physical therapists, social workers, nurses and nutritionists and are provided in conformity with an individualized family service plan (IFSP).

Infants and toddlers who are exposed to cocaine and other illicit drugs qualify to receive these services.
Perhaps one of the most beneficial aspects of the legislation deals with the implementation of case management services. Although early intervention has been available in some parts of the country, in many instances, this intervention service was fragmented. This was because infants and toddlers received services from many professionals, but no mechanism existed to afford proper management of the total services the child received (Copeland & Kemmel, 1989, p. 17).

Case management services, as outlined in the legislation, include services provided to families to assist them in gaining access to early intervention services and other services identified in the individualized family service plan (IFSP). The IFSP requires and authorizes that intervention services be directed at the identified needs of the family and parents as well as at the child's specific needs (Copeland & Kemmel, 1989, p. 17).

It is intended that case management be an active ongoing process of continually seeking the appropriate services or situations that benefit the development of each infant and toddler for the duration of the child's eligibility. Case management includes ensuring timely delivery of intervention and coordinating services that the infant and toddler needs.
Setting the National Agenda

The Surgeon General's Conference on Children with Special Health Care Needs was sponsored by the Division of Maternal and Child Health (now the Maternal and Child Health Bureau) and the American Academy of Pediatrics. Conducted in Houston, June 14-17, 1987, the conference was a call to action to create a national agenda to improve the lives of medically fragile children and their families. The theme of the conference was a family-centered, community-based, coordinated approach to health care. The Surgeon General's Report: Children with Special Health Care Needs (U.S. Public Health Service, 1987) presented at the conference, included seven action steps to improve access to care and quality of life for these children and their families.

1. Pledge a national commitment to all children with special health care needs and their families.
2. Encourage building community-based service system.
3. Assist in ensuring the adequate preparation of providers of care.
4. Develop coalition to improve the delivery of services.
5. Establish guidelines to control costs of services.

6. Encourage and support the development of adequate health care financing.


Follow-up to Surgeon General's Conference. The Surgeon General's Conference on Building Community-Based Service Systems for Children with Special Health Care Needs: Campaign '88 was held in September 1988 in Washington, D.C. The conference brought together more than 1,500 public and private health care providers from a variety of disciplines; providers of educational, vocational, mental health, social and family support services; and parents, elected officials, and other community leaders. The conference focused on defining the populations that are family-centered, comprehensive, coordinate, and culturally sensitive. Proceedings from the conference were being prepared by the National Maternal and Child Health Resource Center at the University of Iowa (Hutchins & McPherson, 1991, p. 142).

PUBLIC LAW 99-457: A Model for the Surgeon General's Agenda. A major legislative initiative has provided the opportunity to carry out the national
agenda directed at young children with special needs. Public Law 99-457, the Amendments to the Education of the Handicapped Act (EHA), was enacted on October 8, 1986. These amendments reauthorized many programs under EHA and authorized a strict agenda for improved services to young children with special needs and their families. This landmark legislation has provided an opportunity to move forward in the development of comprehensive service systems for these children and their families.

The Handicapped Infants and Toddlers program, Part H of the EHA, is a discretionary early intervention program for eligible disabled infants and toddlers from birth through three years of age, and their families. Provision of statewide comprehensive early intervention services through this program requires a mandatory lead agency and interagency council. A comprehensive and multidisciplinary evaluation for each developmentally delayed infant and toddler is also required by Part H. Other services required by P.L. 99-457 include case management and development of Individualized Family Service Plans. The Preschool program, amending a prior section of the EHA, requires all states to provide a free appropriate public education to all eligible three to five-year-old disabled children.
All of the states have elected to participate in Part H of P.L. 99-457 and are actively developing plans for service delivery; training; identification of special need populations that may include medically fragile children, developmentally delayed children, and children "at risk" for delay; and the development of models for Individualized Family Service Plans. The Federal Interagency Coordinating Council, composed of representatives from federal agencies responsible for the administration of P.L. 99-457, has recently established guidelines for states in their efforts to comply with this landmark legislation. Each year for the past three years, the Federal Interagency Coordinating Council has sponsored a national meeting to give state representatives, practitioners, researchers, and parents an opportunity to meet.

