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# The Prenatal Use of Crack Cocaine: How it Affects Children and How Schools Can Respond

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**THE PRENATAL USE OF CRACK COCAINE:  
HOW IT AFFECTS CHILDREN AND HOW SCHOOLS CAN RESPOND**

A Senior Thesis for the University Honors Program

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## **ABSTRACT**

Crack made its debut in the United States during the late 1980's. No one thought about the enormous impact that one illegal drug could have, but crack has dramatically increased the number of drug addictions in this country. Even more traumatic is that there are many children suffering today from the effects of the crack that their mothers used while pregnant. The oldest crack-exposed children are now approaching school-age. A concern for the educators of our country is that disagreements exist concerning what abilities these children do or do not possess and what can or can not be done for them. The questions are many and the answers are few. It is known that children exposed to crack suffer from physiological and neurological side-effects which may interfere with classroom performance. Intervention by educators, medical personnel, and the community is necessary to help these children lead productive lives.

## **THE PRENATAL USE OF CRACK COCAINE:**

### **HOW IT AFFECTS CHILDREN AND HOW SCHOOLS CAN RESPOND**

Each year it is estimated that 375,000 infants are born exposed to crack cocaine in-utero, a figure which represents nearly eleven percent of all live births in the United States. And the numbers are on the rise (Jacques 1991). Crack cocaine first made its appearance on the streets of this country in the early 1980's. Since then, it has become known as the cheap way to get high fast. Crack, unlike any other drug, has been able to cross all socioeconomic boundaries. This means that the number of drug users has increased, in turn increasing the number of drug-related pregnancies.

Since the introduction of crack, cocaine has surpassed heroin as the leading drug of choice on the American streets (VanDyke 1990). As previously stated, this illicit drug knows no socioeconomic boundaries; however, the inner cities are seeing the most effects of this drug. Over thirty percent of the babies admitted to neonatal intensive care units in the inner cities are products of prenatal crack cocaine exposure (Finberg 1990). In Washington, D.C., alone, the infant mortality rate increased by

forty percent in one year because of the increase in drug usage related to crack (Skolnick 1990). In the East Harlem and South Bronx sections of New York City, cocaine has become the number one drug used by women of child-bearing age (Bingol 1987). Over fifty-eight percent of pregnant drug users in the Chicago area have made cocaine their drug of choice (Williams, 1993). These figures are alarming, and even more alarming is that research indicates by the year 2000, sixty percent of all inner-city children will be born exposed to crack cocaine while in-utero (Sautter 1992). There is, however, more to this problem than rising numbers. Because crack is still new to the drug world, the effects are still being documented. Upon prenatally exposed children, there is evidence that crack impairs both physical and neurological development.

The March of Dimes Foundation predicts that by the year 2000 there will be four million crack-affected children within the American school system (Sautter 1992). The oldest crack children are now approaching school age. In order to help these children, researchers and the educational system have begun looking at the long-term effects of crack upon children prenatally exposed to crack and how it will affect school performance and placement. These professionals realize that the physical, social, and emotional impacts upon many of these children are enormous and will continue as such unless something is done to help them. Several

school districts have established pilot programs to help the prenatally exposed children of crack before they reach school-age. These pilot programs not only allow for early intervention but also establish strategies that the classroom teacher can incorporate in order to help these children reach their fullest potential.

Educators are not the only ones who are trying to find ways of helping crack-affected children. Communities have also become involved with forming programs that focus on prenatal and postnatal care for the mother and child. In addition, programs are being established to help the addicted mother and/or father stop the habit and to teach them how to take care of their child.

### **Crack Cocaine: How it Works**

Crack, also known as rock or ice, is a smokable form of cocaine and also one of its most addictive forms. Some refer to it as the "free base" form of cocaine hydrochloride because it is removed or "freed" from the hydrochloride base (Levy 1991). Crack cocaine first noticeably appeared on the United States market in 1983 (Stroud 1991). Yet, crude recipes for crack began to appear in media interviews, congressional testimonies, and underground literature in the 1970's (Witkin 1991). The name "crack" comes from the crackling sound the cocaine makes as it is heated. Since it is heat resistant, users can place flakes in pipes or on

cigarettes to absorb the full impact of the drug into the lungs. The vapors of this powerful stimulant are absorbed through tissues and enter the brain within six seconds, producing an intensely quick euphoria. This "high" characteristic of crack lasts only five to seven minutes, unlike that generated by cocaine powder, which produces a high that lasts thirty minutes or longer (Levy 1991). Crack, therefore, has become the drug of choice because one does not have to wait so long to get the feelings of euphoria and the expense is minimal. According to one source, "What the fast food industry did for eating on the run, crack has done for cocaine" (Dye 1991). Crack is cheap, easy, and faster to use than any other form of cocaine, and the wanted response occurs in less time. But, the "down" comes as quickly as the "high," leaving the user severely depressed. This depression, in turn, makes the person crave more crack, setting up the vicious cycle of addiction.

Crack is not only more addictive than the other forms of cocaine; it is more potent. Cocaine powder is usually fifteen to twenty-five percent pure cocaine (Levy 1991). According the United States Drug Enforcement Administration (DEA), crack is currently seventy-five to ninety percent pure, an increase of thirty-four percent since 1987. It is estimated that there are currently 500,000 users of crack cocaine in the United States (Dye 1991). Even more alarming is that in 1987, the National Cocaine Hotline

estimated that one million Americans had tried crack (Witkin 1991); by 1990 that number had increased to three million Americans (Dye 1991).