Over time, services to families with young children with special health needs will be shaped by the agenda set by the Surgeon General's conference and P.L. 99-457. Evidence for this gradual change can already be seen in increased parent participation and activism concerning children's issues. Funding options, although not as complete as needed, are becoming more responsive to alternate family centered treatment options (U.S. Public Health Service, 1987).
CHAPTER 3

Summary

The goal of this research project was to provide a comprehensive report on the development of infants and toddlers exposed to cocaine as it relates to educators. Special attention was given to resources for developing teaching strategies and the teacher's role. Additionally, an outline of related issues including the effects of cocaine in the physical and psychological functioning of infants and toddlers, characteristics of these children, teen pregnancy, legislation, and early intervention was presented.

Educators must remember that crack children cannot be dealt with in isolation. There is a widespread concern about the use of cocaine and other illicit drugs by pregnant women and its effects in their children that may need to be addressed by the teacher, community nurse, family physician, and pediatrician. These concerns may include long-term issues, such as drug addiction, developmental delays, learning disabilities, and the widespread HIV infection of personal pain and tragedy. With a basic understanding and knowledge of these related issues, a teacher would be more readily equipped to intervene on behalf of a child exposed to cocaine as he/she enters school.
The facts reported in this research clearly show a correlational potential for an increase in the incidence of crack children. The use of cocaine and other drugs is costly to society. Averse developmental effects resulting from drug use during pregnancy and during the life of the child will have an increasing impact on the medical, social welfare, educational and justice systems in our society.

Despite legislation and education, teenage pregnancy and drug addiction are on the rise. The apathetic attitude of expectant mothers about crack use continues to result in the permanent damage to children. It may be due in part to parents not taking a responsible role to their teenage daughter's well being. It may be due in part to the belief of expectant mothers that, "It won't happen to me." Perhaps misinformation about drug use during pregnancy was given by a friend or by a peer group. Perhaps pregnant women just did not know about the teratogenic effects of drugs, or they assumed only a small dose of drugs at certain times was "safe." Perhaps pregnant women did have all the information and chose to "chance it" anyway.

If it is the case that people are informed and not acting responsibly, the question arises: "What should
be done?" What are the moral and legal obligations of pregnant women? Should pregnant women be allowed the right to choose to consume crack in light of carefully documented effects of taking drugs on the developing fetus? What can the law do to prevent unborn children exposed to crack/cocaine? What are the responsibilities of the producers and distributors of crack/cocaine? These are complex questions with no easy answers.

One absolute fact remains. The situation of children exposed to crack/cocaine is 100% preventable. Not one single fetus needs to be traumatized by drugs. Consuming crack/cocaine is a choice, unnecessary choice, made by pregnant women every day. If there were no smoking of cigarettes or drinking of alcohol, women could be drug-free and there would be no children exposed to crack/cocaine at all.

In a world filled with temptations of every kind, temptations that can mutilate and destroy, difficult choices must be made. Legislation and education can only do so much to influence the choices made by the public. Eventually, the responsibility for the choice to take or not to take drugs during pregnancy lies with the individual. However, it can be an acquainted choice.
As the knowledge base of drug effects on fetus development grows, so must the sharing of the new information. Educators and schools must take a leadership role in prevention and intervention programs. In school, teachers have opportunities to promote, inform, and influence choices and decision-making. It is essential that students are taught to make informed choices and to think through potential consequences of their choices. This is especially important with issues of AIDS, sexuality, pregnancy, alcohol and drug abuse and parenting.

In being leaders, teachers can become involved in the prevention of children being exposed to crack/cocaine on many levels. Communities are in need of leaders to form groups on teenage pregnancy, drug abuse, alcoholism, and parenting. In becoming involved, teachers are setting an example for the community. Letters to senators and congressmen and other state representatives provide insight to public concerns. Creating programs when they don't exist and expanding the sharing of information is vital to the cause.

Increased interest in the topics of drugs and pregnancy and widespread information about crack/cocaine-exposed children will generate more
research, more information and more awareness. Educators can develop programs and teaching strategies that effectively assist the growth, development, learning and functioning of children exposed to crack/cocaine by utilizing information collected in research projects.

Finally, teachers and educators must inspect their own behaviors, values and beliefs. Some educators believe that developmental outcomes after birth are more related to environmental conditions and responsive caretaking than to prenatal difficulties. Education begins with information and understanding. Despite the complexity of the topic, most women do not want to be overwhelmed with data and extraneous material. Educators must keep to the facts, as briefly as possible. Teachers and educators must not use technical language that will not be understood.

In many cases, drug-associated deficits only become apparent as a child matures. Mental retardation, lowered intelligence, hyperactivity, short attention spans, learning and organizational disorders, impaired physical coordination, continuing growth delays in height, weight and head size, and social-interpersonal adjustment problems are found with greater regularity among prenatally drug-exposed
youngsters than in similar children whose mothers did not use drugs during pregnancy.

In the long run, a baby’s caretakers and learning environment are as important as the mother’s prenatal drug use for healthy growth and development. A stimulating and supportive family life is vital for overcoming or ameliorating damage to the child from cocaine exposure in the uterus. Many single mothers from impoverished backgrounds need help in parenting skills, as well as with other psychosocial and economic problems. Ultimately, the best hope for any child is a healthy and nurturing family.

Conclusions

Childhood developmental delays and specific skill disorders among children exposed to cocaine, alcohol and other drugs have also been linked to learning and adjustment problems in adolescence and early childhood. Early interventions with parents and children that address prenatal care, parental skills, and remedial help in early school programs may help prevent developmental problems and their progression to mental health problems.

The incidence of drug and pregnancy is the most pressing problem among young people, especially black women. Successful implementation of family planning
choices requires mature, thoughtful decisions accompanied by motivation to carry out those decisions. It requires the exercise of personal responsibility. There are many effective ways by which family planning choice can be implemented.

Drug abuse (the use of crack cocaine) is linked to high rates of violent crime in the nation, to transmission of the HIV virus, and to developmental problems in infants.

A health strategy for the 1990s, must put particular emphasis on the arena where health professionals in both the private and public sectors have most responsibility for providing preventive services. Those services, made available to all Americans, can provide the foundation for achievement of other parts of health strategy.

The effectiveness of preventive services in reducing disease, disability and premature death among children exposed to crack cocaine, alcohol and other drugs is now documented. The dramatic declines observed for children exposed to alcohol, crack, infectious diseases and early death are largely attributed to the application of preventive services (e.g. prenatal care, early intervention programs, well-baby clinics and nutrition).
Inpatient barriers of preventive services is the lack of reimbursement or financing. Few insurance plans cover preventive services. Millions of Americans are without any form of insurance and many more are underinsured or are covered by insurance programs with requirements and payments that providers are increasingly reluctant to accept. Both the causes and the effects of alcohol, drug addiction and school failure among children are linked to all persons within the child’s ecosystem and to factors in a larger society. Each of these persons affects and is affected by the child’s experience, as is society in the long term. To prevent alcohol, drug abuse and school failure, all these people must be engaged in the prevention and remediation process. The most direct social work interventions occur with the child’s primary systems, such as the family and the school. Extended services can influence other large systems.

The full range of social work service activity must be utilized, including collaboration among various professionals, to achieve effective comprehensive service delivery. The ultimate goal should be development of a climate within the school and other parts of the ecosystem that will facilitate positive
experiences for children and ensure their school success.