The side effects of crack addiction are numerous. Researchers have found that crack users are highly susceptible to eye problems associated with the powerful smoke vapors. These include diseases such as infectious keratitis (inflammation of the cornea) and corneal epithelial (Sachs et al. 1993). Crack is also known to interfere with the performance of the heart and lungs. When the crack is inhaled, blood vessels constrict, an action which increases the chance of strokes and heart-attacks. Neurologically, crack is identified as a stimulant that has severe effects upon the central nervous system. Mood swings can be severe, and at times one will suffer from "cocaine bugs," which are actually neurological sensations and hallucinations on the skin which the user views as crawling bugs (Levy 1991).

#### **Prenatal Crack Use and the Effects upon the Child**

Prenatal crack use has major implications upon the health-care industry of the United States. In the state of California, it costs thirteen times more to care for a crack-exposed infant's delivery than a non-drug exposed child, and the average stay is five times longer (Toufexis 1991). The national medical cost for



cocaine-exposed infants in 1990 was over five hundred million dollars (Williams 1993). Many of these children will be abandoned at the hospital by their crack-addicted mothers for one reason or another. As many as fifty-percent of newborns born prenatally exposed to crack do not leave the hospital with their mothers (Briggs 1990). Many mothers do not want the responsibility of motherhood, many are afraid that they will be arrested for delivering crack-addicted children, and many feel that they are doing the best possible thing for their children by leaving them.

The number of crack-exposed children in foster care has dramatically increased in the last decade. Before crack became prevalent in the American society, statistics showed that seven hundred fifty drug-affected infants were annually placed in foster care. Today, the number is close to thirty-five hundred, which has raised the cost of caring for drug-affected foster children from three hundred twenty million dollars to seven hundred ninety-five million dollars in nine years (Toufexis 1991). These figures do not include the intense care that many of these children require physically, emotionally, socially, and academically to combat current and future problems which occur as the result of prenatal crack exposure. Many of these children will return to the hospital with physiological and/or neurological problems related to in-utero

exposure and/or physical abuse by their "drugged-out" parents who did not stop using crack after the birth of their children.

Neglect and abandonment are common forms of child abuse seen with drug-addicted mothers who are out of the home for days looking for someone to give them a hit. Child abuse figures in New York City rose alone by seventy-two percent from 1985 to 1988 as a result of crack use by a caregiver (Williams 1993). And in some cases infants have overdosed on crack taken into their bodies through breast milk and passive smoke inhalation. Even more devastating is that many of these children will be born HIV positive. This is because many drug-addicted mothers turn to prostitution in order to get the money needed to support their habits.

Major physiological complications seen with prenatal cocaine exposure are birth defects, miscarriages, abruptio placentae, and premature births. Abruptio Placenta (separation of the placenta from the uterus) is a very serious condition that results in death to approximately thirty to sixty percent of neonates and ten percent of mothers (Williams 1993). Contrary to many beliefs, cocaine use in any trimester of fetal gestation can have serious effects upon the prenatal and postnatal development of the child. However, the first trimester is the most important in terms of the physical development of the fetus. During this stage, the major

organs, tissues, and physical structure form. The presence of crack in the mother's body can cause blood vessels to constrict, thereby reducing the oxygen and nutrient flow to the fetus (Toufexis 1991). This, in turn, can cause malformations of limbs and organs and can lead to serious neurological impairments.

In a 1987 study, it was found that cocaine use by the pregnant mother increases stillbirths, causes a higher number of physical malformations, and decreases fetal weight (Van Dyke 1990). The use of cocaine during the later months of pregnancy can cause embolisms or blood clots to form and lodge into fetal vessels. Closing off blood, oxygen, and nutrients to an organ or limb can result in shriveled limbs and/or missing parts of intestines and kidneys. Crack also alters neurotransmitters within the central nervous system that send messages back and forth from the body to the brain (Toufexis 1991). This neurological alteration may explain the irritability, impulsiveness, and moodiness seen within many of these children after birth. Scherling also notes that the use of crack leads to more premature births and increases the number of infant deaths related to Sudden Infant Death Syndrome (Scherling 1994).

One may think that the problems are over at birth for prenatally crack-exposed children. This is not true. Although most exposed children have the same physical appearance of any

healthy non-exposed newborn, there are many with neurological and developmental problems. Twenty-five to thirty-five percent are born with below-average weight and length and have head circumferences that are smaller than the average newborn (Scherling 1994). These problems are not very severe and in most cases do not cause prolonged problems for crack-exposed children. Sleeping disorders are also common in these children, and research shows that they are more susceptible to convulsions. The children have problems with visual tracking, can not pay attention, and are easily over stimulated (Waller 1993).

Crack-affected children also suffer from problems that seem to be neurologically related. One-third of prenatally exposed infants are born with lesions on the brain compared to five percent of newborns not prenatally exposed to crack cocaine. Studies of exposed infants during their first week after delivery show irritability of the central nervous system in the form of tremors and rigidity of muscles (Van Dyke 1990). At birth, many show poor results on tests that measure their responsiveness. At one month of age, some are not as responsive as a non-exposed infant of two days (Toufexis 1991). Studies at four months of age have found that forty percent of these children suffer from developmental motor dysfunction, frequent tremors, increased extensor muscle control, and primitive reflexes normally extinct by this age. At

eight months, many stand on their toes, crawl more slowly than average, and possess more rigid extensions of the limbs.

Several studies have been performed upon prenatally crack-exposed infants to assess differences between their development and the development of their non-exposed peers. In a one-year study at the Beth Israel Medical Center in New York, researchers observed that infants of cocaine addicted mothers were found

1. to be smaller than the average newborn,
2. to have unusual brain wave patterns,
3. to have short-term neurological signs such as irritability, and
4. to have poor interaction with caregivers.

Harlem Hospital increased the age of the study to two years utilizing seventy children age two and below in their assessment. Researchers documented that the children were delayed in learning to speak and were unable to separate the mother from a stranger. It was furthered discovered that over fifty percent of these children had impaired motor and social skills (Toufexis 1991).

### **Crack Effects Seen in Preschool and Elementary School Children**

The majority of the prenatally crack-exposed children within the schools today look like any other children. They do not suffer from physical traits seen in many special-needs children with disorders such as Down's Syndrome and Fetal Alcohol Syndrome. The problems are seen within the exposed children's abilities to

socially, academically, and personally interact within the environment. Most of these children have age-appropriate I.Q's, but something is missing that allows them to be totally involved with their environment. Even at age two, children prenatally exposed to crack have the lowest scores on developmental tests that measure group interaction, concentration, and environmental control (Williams 1993).

Preschoolers prenatally exposed to crack cocaine as early as age three are isolated from their peers. Other children are fearful of their violent outburst and mood swings. Crack-exposed children, according to Waller, "do not feel remorse for hurting others, and they do not seem to develop conscience" (Waller 1993). Common characteristics seen within these children are hyperactivity, impulsiveness, unawareness of others, and an inability to attend for any period of time. They have no concept of symbolic or free play and do not comprehend relationships such as cause and effect. Toys are not picked up and played with for periods of time; instead, they are scattered about the room and repeatedly picked up and put down (Williams 1993). These children can and do accomplish tasks when they are directed, but they can not organize their own experiences and activities (Waller 1993).

In a busy classroom, a child prenatally exposed to crack will react in one of two ways to the noise, excitement, and activity. He

will either become completely withdrawn from the environment or he will go into a mood swing, during which he becomes aggressive and difficult to control (Rist, 1990). Several teachers report that these children are sometimes violent and impulsive and that school discipline does not seem to work.

Learning and memory problems are also seen with prenatally exposed children. And many times they are unable to set limits on their speech and behavior, often blurting comments that are embarrassing or irritating to others (Waller 1993). These problems, in turn, make it harder for these children to make and maintain friendships. Another problem seen within crack-affected children is their inability to read nonverbal cues such as body language (Waller 1993). When the teacher shows an expression of approval or disapproval, it has no effect upon the student. Discipline is thus harder to enforce in the classroom for these students, and less praise is felt when the teacher smiles at a project the student is working upon.

### **The Educational System's Response**

In the late 1980's educators began to realize that school systems were ill-equipped to handle crack-affected children and their needs. Several pilot programs were established across the country to find ways of helping these children succeed in the

American Educational system. Educators hoped that these programs would give some insight into strategies that teachers could use in the classroom to help these children.

The Salvin Special Education Center Program in Los Angeles is one of the most widely known educational pilot programs for prenatally drug-exposed children in the country. It was established in 1987 by the Los Angeles Unified School District to serve cocaine-exposed children ages three to six. The main goal of this program is to insure developmentally appropriate teaching for each child. The program follows the guidelines set forth by the National Association for the Education of Young Children (Bellissimo 1990).

Each classroom contains a maximum of eight students and three teachers. The classes are purposely small in size to allow for more individualized attention, although classroom activities, such as playing games and singing songs, are similar to what one would see in any classroom. Yet, this program goes a step further. It emphasizes fixed seating arrangements and consistent routines. Activities are favored over pencil and paper work, and loud noises or other disturbances are minimized in order to avoid overstimulation (Time 1991).

The main difference of the Salvin Center is the persons that are employed at the center. The Salvin Center not only employs



preschool teachers; it employs social workers, psychologists, speech-language pathologists, and pediatricians to meet the childrens' special needs related to their prenatal exposure to cocaine (Kantrowitz 1990). From this program, pilot directors Vicky Ferranra and Carol Cole have formulated some basic suggestions on what works with crack-exposed children:

1. These children need environments and routines which are predictable.
2. They need environments which encourage self-directed exploration.
3. Crack-exposed children need extra time to change activities and/or prepare for new ones. They have a hard time coping with transitions.
4. Because many of the crack-affected children have problems bonding with caregivers, there needs to be stability and consistency within their routine. Therefore, the classroom staff must be consistently stable and there must be a small pupil-to-teacher ratio.
5. The one essential to the crack-affected child having a successful school experience is interaction and support by the educators with the child's parents. (Bellissimo 1990)

Over half of all children who have completed the Salvin program with special counseling and tutoring have been able to transfer into regular classrooms (Toufexis 1991).

The Sausalito School District serves children from four communities: Sausalito, the waterfront houseboat community, Fort Barry and Fort Baker military bases, and Marin City, which is home to federally funded subsidized public housing. The Sausalito School program began in 1990 at the suggestion of Superintendent Don Johnson. This suggestion was made after a county-sponsored

report was released that found that sixty-eight percent of the single women in Marin County were delivering drug and alcohol exposed infants and that twenty-two percent were from Marin City. According to Johnson, "This is not a future problem. These children are in the schools now and they need our best efforts" (Bellisimo 1990).