Social workers in the foster care system and in other agencies need to acquire skills in both case advocacy and systems advocacy. The team concept can energize and help complement the performance planning. The social worker's role is critical. The staff's commitment to permanence must be strengthened, their sensitivity to the needs and problems of black children and their families must be increased, and their knowledge base needs to be expanded.

Adolescent parenthood and drug abuse remain a major problem for the ethnic groups because it disrupts the natural transition into young adulthood, disrupts educational goals and preparation for future employment, and is likely to lead to unstable interpersonal and intrapersonal relationships within and outside of the family of origin. These factors mitigate against adolescent parents being able to accept and effectively carry out parenting responsibility, and they also create a high cost to society in terms of the costs of education, health care and lost productivity.

(1) Alcohol and crack abuse are the primary problem and the number one social problem among
minorities. It is both the cause and the result of numerous other problems, including poverty, unemployment, crime, familial disorganization, and marital disarray. Alcohol and crack use is an integral part of the minorities, and a convenient way to alleviate some of the anxieties and frustrations associated with the harsh realities of racism, discrimination and oppression.

(2) Treatment of abusers must be based on an understanding of the quantitative and qualitative differences between blacks and other ethnic and cultural groups. Intervention and treatment programs must be tailored to the unique needs of alcohol and crack abusers. Cultural sensitivity and genuine understanding on the part of treatment is essential.

(3) Approaches to the prevention of alcoholism and drug abuse must be comprehensive, multimodal, and ecological. Effective strategies need not necessarily relate specifically to drinking problems.

(4) A comprehensive treatment approach must involve prevention. Competition between drug and alcohol treatment and prevention specialists has not been functional for the black community. Treatment efforts need to be viewed on a continuum with prevention efforts. If treatment is conceptualized
along a continuum with prevention, many alcohol and drug issues and problems at different levels can be addressed simultaneously.

Recommendations

The researcher believes that schools serving handicapped children need to undergo fundamental restructuring if they are to ensure the children access to high quality education. This will require schools and their communities to reach beyond the traditional boundaries of education in order to provide the comprehensive services and sustained efforts needed by handicapped children. The restructuring of schools must be made a priority in communities whose children suffer serious problems of drugs and poverty. Such restructuring will require fundamental changes in the way schools are organized, staffed, managed and financed.

A new relationship must be developed between the school district and the community that encourages schools to reach out to parents, community members and business. Public schools and communities must work together to design and tailor programs that meet the special academic, vocational, social and health needs of children exposed to cocaine and other drugs.
The researcher believes that support and continued monitoring of the educational and social progress of children exposed to cocaine and other drugs must be sustained from early childhood education through high school if programs are to have the maximum effect. At the same time, state and local governments and school boards must provide the support necessary to enable local schools to meet their educational goals through programs designed to address the specific needs of their handicapped students.

All teachers should receive appropriate training in child development in addition to the rigorous academic training we are now coming to expect. This is particularly vital for elementary and middle school teachers, who often confront children with a wide range of social, emotional, learning and physical problems.

Teachers should be brought more fully into the decision-making process of the school. More attention should be paid to the concepts of team teaching and mentoring, particularly at the elementary and middle school levels, as a way of helping to relieve the isolation experienced by teachers and to provide a more integrative approach to learning.

Teachers who have made a commitment to working with the handicapped and who have expertise in dealing
with children with multiple problems should encourage flexibility and innovation in the school curriculum, teaching method and organization. Special support for those teachers needs to be made available by school districts and schools of education.