The Sausalito program is directed toward at-risk children and their families within the Sausalito area. The program's plan is to coordinate efforts of various organizations and professionals to reach out to these families. The program hopes eventually to become a clearing house of information regarding what works with these children and their families and hopes to ensure that their needs are being properly met (Bellisimo 1990).

As programs were forming on the West Coast, the East Coast also was also beginning to look at the needs of crack-affected children. Washington, D.C.'s, answer for these children was Project Daisy (Developmentally Appropriate Intervention Strategies for Young Children). This program was established in 1989 as a three-year longitudinal study that would conduct five-year follow-up studies to see if early intervention is beneficial. Project Daisy currently serves sixty children in fifteen classrooms across four Washington, D.C., schools in communities known for high usage of drugs. There is a ratio of ten non-exposed children to five

prenatally crack-exposed children in each classroom. The twenty prenatally exposed children are selected using the Washington, D.C., General Hospital's tracking system. Key features of this program are developmentally appropriate practices, the use of a support team, plug-in services, family partnerships, student choices, and district-wide faculty training.

The Yellow Brick Road Learning Center in West Palm Beach, Florida, is a pilot preschool program for developmentally delayed children in foster care or in the care of children's services. Ninety percent of children between thirty months and five years are in the program because of parental cocaine use. The children and families are required to undergo extensive therapy and testing, and most children are found to have normal intelligence.

The direction of this program is to provide consistency and structure. Focus is placed upon activities such as sitting in chairs, cooperating in group activities, and forming lines. Children are reinforced each day for positive behavior. The positive behavior is based upon oral contracts between the children and the teachers. The children turn in tokens for rewards at the end of each day (Gregorchik 1992).

### **Teaching Strategies and Interventions**

Most teachers realize that children learn in different ways

and that sometimes one must search to find the best strategies to use with a particular child to help him reach his potential. This is the same for a crack-exposed child. Each child is an individual case; what may work with one exposed child may not with another child. The first and most important step in working with this child is early intervention specific to the individual problems and needs. Teachers who work with a crack-exposed child in the classroom believe that if the child is identified by the age of two years, he will be mainstreamed. If intervention is begun at the kindergarten level, it is still possible to mainstream, but it may require a longer period of time (Waller 1993). Patience is the next step. One must have the patience to work with a child who at times will not acknowledge the teacher's presence or will throw a tantrum when the teacher tries to move from one subject to another. Finally, the teacher must be persistent in time allocation and attitude. The classroom instructor may have to spend more time outside of class working on specific and individualized lesson plans for the exposed child who can not grasp learning in the same way as his classroom peers. The teacher must have persistence in his own attitude not to give up on himself or the child.

A teacher needs to be aware of the children exposed to cocaine that are entering his or her classroom. This is not only for the

teacher's benefit but also for the academic and social well being of the children themselves. Gregorchik (1992) has formulated a list of symptoms seen within these children:

1. drug use in the home,
2. frequent mood swings,
3. difficulty with remembering and carrying out multiple directions,
4. low persistence and tolerance levels
5. difficulty with fine and gross motor skills
6. inability to remain seated or control body movements,
7. and difficulty with concentration.

One must remember that all children will show these symptoms at some time, and also that not all exposed children will suffer from any or all of these symptoms.

There are three levels of intervention that classroom teachers can incorporate into their curricula. At the primary intervention level, the instructor can teach drug education in order to help break the cycle (Tyler 1992). This includes teaching the harmful effects of drugs upon the user. By focusing at the elementary level, teachers can involve their students with drug-resistance programs such as Just Say No and D.A.R.E (Drug Awareness and Resistance Education), which not only teach them that drugs are harmful but also try to build students' self-esteem.

In the secondary level of intervention, teachers can make referrals for the child and his family. Sometimes the crack-exposed child needs to be referred to other specialists such as speech-language pathologists or physical therapists. At other

times, the teacher can refer the drug-affected family to community programs that can help the struggling addicted parent kick the habit and the child to increase school performance. However, in many cases, referrals are made to child welfare services because of suspected physical neglect and abuse from the crack-addicted caregiver or caregivers.

Most educators will fall within the tertiary level of intervention. This is where one will work with the after-effects of drug exposure. In this level of intervention, educators will work to maximize language and learning potentials by working around the obstacles confronted by prenatal crack-exposure. One way in which to help these children overcome problems is to avoid labels. By placing the problems in front of the individuals, one pays more attention to the issues and not the children. When discussing children with other professionals and caregivers, one should try to refer to the students first and the problems last. Instead of saying that she has crack-children in her classroom, one would observe that in her classroom she has children who have been exposed to crack cocaine.

Creativity is not the best practice with crack-exposed children. Yes, the teacher must be creative in ways of finding what works with these children; however, too much creativity and excitement in the classroom have negative effects upon the children

exposed to crack. These children need stability and order in the classroom setting. Often, it is beneficial to repeat information to children of crack exposure several times since many of these children have problems processing information both through auditory and visual means (Tyler 1990). Something is wrong in these children's abilities to place information into storage and retrieval within their brains. A teacher must be willing to teach the same information over and over to the child. It helps to offer more time for response in order that the brain may properly process the information (Waller 1993). Also beneficial is to have low stimulation in the classroom. Many of these children can not cope with the colorful bulletin boards and pictures posted upon the walls. It literally drives many of them wild. When working one to one with these children of high stimulation, the teacher and/or therapist should also remember not to wear clothes that distract, such as multicolored outfits or busy design sweaters.

According to Tyler, the most effective intervention depends upon comprehensive and interdisciplinary care aimed at forming stable environments and positive interactions whenever possible (Tyler 1992). These children need stability and high structure in their lives. Teachers must realize that collaboration not only includes other professionals; it also includes the primary caregiver.

## **Community Response to the Growing Problem**

Medical and educational professionals realize that the best place to stop crack addiction is with the pregnant mother. This begins with intensive health care for the mother and the unborn child. Drug-addicted pregnant women are many times very young, very scared, and very unaware of the impact their behavior has upon the unborn children. For example, many crack users think that cocaine shortens labor time and enhances the delivery (Skolnick 1990). This is not true. These infants are born with serious problems directly related to the cocaine used by the mother to ease her pregnancy and labor. Intensive prenatal education and care may not be the answer, but they are a starting point.

Studies show that if the pregnant woman receives intensive prenatal care, the pregnancy can go full term. Also, the infant is born healthy, and the mother is better equipped to handle her newborn baby (Randall 1991). In a study conducted by the Bellevue Hospital in New York City, thirty-five pregnant women known to be substance abusers were subjected to intense prenatal treatment. This comprehensive treatment included counseling and building self-motivation to become drug free. The results of their study were very positive. Researchers found that all women delivered live infants, only one was born prematurely, four infants had low birth weights, and Apgar scores were eight or higher in all but one



infant. An even more hopeful finding was that all of the women in the study were able to keep their babies; six months later only three women had to give up their children because of substance abuse (Randall 1991).

Most addicted mothers are not as lucky as the ones that participated in the Bellevue Study. Eighty-seven percent of the drug treatment programs in New York City will not accept pregnant addicts, and they will dismiss women once they find out about the pregnancy. The sad truth is the programs are afraid of being sued for liability that is pregnancy related (Randall 1991). These women are, in turn, sent back into the destructive environments that offer no hope for them or their unborn children.

It is estimated that thirty-one dollars in benefits is gained from every one dollar that is spent on preventive services (Miller 1992). These services include such things as drug education programs and appropriate prenatal and postnatal care. California has become the forerunner in providing preventive services for perinatal drug abusers. On September 30, 1990, the Perinatal Substance Abuse Services Act was passed by the California legislature. This law allows for comprehensive care and service of pregnant substance abusers at the local level. Furthermore, all information obtained during the prenatal period is confidential and can only be used for the purpose of healthcare. If a mother tests

positive for crack or any other drug prior to delivery, this does not alone signify child abuse nor neglect. A positive toxicology does lead to a referral to Public Health so that the infant may be screened at birth. If the infant is drug positive, a needs assessment of the mother and child is performed and the results are sent to County Welfare if the child is at risk. Law enforcement is prohibited from receiving and acting on these reports as mandated in the Perinatal Substance Abuse Services Act (Miller 1992).

### **The Role of the Speech-Language Pathologist in Intervention**

It is known that a large percentage of crack-exposed infants is prematurely born. Studies have shown that these infants are behind their full-term peers in academic, cognitive, and physical performances (Barrera et. al. 1990). Without intervention, these low-birthweight children will continue to show deficiencies in language, cognition, and perceptual motor skills. It is the role of the speech-language pathologist to assist these children in reaching their maximum potential in the areas previously mentioned.

Since the introduction of Public Law 99-457, the clientele list of the speech-language pathologist has expanded. This law mandates intervention services for the zero to three population who suffer from environmental and/or physical at-risk factors. There are four basic principles or guidelines that a speech-language

pathologist uses to assess neonates in a intensive care unit:

1. perinatal and prenatal history,
2. oral motor movements of infant,
3. ability or inability of infant to maintain homeostasis,
4. and the surrounding hospital environment. (Miller 1992)

Perinatal history refers to any problems surrounding the actual birth, whereas the prenatal history refers to any physical problems before birth that the mother and/or fetus may encounter. Knowing the case history of the infant and birth mother is very important to the assessment process. Prenatal concerns may include viral infections, bleeding, previous miscarriages, and drug usage. There are many instances in which the mother may not say that crack was used during pregnancy. Therefore, it is important to compare the prenatal information with the perinatal and even postnatal information. Things to be aware of include the use of anaesthesia or forceps during the delivery, the position of the baby, presence of jaundice, lack of oxygen during and after birth, and in the case of many crack-affected children, an abnormal head size.

The post-natal information goes beyond the hospital setting. It is the role of the speech-language pathologist to be aware of changes in the client and to try to find the appropriate cause or causes. It is not the pathologist's role to pass judgment or even to make assumptions about the caregiver's treatment of the child at home; yet, he or she is required by law to report suspected abuse

and/or neglect based upon physical and/or verbal clues. Signs to be aware of with someone using crack include a runny nose, low weight for body type, complaints of exhaustion, headaches, insomnia, dilated pupils, visible racing pulse, and extreme mood swings (Sparks 1993).