Support is needed for preschool and child care programs by the school system where appropriate for the community. Support systems within the schools should include health services, nutritional guidance, psychological, career and family counseling.
Appendix

Books and Journals

Prenatal Drug Exposure: Effects on Neonatal and Infant Growth and Development
Dr. Ira J. Chasnoff
Assistant Professor of Pediatrics and Psychiatry
Northwestern University Medical School
215 East Chicago
Chicago, IL 60611
(312) 869-4300

Drug Addiction, AIDS and Childbirth
Alison B. Marshall
Miller, Canfield, Paddock, and Stone
2500 Commercial Building
Detroit, MI 48226
(313) 963-6420

Direct and Indirect Effects on the Infant of Maternal Substance Abuser
Cheryl LaRue Jones, Ph.D.
Research Psychologist
Division of Clinical Research
National Institute on Drug Abuse
Parklawn Building, Room 10A20
5600 Fishers Lane
Rockville, MD 20857
(301) 443-1514
About Pregnancy and Drugs
Channing L. Bete Co., Inc.
200 State Road
South Deerfield, MA 01373
(800) 628-7733
Facts You Should Know About Teenage Pregnancy
March of Dimes Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 426-7100
Fetal Alcohol Syndrome and Other Drugs Update
Prevention Resource Center
901 South Second Street
Springfield, IL 62704
(217) 525-3456
Keep the Pride
Alcoholism and Substance Abuse Program
Indian Health Service
5600 Fishers Lane
Rockville, MD 20857
(301) 443-4297
Alcohol, Other Drugs and Pregnancy
Wisconsin Clearinghouse
Department CF
Healthy Mothers, Healthy Babies Quiz
March of Dimes Chapter or
March of Dimes Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

Better Beginnings for Babies
Washington - Greene Prevention Corporation
87 East Maiden Street
Washington, PA 15301
(412) 228-0810

"Techniques for Approaching Women at Risk"
California Urban Indian Health Council, Inc.
2422 Arden Way, Suite A-32
Sacramento, CA 92825
(916) 920-0313

Brochures, Pamphlets and Fact Sheets
National Clearinghouse for Alcohol and Drug Information
PO Box 2345
Rockville, MD 20852
(301) 468-2600

Prenatal and postnatal care
American Medical Association Auxiliary, Inc.
535 North Dearborn Street
Chicago, IL 60610
Do It Now Foundation
PO Box 21126
Phoenix, AZ 85036

No Thanks . . . I Want a Healthy Baby
Prevention Resource Center
901 South Second Street
Springfield, IL 62701

American College of Obstetricians and Gynecologists
409 12th Street, SW
Washington, DC 20024
(202) 638-5577

D.A.T.A. Drugs, Alcohol, Tobacco Abuse During Pregnancy
March of Dimes Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

National Agencies
Illinois Prevention Resource Center
901 South Second Street
Springfield, IL 62704
(217) 525-3456
March of Dimes
1275 Mamaroneck Avenue
White Plains, NY 10605
(or your local chapter)
Madison: (608) 257-5151

National Center for Education in Maternal and Child Health
3520 Prospect Street, NW, Ground Floor
Washington, DC 20057

National Clearinghouse for Alcohol and Drug Information
PO Box 2345
Rockville, MD 20825
(301) 468-2600

National Council on Alcoholism and Drug Dependence, Inc.
12 West 21st Street, Eighth Floor
New York, NY 10010
1-800-NCA-Call; (212) 206-6770

National Association for Perinatal Addiction Research and Education (NAPARE)
11 East Hubbard Street, Suite 200
Chicago, IL 60611
(312) 229-2512
Healthy Mothers, Healthy Babies Coalition
600 Maryland Avenue, SW, Suite 300 East
Washington, DC 20024
(202) 638-5577

National Federation of Parents for Drug-free Youth
8730 Georgia Avenue, Suite 200
Silver Spring, MD 20910
1-800-554-KIDS
(301) 525-5477

Wisconsin Resource Agencies for Information and Materials

Central Wisconsin Center for the Developmentally Disabled
317 Knutson Drive
Madison, WI 53704
(608) 249-2151

Middleton Health Sciences Library
1305 Linden Drive
University of Wisconsin
Madison, WI 53706
(608) 231-3335