Passive smoke from crack in the home can also have detrimental effects upon a child. It can lead to drowsiness and seizures (Randall 1992). Passive exposure can occur in two ways. First, someone in the home may be smoking cocaine. Second, a mother who is taking crack will pass it on to her child within forty-eight hours if she is breast feeding. It is important that the speech-language pathologist know if the crack-addicted mother is breast feeding or plans to breast feed.

Oral motor skills are very important in the actual production of speech sounds. Most infants have no problem mastering the oral muscles. The bite and suck reflexes usually disappear by the time the infant is five months of age. The gag reflex is reduced by seven months of age, and the root reflex disappears by three weeks. If any one of these reflexes persists beyond the designated time, then there are definite problems with oral motor abilities. A complete and extensive evaluation should be performed.

The ability to maintain homeostasis is the infant's ability to respond and interact appropriately within an environment. This

homeostasis includes such things as responding to the voice of a caregiver. The hospital environment is also very important. Factors that will adversely affect the neonate's behavior include isolation from other babies and the sterility sometimes seen in nurseries. An infant is more relaxed and more eager to respond in a warm and caring environment than in a cold and sterile one. After the speech-language pathologist determines that there is a need for intervention, he or she must then plan the intervention. Research has concluded that there are three basic principles that the speech-language pathologist must keep in mind when developing intervention strategies for children who either have or who are at risk for communicative and behavioral disorders and their primary caregivers (Theadore et al. 1990)

First, each child is an individual. Therefore, interventions should be different regardless of the disorder. Family needs should be included in the treatment efforts, but the strengths and weaknesses of the individual child need to guide the intervention process.

Natural settings are the second principle to remember. A person performs better in a setting that is natural, relaxed, and familiar. This is especially true for the crack-exposed infant or child who needs stability. More will be gained by the child and caregiver if the speech-language pathologist goes into his

environment instead of taking him out of the familiarity and comfort of his own. The speech-language pathologist will also learn more about the caregiver/child interaction in a more natural environment such as the home or classroom.

The last principle to remember when one is planning intervention is to help the caregiver to become more responsive and child-centered. The speech-language pathologist should observe how the caregiver's language changes as the child's language and emotions develop. One should notice the effectiveness of the caregiver in comforting the child. If there are problems with the child's reaction to the caregiver, this does not mean that the caregiver is not doing his or her job. A child exposed to drugs such as crack may not respond to the intonations that a non-exposed infant will respond to in the environment (Theadore et al. 1990).

The speech-language pathologist's role has also increased in the school system. Because of public law 99-457 and other federal mandates, many states now require a speech-language pathologist in every school, and some states have school-based preschool programs that provide intervention services. Public law 99-457 includes provisions for family involvement under the Individualized Family Services Plan (IFSP). The speech-language pathologist places an emphasis not only upon the child but also the caregiver. The professional looks at the behavior of the infant or child alone and

its behavior with the caregiver. Even though public law 99-457 emphasizes the inclusion of the family, the speech-language pathologist's first professional concern should always be for the child and his or her best interests and needs.

The relationship between the infant and caregiver is very important in the development of speech and language during the what Erikson referred to as the trust versus mistrust stage. It is during this early stage that the newborn learns to trust or mistrust the caregiver based upon interactions. Many times the crack-exposed baby shows difficulty in forming bonds with others. This is due, in part, to the neglect seen in homes where crack is used by one or both parents. If the infant is ignored or mistreated by the primary caregiver, problems may arise. The caregiver-infant interaction provides a model to the child. The child is taught to attend to a person, discriminate between the caregiver and other individuals, and use joint focus eye contact. These are some of the building blocks for the development of language and speech.

Shaffer has researched the outcome of relationships between the infant and caregiver, concluding that the child may be placed into one of three categories: "ambivalence," "avoidance," or "emptiness." The "ambivalent" infant needs and wants attention but is never satisfied with the attention that he receives. This is the child in school that the teacher wants to protect from the

world. He has a low tolerance level of frustration and asks for help by whining or throwing tantrums. The "avoidance" baby does not want to interact with caregivers. He would rather be alone in his own security than take a chance on another person. This is the loner child in the classroom that many times is disliked by the teacher. He is more aggressive than the ambivalent child but also exhibits a low level of frustration. The "empty" child sees life and those in it as insignificant. This is the child who will show more physical and psychological signs of insecurity. He will at times seem depressed to the point many may think that he is mentally disabled (Shaffer 1991).

The speech-language pathologist must remember to utilize the three R's - remediation, redefinition, and reeducation - whenever appropriate when focusing upon intervention strategies (Theadore 1990). Remediation refers to helping the child to overcome or compensate for his or her delays. Redefinition focuses upon redefining the strengths and weaknesses of the child and offering useful strategies to the caregiver to help with the child's progression. Reeducation is the process whereby parents are taught the most successful ways of helping their child overcome his or her problems (Theadore 1990).

With crack-exposed children who suffer from a wide array of language, cognitive, academic, and social disorders, the speech-



language pathologist and the caregiver must realize that intervention is only beneficial if given time and space. The time is needed so that these children may progress and learn at a pace that is comfortable to them. The space is needed so that redefinitions of the children's strong points and weak points can be made.

### **Conclusion**

Crack cocaine is producing serious problems in today's society. Users of crack are not only hurting themselves but are many times endangering the lives of the unborn. Professionals must put aside their differences and work together in order to help the crack-addicted mother and child break the vicious cycle. Through knowledge there is power, but more is needed to help the addicted mother of an unborn child. Intervention with care and compassion instead of judgement and persecution should be the goal of all professionals working with the crack-addicted newborn and mother.