Judy Pfeifer, Executive Director
PICADA
17 North Webster Street
Madison, WI 53703
Wisconsin Association on AODA/Women Reaching Women
2801 West Beltline Highway, Suite 235
Madison, WI 53713
(608) 273-9616

Wisconsin Clearinghouse
PO Box 1468
Madison, WI 53701
(608) 263-2797

Wisconsin Office on Alcohol and Other Drug Abuse
Room 441
One West Wilson Street
Madison, WI 53704
(608) 266-2717

Wisconsin Human Genetics Education Center
104 Genetics Building
445 Henry Mall
University of Wisconsin
Madison, WI 53706
(608) 262-1006

Other Organizations in Community
- State and local maternal and child health and developmental disabilities agencies
Local or state medical societies or chapters of national organizations
Alcohol and other drug abuse agencies
State midwives and nurses' associations
Women, Infants and Children (WIC) nutrition counselors
Women's advocacy groups
Civic organizations
Hospitals
Appropriate business firms
Local chapters of the Association of Junior Leagues

Pamphlets and Fact Sheets
I Didn't Mean to Hurt Your Baby
Virginia Department of Mental Health/Mental Retardation
PO Box 1797
Richmond, VA 23214
(804) 786-1530

Sudden Infant Death Syndrome (SIDS) Foundation
2320 Glenview Road
Glenview, IL 60025
(312) 657-8080

The Fact Is . . . Alcohol and Other Drugs Can Harm an Unborn Baby
NCADI
Drugs, Alcohol and Pregnancy
Christian Dye
Do It Now Publications
PO Box 21126
Phoenix, AZ 85036
(602) 491-0393

Drugs and Pregnancy: It's Not Worth the Risk
American Council for Drug Education
204 Monroe Street, Suite 110
Rockville, MD 20850
(301) 294-0600

I Want To Have a Healthy, Happy Baby
Trish Magyari
Georgetown University Child Development Center
3800 Reservoir Road, NW
Washington, DC 20008
(202) 687-8635

National Head Start Association
1220 King Street, Suite 200
Alexandria, VA 22314
(703) 739-0875

Planned Parenthood Federation of America, Inc.
810 Seventh Avenue
New York, NY 10019
(212) 541-7800

Posters
No Thanks ... I Want a Healthy Baby
Prevention Resource Center
901 South Second Street
Springfield, IL 62704
(217) 523-3456

Drug and Alcohol Poster Series
Texas Commission on Alcohol and Drug Abuse
Resource Development Department
1705 Guadalupe
Austin, TX 78701-1214
(512) 463-5510

Audiovisuals
Treating the Chemically Dependent Woman and Child
Pyramid Film and Video
Box 1048
Santa Monica, CA 90406-1048
(800) 421-2304

Innocent Addicts
Pyramid Film and Video
Box 1048
Santa Monica, CA 90406-1048
(800) 421-2304
A Love Story for My Unborn Child
Universal Health Associates, Inc.
1701 K Street, NW, Suite 600
PO Box 65465
Washington, DC 20035-5465
(202) 429-9506

Drugs, Smoking and Alcohol During Pregnancy
Milner-Fenwick, Inc.
2125 Greenspring Drive
Timonium, MD 21093
(301) 352-1700; (800) 638-8652

Cocaine's Children
March of Dimes Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

Medicines Used During Pregnancy
Universal Health Associates, Inc.
1701 K Street, NW, Suite 600
PO Box 65465
Washington, DC 20035-5465
(202) 429-9506

One for My Baby
Wisconsin Association for Retarded Citizens
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Wisconsin Human Genetics Education Center
104 Genetics Building, 445 Henry Mall
University of Wisconsin
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Central Wisconsin Center for the Developmentally Disabled
317 Knutson Drive
Madison, WI 53704
(608) 249-2151
PICADA
17 North Webster Street
Madison, WI 53703
(608) 251-4558
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Pregnancy on the Rocks
Peter Glaws Productions
130 B Avenue
Coronado, CA 92118
(619) 435-3179
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