Professionals in all fields need to collaborate in order to help the victims of crack cocaine. As the prenatally exposed children reach schoolage, it is especially important that the classroom teacher and speech-language pathologist work together to provide the most successful intervention for these children.

Because most of the prenatally crack-exposed children are

still in elementary school, their long-term outcomes are not known. Early intervention with crack-exposed children who suffer from developmental problems is the best treatment that can be done thus far. There are no miracle drugs or cures, and the process may be long and tedious. The benefits are already being documented; yet, the outcomes are years from being conclusive. The hope of all professionals involved with prenatally exposed children is that through early detection and intervention these children will grow to be healthy and happy adults who lead normal, productive lives.

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## APPENDIX A

### INFORMATION AND REFERRAL

\* Cocaine Baby Hotline

Telephone: 1-800-638-BABY

This program offers current information of the effects of cocaine upon the unborn child and provides referrals to the mother for treatment.

\* National Clearinghouse for Alcohol and Drug Information  
(NCADI)

Telephone: 301-468-2000

NCADI disperses the latest scientific information on drug use and pregnancy.

\* National Institute on Drug Abuse (NIDA)

Telephone: 1-800-662-HELP

NIDA is a national hotline that operates seven days a week. It offers referrals on drug treatment programs to callers and serves as a clearing house for free information.

\* Tennessee Alcohol and Drug Association Statewide Clearinghouse  
(TADA)

Telephone: 1-800-842-8629

TADA has several services available to the information seeker. There are over 360 audiovisuals on drug abuse, recovery, and education available to the public. This clearinghouse also is home to a library of books, journals, and pamphlets which are for sale at low rates.

## APPENDIX B

### FORMAL ASSESSMENT TESTS FOR INFANTS AND INFANT/CAREGIVER INTERACTIONS

#### INFANT ASSESSMENT

Battelle Developmental Inventory  
(Newborg, Stock, Wnek, Buidubaldi, and Svinicki, 1984)  
Standardized Measure

Carolina Curriculum for Handicapped Infants and Infants at Risk  
(Johnson, Martin, Jens, and Attermeier, 1986)  
Criterion Referenced

Early Learning Accomplishment Profile  
(Glover, Preminger, and Sanford, 1978)  
Criterion Referenced

Hawaii Early Learning Profile (HELP)  
(Furuno, Inatsuka, O'Reilly, Hosaka, Zeisloft, and Allman, 1984)  
Criterion Referenced

Infant/Toddler Language Scale  
(Rosetti, 1990)  
Checklist

#### INFANT/CAREGIVER INTERACTION ASSESSMENT

Nursing Child Assessment Teaching and Feeding Scales  
(Bee, Barnard, Eyres, Gray, Hammond, Spietx, Synder, and Clark, 1982)  
Behavioral Checklist

Observation of Communicative Interactions Scale (OCI)  
(Klein and Briggs, 1987)

Parent Infant Interaction Scale  
(Clark and Seifer, 1983)  
Rating Scale

Social Interaction Assessment/Intervention  
(McCollum and Stayton, 1985)  
Behavioral Charting

## APPENDIX C

### CLASSROOM ADAPTATIONS

These adaptations are useful for the speech-language pathologist and classroom teacher as well as for the primary caregiver in the home and other professionals working with children with language, cognitive, academic, and behavioral disorders.

#### IF THE STUDENT HAS DIFFICULTY:

##### BECOMING INTERESTED

- establish relevancy and a purpose of learning by relating to previous experiences
- adjust the conceptual level
- shape approximations of desired behavior by providing direct reinforcements such as praise or one to one conversation or immediate feedback of correct answers
- seat student closer to teacher; distance affects interest
- make a positive, personal comment every time student shows any evidence of interest (sits in seat, has book)

##### GETTING STARTED

- give cue to begin work
- give work in smaller amounts
- provide immediate reinforcers, feedback
- sequence work with easiest problems first
- provide all necessary materials
- introduce assignments carefully so student knows what tasks will be expected
- check on progress often in first few minutes of work
- give a checklist for each step of the task
- start with a peer or peer tutor

##### PAYING ATTENTION TO THE SPOKEN WORD

- give explanations in small distinct steps
- provide written backup to oral directions and lectures;
- provide visual via chalkboard or overhead
- have student repeat directions
- provide other sources of information: buddies, tape record, language master
- shorten the listening time: repeat
- alternate spoken with written and manipulative tasks
- look directly at student; place hand on student's shoulder when giving directions

##### PAY ATTENTION TO PRINTED WORD

- select a text with less on a page
- highlight distinctive features
- marks, underline, point, number
- cut pages apart or tear out of book



practice discriminating one part; have student identify main headings or unit titles  
require desk to be cleared of extraneous material  
face desk to wall or provide carrel if this would not be construed as punishment

#### FOLLOWING DIRECTIONS

- use fewer words
- provide examples
- repeat
- have student repeat or explain
- provide checklist
- put directions on a cassette
- provide a peer tutor
- monitor closely as student begins
- present both auditory and visual directions

#### KEEPING TRACK OF MATERIAL OR ASSIGNMENTS

- require a notebook; use large envelopes for each subject
- check notebook often
- provide assignment sheet to student
- write assignment on board for student to copy
- give reward ( grade, points) for bringing book, paper, pencil to class every day
- return corrected work promptly

#### STAYING ON TASK

- reduce distractions
- increase reinforcements
- provide smaller tasks or sub tasks; reduce amount of work
- provide checklists
- provide peer tutors
- provide different activities in same class
- provide a reward that is valued by student
- provide quiet alternatives for a short time
- provide a timer to set short periods of work

#### COMPLETING TASKS ON TIME

- reduce amount to be accomplished; allow more time
- provide time cues
- write schedules
- provide checklists

#### WORKING IN GROUPS

- provide direct instruction in small groups
- provide a partner
- utilize teacher aide, student aide or volunteer in classroom
- restate goal and link it to the required activities; provide closure

#### WORKING INDEPENDENTLY

- assign a task at the appropriate level

be certain the student can see an end to the task; use smaller units of practice  
give precise directions  
lower the difficulty  
motivate by providing a goal or using peer pressure  
provide a variety of types of work within the assignment  
instead of all writing tasks ( charts, maps, flags, picture drawing etc...)

#### REMEMBERING

provide checklist  
provide cues  
have students make notes to self  
teach use of acronyms and other mnemonic devices

#### LEARNING BY LISTENING

provide visuals  
spell by visualizing the whole word; don't teach by sounding out  
have student take notes, write things down, highlight with colored felt tip pens  
teach the use of acronyms to help visualize lists of names  
give explanations in small distinct steps  
provide other sources of information  
shorten the listening time; repeat  
alternate spoken with written and manipulative tasks  
pre-teach new or difficult vocabulary and concepts  
tell him/her what he/she is going to learn; provide a reason for listening  
remove extra words  
provide study guides/worksheets  
tape record directions of differing complexity, length, speed for practice

#### EXPRESSING HIM/HERSELF VERBALLY

accept alternate form of information sharing such as the following:  
written report  
art expressive response  
exhibit  
chart or graph or table  
bulletin board  
photo essay  
map  
diorama, 3-D display, showcase  
charade or pantomime  
demonstration  
filmstrip or sound filmstrip; U-film-it kit  
ask questions requiring short answers  
provide a prompt, such as beginning the sentence for the student or giving a picture cue  
give rules for class discussion

give points for oral contributions, and prepare the student individually  
wait for students to respond; don't call on the first student to raise his/her hand  
question at the teaching level-give facts; ask for facts back  
have student break in gradually by speaking in smaller groups and then go to larger group sessions  
allow a taped report instead of oral to class if this is perceived to be easier to student

#### READING TEXTBOOKS

find a text written at a lower level  
adapt the student's text by highlighting and reorganizing  
rewrite the student's text including only important concepts  
tape important concepts in the student's text  
allow a buddy to read text aloud to disabled student  
shorten the amount or required reading  
look for same content in another medium  
have students read aloud in small groups on a volunteer basis, being certain disabled reader can contribute some other way later  
allow extra time for reading  
substitute study guides which identify key ideas and terms as the only reading assignment  
use worksheets which ask for information you want learned, and provide page numbers, paragraph, etc.  
put main ideas of text on index cards which can easily be organized in a file box, divided by chapters

#### INABILITY TO COMPREHEND

do not introduce a new skill until an old one is completely mastered  
break task down into smaller steps  
highlight key words or ideas  
have student repeat the passage in his own words  
relate math problems to real-life situations  
use pictures for sequencing activities

#### INABILITY TO FOLLOW DIRECTIONS

give fewer directions at a time  
write oral directions down  
read written directions  
allow a peer to remind a student  
have the student repeat directions back to you

#### INABILITY TO LISTEN

have students tape lectures  
make sure the student is completely attentive when directions are given  
flick the lights to get student's attention  
have the student repeat statements back  
eliminate extraneous stimuli as much as possible

put your hand on the student's shoulder to get his attention

#### INABILITY TO PROCESS INFORMATION THROUGH PERCEPTUAL MODALITIES

- tape record required readings and allow student to follow along with the text
- allow use of fingers for math computations
- allow use of calculator or multiplication chart
- color code math process signs
- reproduce materials in large print
- give math story problems orally
- utilize talking books
- use configuration cues for spelling or word recognition

#### INABILITY TO COMPLETE ASSIGNMENTS

- use peer tutors
- use shorter assignments
- allow more time to complete assignments
- make sure the assignment is on the student's reading elver
- repeat directions
- have the child work with a friend
- separate students who can't work together
- let students work in a quiet area of the room
- use contracting
- design instruction to meet the student's strengths
- wary the type of assignment so that written work is not always required

#### INABILITY TO BEHAVE APPROPRIATELY

- let the student work with another student on projects
- provide more positive attention
- send student on errands
- ignore self-depreciatory remarks
- mark only the number of correct responses
- emphasize the positive
- don't use red correcting markers
- send good notes home
- allow the student to tutor a lower functioning student
- have a time out area or room
- make arrangements with PE teacher to use the gym for venting
- change seating arrangements or adjust student's grouping
- ignore inappropriate behavior unless it's physically harmful to someone
- use a timer to specify behavior intervals
- remove earned tokens for each disruptive behavior
- do not attempt to get the last word
- have student work at a level where they can achieve success
- allow the student to tutor another student in his area of strength
- avoid comparing the student with other students in the class
- avoid using timed learning experiences

\*\*\*\*Source: POLICY AND ALTERNATIVE ASSESSMENT GUIDELINE